

RAUDTEEALASED RAKENDUSED. TELJEPUKSID.
TÖÖMADUSTE KATSETAMINE

Railway applications - Axleboxes - Performance testing

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 12082:2017 sisaldab Euroopa standardi EN 12082:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 12082:2017 consists of the English text of the European standard EN 12082:2017.
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 06.09.2017.	Date of Availability of the European standard is 06.09.2017.
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 45.040

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

Railway applications - Axleboxes - Performance testing

Applications ferroviaires - Boîtes d'essieux - Essais de performance

Bahnanwendungen - Radsatzlager - Prüfung des Leistungsvermögens

This European Standard was approved by CEN on 19 June 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

Contents

Page

European foreword.....	4
Introduction	5
1 Scope.....	6
2 Normative references	6
3 Terms and definitions	6
4 Symbols and abbreviations	8
5 Test specification	10
5.1 General requirements	10
5.2 Test specification content.....	10
5.2.1 General.....	10
5.2.2 Rig tests.....	10
5.2.3 Field test.....	11
6 Water tightness test	11
7 Rig performance test.....	11
7.1 General.....	11
7.2 Test execution	12
7.2.1 Test rig.....	12
7.2.2 Test parameters.....	13
7.3 Carrying out the test.....	14
7.3.1 Pre-test.....	14
7.3.2 Performance test.....	14
7.4 Acceptance criteria.....	15
7.4.1 Results obtained during the test.....	15
7.4.2 Results obtained after the test	16
7.5 Performance test report.....	16
8 Field test	17
8.1 General.....	17
8.2 Carrying out the test.....	17
8.3 Test parameters.....	17
8.4 Acceptance criteria.....	18
8.4.1 Results to be obtained at intermediate inspections during the test	18
8.4.2 Results to be obtained after the test	18
8.5 Field test report	18
Annex A (normative) Rig performance test.....	19
A.1 Schematic examples of test rigs	19
A.2 Temperature measurements.....	21
A.3 Grease sampling zones.....	22
A.4 Definition of forces	23
A.5 Definition of test cycles.....	23
A.5.1 Speed Classes and cumulative distances for testing.....	23

A.5.2	Conditions for sequenced tests.....	24
A.5.3	Particular conditions for similar rolling bearing(s), grease or box housing.....	24
A.6	Graphical presentation of test cycles	25
A.7	Temperature criteria	26
A.8	Mechanical and physico-chemical acceptance criteria.....	27
A.8.1	Mechanical criteria	27
A.8.2	Physico-chemical criteria	28
A.9	Reference to existing approval results	29
A.9.1	General	29
A.9.2	Preconditions for applicability of existing results	30
	Annex B (informative) Sequenced performance tests	33
B.1	General	33
B.2	High Speed Train example	33
B.3	Passenger train example.....	35
B.4	Freight train example.....	36
B.5	Peri-urban train example	38
	Annex C (normative) Water tightness test	40
C.1	General	40
C.2	Test conditions	40
C.3	Test procedure	41
C.4	Pass/fail criterion.....	41
C.5	Test report	41
C.6	Sketches	42
C.6.1	Classic application.....	42
C.6.2	Application with dynamic seals on both sides of the axlebox	43
	Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC aimed to be covered.....	44
	Bibliography	46

European foreword

This document (EN 12082:2017) 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 February 2018, and conflicting national standards shall be withdrawn at the latest by February 2018.

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 12082:2007+A1:2010.

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.

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

To improve the reliability, availability, durability, the high speed capacity and maintenance of the European rail transportation system, there is a need to ensure the required quality, safety and efficiency of axleboxes that are covered by the set of standards: EN 12080, EN 12081 and EN 12082.

This European Standard has been drawn up with the purpose of standardizing the performance testing of axleboxes for all types of rolling stock to ensure suitability for the required service, i.e. that the assembly of box housing, bearing(s), seal(s) and grease is well suited for the service requirements.

This testing is made in two stages, a “rig test”, described in detail in this European Standard, and a “field test”. The extent of testing to be applied depends on the novelty of bearing design, seal design, grease formulation and/or box housing, as well as the application (see EN 12080 and EN 12081).

This document is a preview generated by EVS

1 Scope

This European Standard specifies the principles and methods for a rig performance test of the system of axlebox rolling bearing(s), housing, seal(s) and grease. Test parameters and minimum performance requirements for vehicles in operation on main lines are specified. Different test parameters and performance requirements may be selected for vehicles in operation on other networks (e.g. urban rail). This standard is historically developed for outboard applications but can be used for vehicles with other bearing arrangements (e.g.: inboard application or single wheels).

It gives some possible examples where a “sequenced performance test” addresses the broad range of different service conditions within a specific application or vehicle platform into account.

It describes in detail the water tightness test and basic principles and minimum requirements for a field test.

This European Standard only applies to axleboxes equipped with rolling bearings and greases according to EN 12080 and EN 12081.

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.

ASTM D7303:2012, *Standard Test Method for Determination of Metals in Lubricating Greases by Inductively Coupled Plasma Atomic Emission Spectrometry*

DIN 51460-1:2007, *Testing of petroleum products - Method for sample preparation - Part 1: Microwave incineration*

DIN 51829:2013, *Petroleum products - Determination of additive and wear elements in greases - Analysis by wavelength dispersive X-ray fluorescence spectrometry*

EN 12080:2017, *Railway applications - Axleboxes - Rolling bearings*

EN 12081:2007+A1:2010, *Railway applications - Axleboxes - Lubricating greases*

EN 15663:2017, *Railway applications - Definition of vehicle reference masses*

EN ISO 11885:2009, *Water quality - Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES) (ISO 11885:2007)*

ISO 15243:2017, *Rolling bearings — Damage and failures — Terms, characteristics and causes*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

axlebox

assembly consisting of the following major components: rolling bearing(s), grease, seal(s) and box housing

Note 1 to entry: Further components such as axle end cap components, bearing sleeve, box cover(s), distance rings, fasteners, labyrinth(s) may be also part of the assembly but their presence depends on the axlebox type design.