

საქართველოს სტანდარტი

სარკინიგზო აღჭურვილობები- გზის აგებულება- სარკინიგზო
კონსტრუქციები და საექსპლუატაციო მანქანები

საქართველოს სტანდარტებისა და მეტროლოგიის
ეროვნული სააგენტო
თბილისი

საინფორმაციო მონაცემები

1 შემუშავებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს სტანდარტების დეპარტამენტის მიერ

2 დამტკიცებულია და შემოღებულია სამოქმედოდ საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს 2019 წლის 6 დეკემბრის № 98 განკარგულებით

3 მიღებულია გარეკანის თარგმნის მეთოდით სტანდარტიზაციის ევროპული კომიტეტის სტანდარტი ენ 14033-3:2017 „სარკინიგზო ალჭურვილობები- გზის აგებულება- სარკინიგზო კონსტრუქციები და საექსპლუატაციო მანქანები”

4 პირველად

5 რეგისტრირებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 2019 წლის 6 დეკემბერი №268-1.3-016362

დაუშვებელია წინამდებარე სტანდარტის სრული ან ნაწილობრივი კვლავწარმოება, ტირაჟირება და გავრცელება სსიპ საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს ნებართვის გარეშე

May 2017

ICS 45.120; 93.100

Supersedes EN 14033-3:2009+A1:2011

English Version

Railway applications - Track - Railbound construction and maintenance machines - Part 3: General safety requirements

Applications ferroviaires - Voie - Machines de construction et de maintenance empruntant exclusivement les voies ferrées - Partie 3 : Prescriptions générales pour la sécurité

Bahnanwendungen - Oberbau - Schienengebundene Bau- und Instandhaltungsmaschinen - Teil 3: Allgemeine Sicherheitsanforderungen

This European Standard was approved by CEN on 20 February 2017.

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, 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 United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

	Page
European foreword.....	6
Introduction	8
1 Scope.....	9
2 Normative references.....	10
3 Terms and definitions	14
4 List of significant hazards	15
5 General safety requirements and/or protective measures.....	15
5.1 General.....	15
5.2 Access to working places.....	15
5.2.1 Working cabs and combined working and driving cabs.....	15
5.2.2 Working places, places for control and maintenance outside of cabs.....	15
5.2.3 Walkways on the machine	15
5.3 Ergonomics.....	16
5.4 Requirements for working cabs	16
5.4.1 General requirements for working cabs.....	16
5.4.2 Minimum dimensions in working cabs	16
5.4.3 Working cab floors	16
5.4.4 Storage for instruction handbook.....	16
5.4.5 Emergency exit.....	16
5.4.6 Climatic conditions	16
5.4.7 Protection from dust.....	17
5.4.8 Windows.....	17
5.4.9 Interior lighting	17
5.5 Operator's seats.....	18
5.6 Edges and corners	18
5.7 Pipes and hoses.....	18
5.8 Communications between work positions.....	18
5.9 Stability and measures preventing derailment	18
5.10 Visibility of working tools and working areas.....	18
5.11 Visibility of the track ahead of the machine in the direction of movement.....	19
5.11.1 Movement along track in travelling mode	19
5.11.2 Movement along track in working mode.....	19
5.12 Emergency devices	19
5.12.1 Emergency stopping devices for working equipment	19
5.12.2 Emergency stopping device for movement of machines along the track	20
5.12.3 Emergency stopping device for power sources.....	20
5.12.4 Action of emergency stopping devices	20
5.13 Hazards associated with high working places and their access.....	20
5.13.1 Electrical risk from overhead lines	20
5.13.2 Risk of falling	20
5.14 Moving parts and materials.....	21
5.14.1 General.....	21
5.14.2 Wheels and caterpillar tracks	21
5.15 Control systems	21
5.15.1 General.....	21

5.15.2 Software	22
5.16 Operator's controls and indicators	22
5.16.1 General	22
5.16.2 Starting systems	23
5.16.3 Inadvertent activation	23
5.16.4 Pedals	23
5.16.5 Protection against uncontrolled motion in working configuration.....	23
5.16.6 Control panels and indicators	23
5.16.7 Marking of controls and indicators.....	23
5.17 Thermal hazards	23
5.18 Electrical hazards	24
5.18.1 Electrical equipment	24
5.18.2 Disconnection devices	24
5.18.3 Electrical enclosures	24
5.18.4 Conductors, cables and wiring practices.....	24
5.18.5 Batteries.....	24
5.18.6 Overhead line equipment	25
5.18.7 Connection to the rail electrical potential.....	25
5.19 Machine safety requirements related to electromagnetic compatibility.....	25
5.20 Emission of gas and particles	25
5.20.1 Exhaust gasses	25
5.20.2 Protection from dust	25
5.21 Pressurized systems.....	25
5.22 Fuel and hydraulic systems.....	25
5.23 Noise reduction	26
5.24 Vibration	27
5.24.1 General	27
5.24.2 Whole body vibration.....	28
5.24.3 Hand arm vibration.....	28
5.25 Protection from the risks of fire.....	28
5.25.1 Material requirements.....	28
5.25.2 Fire detection system	28
5.25.3 Fire suppression system	28
5.25.4 Portable fire extinguishers	29
5.26 Braking systems	29
5.27 Lighting.....	29
5.27.1 General	29
5.27.2 Lighting inside the machine.....	29
5.27.3 Lighting for working places/areas beside the machine	29
5.28 Protection from the risks of lasers	30
5.29 Warning systems.....	30
5.29.1 General	30
5.29.2 System for warning personnel of machine movement or travelling movement or working movement.....	30
5.30 Temperature range.....	31
5.31 Maintenance	31
5.31.1 General	31
5.31.2 Frequent maintenance.....	31
5.31.3 Support devices	31
5.31.4 Access to the engine compartment.....	31
5.32 Safe handling	31
5.33 Moveable machine components.....	32

