SLOVENSKI STANDARD
SIST EN 15273-3:2010

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Železniške naprave - Profili - 3. del: Svetli profili

Railway applications - Gauges - Part 3: Structure gauges

Bahnanwendungen - Lichtraum - Teil 3: Lichtraumprofile

Applications ferroviaires - Gabarits - Partie 3: Gabarit des obstacles

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45.060.01	Železniška vozila na splošno	Railway rolling stock in general

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Railway applications - Gauges - Part 3: Structure gauges

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Bahnanwendungen - Begrenzungslinien - Teil 3: Lichtraumprofile

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

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Foreword

This document (EN 15273-3:2009) 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of an identical text or by endorsement, at the latest by June 2010, and conflicting national standards shall be withdrawn at the latest by June 2010.

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For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

This document is the third of a series of three parts of the European Standard covering gauges:

— Part 1 covers general principles, phenomena shared by the infrastructure and by the rolling stock, reference profiles and their associated rules;

— Part 2 gives the rules for dimensioning the vehicles as a function of their specific characteristics for the relevant gauge and for the related calculation method;

— Part 3 gives the rules for dimensioning the infrastructure in order to allow vehicles built according to the relevant gauge and taking account of the specific constraints to operate within it.

The aim of this standard is to define the space to be cleared and maintained to allow the running of rolling stock, and the rules for calculation and verification intended for sizing the rolling stock to run on one or several infrastructures without interference risk.

This standard defines the gauge as a one-to-one agreement between infrastructure and rolling stock.

This standard defines the responsibilities of the following parties:

a) for the infrastructure:

   1) gauge clearance,

   2) maintenance;

   3) infrastructure monitoring.

b) for the rolling stock:

   1) compliance of the operating rolling stock with the gauge concerned;

   2) maintenance of this compliance over time.

This standard includes a catalogue of various railway gauges implemented in Europe, some of which are required to ensure the interoperability, while others are related to more specific applications not requiring the interoperability of the rolling stock on other networks.

1 Scope

This standard:

— defines the various profiles needed to install, verify and maintain the various structures near the structure gauge;

— lists the various phenomena to be taken into account to determine the structure gauge;

— defines a methodology that may be used to calculate the various profiles from these phenomena;

— lists the rules to determine the distance between the track centres;

— lists the rules to be complied with when building the platforms;

— lists the rules to determine the pantograph gauge;

— lists the formulae needed to calculate the structure gauges in the catalogue.

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 13232-3, *Railway applications — Track — Switches and crossings — Part 3: Requirements for wheel/rail interaction*

EN 13232-9, *Railway applications — Track — Switches and crossings — Part 9: Layouts*

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

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

EN 50119, *Railway applications — Fixed installations — Electric traction overhead contact lines*

EN 50367, *Railway applications — Current collection systems —Technical criteria for the interaction between pantograph and overhead line (to achieve free access)*

3 Terms and definitions

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

3.1
structure gauge
defines the space, relative to the track used called the reference track, to be cleared of all objects or structures and relative to the traffic on adjacent tracks in order to permit safe operation on this reference track.

The structure gauge is defined on the basis of the reference profile by applying the associated rules.

There are three types of structure gauge.

3.2
structure limit gauge
space not to be encroached upon at any time and fixes the limit for normal operation. It is used to ensure that structures allow free passage

Consequently, no structure is allowed to penetrate this space at any time.

3.3
structure installation limit gauge
space not to be encroached upon taking into account a maintenance allowance. It is to be used to define the structure installation limit

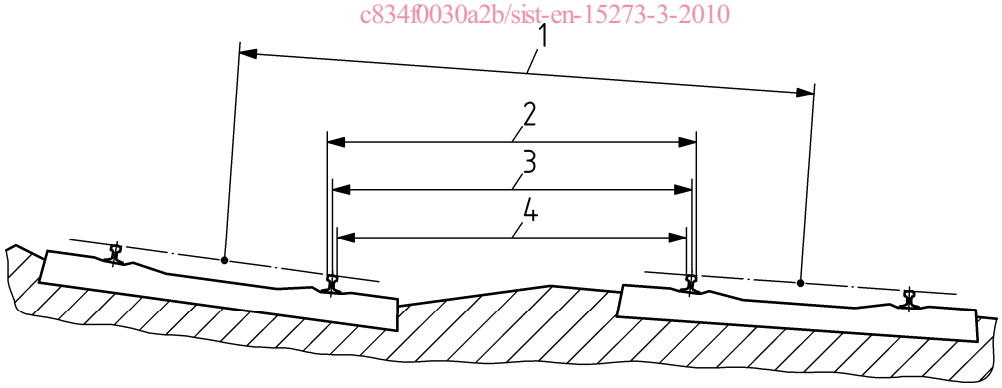
Consequently, no structure shall be installed if free passage is desired following normal maintenance operations.

