RAUDTEEALASED RAKENDUSED. RÖÖBASTEE. RAUDTEE EHITUS- JA HOOLDUSMASINAD. OSA 1: TEHNILISED NÕUDED SÕIDUOMADUSTELE

Railway applications - Track - Railbound construction and maintenance machines - Part 1: Technical requirements for running

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 14033-1:2017 sisaldab Euroopa standardi EN 14033-1:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 14033-1:2017 consists of the English text of the European standard EN 14033-1:2017.
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 31.05.2017.	Date of Availability of the European standard is 31.05.2017.
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 45.120, 93.100

EUROPEAN STANDARD

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English Version

Railway applications - Track - Railbound construction and maintenance machines - Part 1: Technical requirements for running

Applications ferroviaires - Voie - Machines de construction et de maintenance empruntant exclusivement les voies ferrées - Partie 1 : Prescriptions techniques pour la circulation

Bahnanwendungen - Oberbau - Schienengebundene Bau- und Instandhaltungsmaschinen - Teil 1: Technische Anforderungen an das Fahren

This European Standard was approved by CEN on 2 October 2016.

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European foreword

This document (EN 14033-1:2017) 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of an identical text or by endorsement, at the latest by November 2017, and conflicting national standards shall be withdrawn at the latest by November 2017.

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 supersedes EN 14033-1:2011.

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 2008/57/EC.

For relationship with EU Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document.

This series of standards EN 14033, *Railway applications — Track — Railbound construction and maintenance machines*, consists of the following parts:

— *Part 1: Technical requirements for running*;

— *Part 2: Technical requirements for travelling and working*;

— *Part 3: General safety requirements*.

Amended clauses compared to EN 14033-1:2011:

General	All references updated to latest issue
3.3	Inspection vehicles recognized as an additional type of railbound machine
3.8 to 3.10	Different modes of machine defined
4.2	New section on demountable modules added
5.1	Requirement for reference profile to be marked
5.2.5	Additional requirements for prevention of operation of locks in running mode
6.1	Clarification added concerning machine attachments and when fatigue calculations are required
6.3	Recognition that stowage hooks also used for towing
7.2	New requirements for structural design of bogies added
7.6	Wheelsets required to comply with ENs and dimensions mandated
7.7	New section on machine mass measurement added
7.9	Requirements for when lifeguards fitted and design forces reduced
7.10	New section on obstacle deflectors aligned with requirements of TSI

Clause 8	Running safety section amended to align with latest edition of EN 14363
Clause 9	Brakes section extensively modified to align with requirements of emerging ENs and TSI, and to clarify testing
Clause 10	Alternative buffing and drawgear now permitted and requirements added
10.5	Marking of machine required where Berne rectangle not achieved
10.6 & 10.7	Clarity added when shunters handrail and step required
11.1	Dimensions of machine for operation of track machine aligned with requirements of TSI
11.3	Requirements for hot axle box detection aligned with requirements of EN 15437-1
11.4	New section on on-board hot box detection added
11.5	New section on other signalling systems added
12.2	Requirements for data recorder aligned with requirements of EN 62625-1
Clause 13	Section on warning horns and lights amended to align with requirements of TSI
14.2.2	Position of handrails no longer mandated, handrails to comply with EN 14033-3
14.2.3	Section on doorways amended to align with requirements of TSI
14.3.4	All forward facing windows now windscreens but reduced requirements from EN 15152 to only certain clauses
14.3.5	Reduced requirements for side windows and other glazing now included
14.6	Area of visibility requirements relaxed
14.8	Section on controls and indicators amended to align with requirements of TSI
14.10.1	Requirements for sanding and brake gauges added
14.10.4	Requirement for storage of tools added
14.11	New section on driver's vigilance device added
15.3	Section on fire precaution amended to align with requirements of TSI
15.4	New requirement for front end to be yellow added
16.1	New requirement to demonstrate compliance to environmental conditions where there is no previous experience
16.3	Requirements for fuel tank amended
Clause 17	New section on aerodynamic effects added
Clause 18	New section on design for recovery added
Clause 19	Requirements for machine marking aligned with EN 15877-2 and use of identification plate de-mandated
Clause 20	User information extensively amended and incorporates requirements in former Annexes G and I
Annexes	All annexes reviewed and updated
Annexes E and F	Now Informative
Annex H	Now Normative

Annex J	New annex giving clause-by-clause comparison with Loc&Pas TSI

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

Introduction

This European Standard was prepared to meet the essential requirements of EU Directives to facilitate an open market for goods and services.