6	Additional safety requirements and/or measures for specific machine functions	32
6.1	Conveyors.....	32
6.2	Rail handling devices	32
6.3	Portal cranes mounted on railbound machines.....	33
6.4	Cranes and lifting devices fixed on the machine.....	34
6.5	Transport of loads by rail cranes	34
6.6	Elevating work platforms.....	34
6.7	Ballast chains.....	34
6.8	Ballast dust.....	34
6.9	Rail profiling machines (grinding, milling or planing)	34
7	Verification of the conformity to the safety requirements and/or particular safety measures	35
7.1	General.....	35
7.2	Methods of verification	35
7.2.1	General.....	35
7.2.2	Visual check.....	35
7.2.3	Measurement.....	35
7.2.4	Functional test.....	35
7.2.5	Load test(s).....	35
7.2.6	Specific verification/measurements and other controls.....	35
8	Information for use	35
8.1	Instruction handbook.....	35
8.1.1	General.....	35
8.1.2	Specific information in instruction handbook	36
8.1.3	Restrictions of use.....	37
8.1.4	Warning systems	37
8.1.5	Information for maintenance	38
8.2	Warning signs and written warnings.....	38
Annex A (normative) List of significant hazards.....		39
Annex B (normative) Verification of conformity		42
Annex C (normative) Noise test code (grade of accuracy 2)		47
C.1	Scope.....	47
C.2	Definitions	47
C.3	Determination of the emission sound pressure level at the work station and other specified positions.....	47
C.4	Sound power level determination	48
C.5	Installation and mounting conditions	48
C.6	Working conditions.....	48
C.7	Measurement uncertainties	51
C.8	Information to be recorded	52
C.9	Information to be reported	52
C.10	Declaration and verification of noise emission values.....	52
Annex D (normative) Requirements for camera-monitor-systems.....		55
Annex E (normative) Requirements for close range surveillance systems		57
E.1	General requirements	57

E.2	Signal at the front of the machine	57
E.3	Signal inside the working cab	57
E.4	Range of detection.....	58
E.5	Environmental factors	58
Annex F (normative) Vibration test code		59
F.1	Scope	59
F.2	Measurement and degree of uncertainty of whole body vibration (WBV).....	59
F.2.1	General	59
F.2.2	WBV Vibration measurement	59
F.2.3	Reporting whole body vibration data	59
F.3	Measurement and degree of uncertainty of hand arm vibration (HAV).....	60
F.3.1	General	60
F.3.2	HAV Vibration measurement	60
F.3.3	Reporting hand arm vibration data	60
Annex G (informative) Structure of European Standards for track construction and maintenance machines.....		61
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC aimed to be covered.....		63
Bibliography		64

European foreword

This document (EN 14033-3:2017) 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 shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14033-3:2009+A1:2011.

Amended clauses compared to EN 14033-3:2009+A1:2011:

General	All references updated to latest issue
3.2 to 3.4	Different modes of machine defined
3.5	Definition added
4	New paragraph added as a reminder about risk assessment
5.2.3	Minimum width of walkways increased to 800mm with additional consideration for fire escape routes
5.4.7	Ventilation air requirements made per person, extra requirements deleted
5.7	Maximum pressure at which non-mesh guards are to be provided reduced to 50kPa
5.8	Additional requirements added for communication between work places
5.11	Requirements for visibility of track amended to reflect differing requirements of working and travelling modes
5.12.2	Emergency stopping devices now only required where movement presents a danger to personnel
5.12.3	New section added for emergency stopping of power sources
5.15	New section added for control systems and minimum performance level requirements
5.16.1	Additional requirement added concerning single point failures
5.22	Additional requirements added for corrosion and protective devices for fuel and hydraulic systems
5.23	Minimum noise level requirement added for travelling mode and additional requirements for working mode
5.25	Material requirements for fire protection standardised with EN 14033 parts 1 and 2; additional requirements added for fire detection and suppression systems
5.27.3	More detailed requirements added for external illumination on machines

5.28	New section added on lasers
5.29.2	Clarity added for existing requirement on warning horns
5.30	New section added on temperature range
5.33	New section added on moveable components
6.3	New requirements added for portal cranes
6.7	New section added on ballast chains
6.8	New section added on ballast dust
6.9	New section added on rail profiling
8	Information for use updated to reflect changes in standard
Annex B	Annex updated to reflect changes in standard
Annex C	Noise test code updated
Annex D	New annex for camera monitor systems
Annex E	New annex for close range surveillance systems
Annex F	New annex for vibration test code

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(s).

For relationship with EU Directive(s), 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*

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, 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 document is a type C standard as stated in EN ISO 12100:2010.

This document is the third 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, 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 machinery concerned and the extent to which hazards, hazardous situations and hazardous events are covered are indicated in the scope of this document.

When provisions of this type C standard are different from those, which are stated in type B standards, the provisions of this type C standard take precedence over the provisions of the other standards.