3.4
structure installation nominal gauge
space to be cleared for all structures to permit train operation and track maintenance, including adequate allowances. This space may include allowances for special consignments and other conditions

3.5
distance between track centres
distance between the centre points of the two tracks concerned, measured parallel to the running surface of the track used, called the reference track, which is the track with the least cant

NOTE 1 On the track, the distance between centres is often determined on the basis of the space between centres which is the distance between the two rails of the adjacent tracks. The exact measurement references (guideline, field face, rail centrelines) differ from one network to another.

NOTE 2 The definition of distance between centres adopted in this standard may differ from those used in other applications, such as installation for example. It is the responsibility of the infrastructure manager to determine the various conversion rules.



Key

1 distance between track centres

2 space between centres measured between the running edges

3 space between centres measured between the rail centrelines

4 space between centres measured between the outside edges of the rails

Figure 1 — Distance between track centres

3.6
limit distance between centres
minimum distance to be maintained at all times between adjacent tracks to ensure completely safe passage of traffic within the gauge used on the two tracks by avoiding any risk of interference between the vehicles. This distance varies as a function of the local track parameters (e.g. cant, curve radius, etc.)

3.7
installation limit distance between centres
minimum distance between adjacent tracks to ensure completely safe passage of traffic within the gauge used on the two tracks by avoiding any risk of interference between the vehicles. This distance varies as a function of the local track parameters (e.g. cant, curve radius, etc.). It takes into account maintenance allowances

3.8
installation nominal distance between centres
distance between centres that generally has a suitable allowance to permit ease of design, laying, monitoring and maintenance, the operation of special transport or any other aspect. Outside the small radius zones, the nominal distance between centres is often invariable (determined with fixed parameters)

4 Symbols, abbreviations and subscripts

4.1 Symbols and abbreviations

Table 1 — Symbols and abbreviations

Symbol	Designation	Unit	Symbol number
a	Distance between end axles of vehicles not fitted with bogies or between bogie centres	m	1.001
b	Semi-width or distance parallel to the running surface, relative to the track centreline or of the vehicle	m	1.007
b'	Semi-width of the pantograph gauge	m	3.001
b'_q	Actual installation distance of the platforms, measured from the rail running edge	m	1.008
b_{RP}	Semi-width of the reference profile	m	3.002
b_{elec}	Electrical insulation distance	m	3.003
b_{gap}	Standard width of the gap between the platform and the step	m	1.019
$b_{structure}$	Distance parallel to the running surface between the structure and the track centreline	m	3.004
b_q	Semi-width of the platform installation	m	1.021
Δb	Variation in semi-width b	m	3.005
b_{veh}	Semi-width of the vehicle	m	1.030
b_w	Semi-width of the pantograph head	m	1.033
C_0	(Reference) roll centre	m	3.006
c_w	Semi-width of the pantograph head insulating horn	m	3.007
dg	Geometric overthrow	m	3.008
dg_a	Geometric overthrow of the vehicle on the outside of the curve	m	1.038
dg_i	Geometric overthrow of the vehicle on the inside of the curve	m	1.041
D	Cant	m	1.044
D_0	Fixed cant value taken into account by agreement between the vehicle and the infrastructure	m	1.045
D'_0	Reference cant taken into account by the vehicle for the pantograph gauge	m	3.009
D'_L and D''_L	Limit cant values used in calculation of the total allowances	m	3.010
$D_{max,0}$	Standard maximum cant to allow for enlargement of the kinematic gauge	m	1.050

Table 1 *(continued)*

Symbol	Designation	Unit	Symbol number
δD	Cant difference (between two tracks)	m	3.011
e_p	Offset of the pantograph due to the vehicle characteristics	m	1.067
e_{pi}	Offset of the pantograph due to the vehicle characteristics, inside of the curve	m	3.012
e_{pa}	Offset of the pantograph due to the vehicle characteristics, outside of the curve	m	3.013
e_{po}	Offset of the pantograph at the upper verification point	m	1.068
e_{pu}	Offset of the pantograph at the lower verification point	m	1.071
e_V	Lowering of track components	m	1.073
EA	Distance between track centres	m	3.014
f_s	Allowance to take into account raising of the contact wire	m	1.079
f_{dyn}	Allowance to take into account dynamic movement of the contact wire	m	3.015
f_{wa}	Allowance to take into account the overrun by the pantograph head of the contact surface because of pantograph contact strip wear	m	1.083
f_{ws}	Allowance to take into account the overrun by the pantograph head of the contact surface because of pantograph skewing	m	1.084
h	Height in relation to the running surface	m	1.088
h'	Reference height in the calculation of the pantograph gauge	m	3.016
h_o'	Maximum verification height of the pantograph gauge in a raised position	m	1.089
h_u'	Minimum verification height of the pantograph gauge in a raised position	m	1.090
h_{Co}	Value of h_c used for the agreement between the vehicle and the infrastructure	m	1.092
h'_{Co}	(Reference) roll centre height for the pantograph gauge	m	3.017