This document is the first of a series of three parts of the European Standard: *Railway applications — Track — Railbound construction and maintenance machines*:

— Part 1 covers the safety and technical requirements for the machines in running mode; this is a harmonized standard with the Technical Specification for Interoperability (TSI) for Locomotives and Passenger Rolling Stock Commission decision 2011/291/EU, which itself meets the essential requirements to ensure the interoperability of the rail system as described in Article 1 of European Directive 2008/57/EC;

— Part 2 covers the railway specific requirements for the machines in working and travelling modes;

— Part 3 covers the safety requirements for the machines in working and travelling modes; this is a harmonized standard with the European Machinery Directive 2006/42/EC.

The risks that exist in all mechanical, electrical, hydraulic, pneumatic and other components of machines and which are dealt with in the relevant European Standards are not within the scope of this European Standard. Where necessary, references are made to appropriate standards of this type.

1 Scope

This European Standard defines the specific technical railway requirements for running of machines and other vehicles used for construction, maintenance and inspection of track, structures, track formation and fixed electric traction equipment. Special national conditions applicable to specific member states are shown in Annex B.

This European Standard applies to all railbound machines and other vehicles – referred to as machines – running exclusively on the railway (utilizing adhesion between the rail and wheels) and used for construction, maintenance and inspection of track, structures, infrastructure and fixed electric traction equipment.

This European Standard applies to machines that are intended to operate signalling and control systems. Other machines are dealt with in other European Standards, see Annex I.

This European Standard is written for 1 435 mm nominal track gauge; special requirements can apply for running on infrastructures with narrow gauge or broad gauge lines, urban railways, railways utilizing other than adhesion between the rail and wheels and road-rail machines which are not included in this standard.

This European Standard covers the railway specific requirements for movements of the machine as a train and movements to reach work sites.

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 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*

EN 12080, *Railway applications — Axleboxes — Rolling bearings*

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 12663-2:2010, *Railway applications — Structural requirements of railway vehicle bodies — Part 2: Freight wagons*

EN 13103, *Railway applications — Wheelsets and bogies — Non-powered axles — Design method*

EN 13104, *Railway applications — Wheelsets and bogies — Powered axles — Design method*

EN 13260, *Railway applications — Wheelsets and bogies — Wheelsets — Product requirements*

EN 13261, *Railway applications — Wheelsets and bogies — Axles — Product requirements*

EN 13262, *Railway applications — Wheelsets and bogies — Wheels — Product requirements*

EN 13715, *Railway applications — Wheelsets and bogies — Wheels — Tread profile*

EN 13749:2011, *Railway applications — Wheelsets and bogies — Method of specifying the structural requirements of bogie frames*

EN 13979-1, *Railway applications — Wheelsets and bogies — Monobloc wheels — Technical approval procedure — Part 1: Forged and rolled wheels*

EN 14033-2:2017, *Railway applications — Track — Railbound construction and maintenance machines — Part 2: Technical requirements for travelling and working*

EN 14033-3:2017, *Railway applications — Track — Railbound construction and maintenance machines — Part 3: General safety requirements*

EN 14067-4:2013, *Railway applications — Aerodynamics — Part 4: Requirements and test procedures for aerodynamics on open track*

EN 14067-6:2010, *Railway applications — Aerodynamics — Part 6: Requirements and test procedures for cross wind assessment*

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

EN 14363:2016, *Railway applications — Testing and Simulation for the acceptance of running characteristics of railway vehicles — Running Behaviour and stationary tests*

EN 14531-1:2015, *Railway applications — Methods for calculation of stopping and slowing distances and immobilization braking — Part 1: General algorithms utilizing mean value calculation for train sets or single vehicles*

