
Železniške naprave - Profili - 5. del: Ozadje, razlaga in praktični primeri

Railway applications - Gauges - Part 5: Background, explanation and worked examples

Bahnanwendungen - Begrenzungslinien - Teil 5: Hintergrund, Erläuterung und praktizierte Beispiele

Applications ferroviaires - Gabarits - Partie 5 : Contexte, explication et exemples

Ta slovenski standard je istoveten z: **CEN/TR 15273-5:2025**

ICS:

45.060.01

Železniška vozila na splošno

Railway rolling stock in
general

SIST-TP CEN/TR 15273-5:2026

en,fr,de

TECHNICAL REPORT

CEN/TR 15273-5

RAPPORT TECHNIQUE

TECHNISCHER REPORT

October 2025

ICS 45.020; 45.060.01

English Version

Railway applications - Gauges - Part 5: Background, explanation and worked examples

Applications ferroviaires - Gabarits - Partie 5 :
Contexte, explication et exemples

Bahnanwendungen - Begrenzungslinien - Teil 5:
Hintergrund, Erläuterung und praktizierte Beispiele

This Technical Report was approved by CEN on 18 August 2025. It has been drawn up by the Technical Committee CEN/TC 256.

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, Türkiye and United Kingdom.

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[SIST-TP CEN/TR 15273-5:2026](https://standards.iteh.ai/catalog/standards/sist/ea66090f-8a86-4c55-a085-fdb3abdc8a56/sist-tp-cen-tr-15273-5-2026)

<https://standards.iteh.ai/catalog/standards/sist/ea66090f-8a86-4c55-a085-fdb3abdc8a56/sist-tp-cen-tr-15273-5-2026>



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword	4
Introduction	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions	6
4 Symbols and abbreviations	6
5 General.....	6
6 Historical background	7
6.1 Why gauging?.....	7
6.2 Defined gauges.....	8
6.3 Absolute and comparative process	9
7 Technical background.....	10
7.1 Defined gauges.....	10
7.1.1 Rolling stock	10
7.1.2 Infrastructure.....	59
7.1.3 Creating a defined gauge	72
7.2 Absolute and comparative process	76
7.2.1 Main steps to performing an absolute gauging assessment.....	76
7.2.2 Main steps to performing a comparative gauging assessment	77
7.2.3 Clearances and control measures.....	77
7.2.4 Effective position of the track.....	78
7.2.5 Platform stepping distances	79
7.2.6 Generation of track data for use in absolute and comparative process	82
7.2.7 Background to statistical evaluation and clearance categories in EN 15273-1:2025.....	89
7.2.8 Information on vehicle “datum” used in the calculation of swept envelopes	89
7.2.9 Guidance on choosing between two or three datum points for calculation of maximum suspension displacement.....	90
7.2.10 Determining survey and measurement accuracy	90
8 Examples: defined kinematic gauges.....	91
8.1 Rolling stock	91
8.1.1 General.....	91
8.1.2 Passenger coach with 2 trailer bogies without rotational bump stops with gauges G1 + GI2	91
8.1.3 Passenger coach with 2 trailer bogies with curve dependent bump stops with G1 + GI2	97
8.1.4 Multiple unit with 1 trailer bogie + 1 motor bogie with GB + GI2	100
8.1.5 Application for articulated trainset	106
8.1.6 Checking the pantograph in the collecting position.....	111
8.1.7 Analysis of an open door and steps for FR 3.3 and GI2	113
8.1.8 Calculation of bogie gauge for G1+GI2	117
8.1.9 Tilting trains with an active system	122
8.1.10 Passive tilting articulated vehicles with independent wheels	129
8.1.11 Wagon and marshalling hump	137
8.1.12 Defined new formulae in special cases.....	141
8.2 Infrastructure.....	146

8.2.1	General	146
8.2.2	Gauge GB + GI2 on straight track	146
8.2.3	Gauge GB + GI2 on curved track	156
8.2.4	Pantograph.....	165
8.2.5	Platform calculation	169
8.2.6	Distance between the track centres.....	171
8.2.7	Transition curve.....	175
9	Examples: defined dynamic gauges	180
9.1	Rolling stock.....	180
9.1.1	Multiple unit	180
9.1.2	Pantograph.....	188
9.2	Infrastructure	190
9.2.1	General	190
9.2.2	Gauge SEa on straight track	190
9.2.3	Gauge SEa on curved track	196
9.2.4	Pantograph for SEa.....	204
9.2.5	Platform calculation for SEa	205
9.2.6	Distance between track centres for SEa	206
10	Examples: absolute and comparative gauging process	209
10.1	Absolute example	209
10.1.1	Introduction	209
10.1.2	Input	209
10.1.3	Methodology	213
10.1.4	Calculating the swept envelope	216
10.1.5	Building the swept envelope	216
10.1.6	Including the effective track position	217
10.1.7	Calculating the clearance.....	218
10.2	Comparative example	219
10.2.1	Input data	219
10.2.2	Methodology	219
10.2.3	Results	221
10.3	Hybrid example – combination of comparative and absolute method	221
10.4	Absolute gauging example for pantographs	223
10.4.1	Introduction	223
10.4.2	Method 1 – static pantograph gauge example.....	223
10.4.3	Method 2 – Benchmark sway values example.....	225
	Bibliography	227

CEN/TR 15273-5:2025 (E)**European foreword**

This document (CEN/TR 15276-5:2025) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

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.

The EN 15273 series, *Railway applications — Gauges*, consists of the following parts:

- EN 15273-1:2025, *General — Common rules for rolling stock and infrastructure*, which gives the general explanations of gauging and defines the sharing of the space between rolling stock and infrastructure;
- EN 15273-2:2025, *Rolling stock*, which gives the rules for dimensioning vehicles;
- EN 15273-3:2025, *Infrastructure*, which gives the rules for positioning the infrastructure;
- EN 15273-4:2025, *Catalogue of defined gauges*, which includes a non-exhaustive list of reference profiles and parameters to be used by infrastructure and rolling stock; and
- CEN/TR 15273-5:2025, *Background, explanation and worked examples* (this document).

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.

(<https://standards.iteh.ai>)
Document Preview

[SIST-TP CEN/TR 15273-5:2026](https://standards.iteh.ai/catalog/standards/sist/ea66090f-8a86-4c55-a085-fdb3abdc8a56/sist-tp-cen-tr-15273-5-2026)

<https://standards.iteh.ai/catalog/standards/sist/ea66090f-8a86-4c55-a085-fdb3abdc8a56/sist-tp-cen-tr-15273-5-2026>

Introduction

The aim of this document is to define the rules for the calculation and verification of the dimensions of rolling stock and infrastructure from a gauging perspective.

This document gives gauging processes taking into account the relative movements between rolling stock and infrastructure and the necessary margins or clearances.

This part of the series EN 15273 is intended to be used in conjunction with the following parts:

- *Part 1: General — Common rules for rolling stock and infrastructure;*
- *Part 2: Rolling stock;*
- *Part 3: Infrastructure;*
- *Part 4: Catalogue of defined gauges.*

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[SIST-TP CEN/TR 15273-5:2026](https://standards.iteh.ai/catalog/standards/sist/ea66090f-8a86-4c55-a085-fdb3abdc8a56/sist-tp-cen-tr-15273-5-2026)

<https://standards.iteh.ai/catalog/standards/sist/ea66090f-8a86-4c55-a085-fdb3abdc8a56/sist-tp-cen-tr-15273-5-2026>