EN 14531-2, *Railway applications — Methods for calculation of stopping and slowing distances and immobilization braking — Part 2: Step by step calculations for train sets or single vehicles*

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 14601, *Railway applications — Straight and angled end cocks for brake pipe and main reservoir pipe*

EN 15152:2007, *Railway applications — Front windscreens for train cabs*

EN 15153-1:2013+A1:2016, *Railway applications — External visible and audible warning devices for trains — Part 1: Head, marker and tail lamps*

EN 15153-2:2013, *Railway applications — External visible and audible warning devices for trains — Part 2: Warning horns*

EN 15179:2007, *Railway applications — Braking — Requirements for the brake system of coaches*

EN 15220:2016, *Railway applications — Brake indicators*

EN 15227:2008+A1:2010, *Railway applications — Crashworthiness requirements for railway vehicle bodies*

EN 15273-1, *Railway applications — Gauges — Part 1: General - Common rules for infrastructure and rolling stock*

EN 15273-2:2013, *Railway applications — Gauges — Part 2: Rolling stock gauge*

EN 15313, *Railway applications — In-service wheelset operation requirements — In-service and off-vehicle wheelset maintenance*

EN 15329, *Railway applications — Braking — Brake block holder and brake shoe key for railway vehicles*

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

EN 15437-1:2009, *Railway applications — Axlebox condition monitoring — Interface and design requirements — Part 1: Track side equipment and rolling stock axlebox*

EN 15528, *Railway applications — Line categories for managing the interface between load limits of vehicles and infrastructure*

EN 15551, *Railway applications — Railway rolling stock —Buffers*

EN 15566:2016, *Railway applications — Railway rolling stock — Draw gear and screw coupling*

EN 15595:2009+A1:2011, *Railway applications — Braking — Wheel slide protection*

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

EN 15612, *Railway applications — Braking — Brake pipe accelerator valve*

EN 15624, *Railway applications — Braking — Empty-loaded changeover devices*

EN 15625, *Railway applications — Braking — Automatic variable load sensing devices*

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

EN 15806:2010, *Railway applications — Braking — Static brake testing*

EN 15807, *Railway applications — Pneumatic half couplings*

EN 15827:2011, *Railway applications — Requirements for bogies and running gears*

EN 15839, *Railway applications — Testing for the acceptance of running characteristics of railway vehicles — Freight wagons — Testing of running safety under longitudinal compressive forces*

EN 15877-1:2012, *Railway applications — Marking on railway vehicles — Part 1: Freight wagons*

EN 15877-2:2013, *Railway applications — Markings of railway vehicles — Part 2: External markings on coaches, motive power units, locomotives and on track machines*

EN 16116-2, *Railway applications — Design requirements for steps, handrails and associated access for staff — Part 2: Freight wagons*

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

EN 16404, *Railway applications — Re-railing and recovery requirements for railway vehicles*

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

EN 50121-3-1, *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 50153:2014, *Railway applications — Rolling stock — Protective provisions relating to electrical hazards*

EN 50238-1:2003, *Railway applications — Compatibility between rolling stock and train detection systems — Part 1: General*

EN 62625-1:2013, *Electronic railway equipment — On board driving data recording system — Part 1: System specification (IEC 62625-1:2013)*

EN ISO 7010:2012, *Graphical symbols — Safety colours and safety signs — Registered safety signs (ISO 7010:2011)*

EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025)*

ISO 8573-1:2010, *Compressed air — Part 1: Contaminants and purity classes*

ISO 11112, *Earth-moving machinery — Operator's seat — Dimensions and requirements*

UIC 520:2003, *Wagons, coaches and vans — Draw gear — Standardisation*

UIC 527-1:2005, *Coaches, vans and wagons — Dimensions of buffer heads — Track layout on S-curves*

UIC 541-03:1984, *Brakes — Regulations concerning manufacture of the different brake parts — Driver's brake valve*

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

UIC 541-5:2006, *Brakes — Electropneumatic brake (EP brake) — Electropneumatic emergency brake override (EBO)*

UIC 544-1:2014, *Brakes — Braking performance*