SLOVENSKI STANDARD
SIST EN 13103-1:2018/oprA1:2020

01-marec-2020

Železniške naprave - Kolesne dvojice in podstavni vozički - 1. del: Metode za načrtovanje osi z notranjim uležajenjem - Dopolnilo A1

Railway applications - Wheelsets and bogies - Part 1: Design method for axles with external journals

Bahnanwendungen - Radsätze und Drehgestelle - Teil 1: Konstruktionsleitfaden für außengelagerte Radsatzwellen

Applications ferroviaires - Essieux montés et bogies - Partie 1: Méthode de conception des essieux-axes avec fusées extérieures

Ta slovenski standard je istoveten z: **EN 13103-1:2017/prA1:2020**

ICS:

45.040	Materiali in deli za železniško tehniko	Materials and components for railway engineering

SIST EN 13103-1:2018/oprA1:2020 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
EN 13103-1:2017

prA1

January 2020

ICS

English Version

Railway applications - Wheelsets and bogies - Part 1: Design method for axles with external journals

Applications ferroviaires - Essieux montés et bogies - Partie 1: Méthode de conception des essieux-axes avec fusées extérieures

Bahnanwendungen - Radsätze und Drehgestelle - Teil 1: Konstruktionsleitfaden für außengelagerte Radsatzwellen

This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 256.

This draft amendment A1, if approved, will modify the European Standard EN 13103-1:2017. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

This draft amendment was established by CEN 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, 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, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.

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

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

Ref. No. EN 13103-1:2017/prA1:2020:2020 E

Contents

Page

European foreword **3**

1 Change to paragraph 2, Normative references **4**

2 Changes to paragraph 3.4, Definition of the guiding axle **4**

3 Changes to paragraph 6.2, Influence of masses in motion **4**

4 Changes to paragraph 6.3, Effects due to braking **5**

5 Changes to paragraph 7.3.1, Determination of the diameter of the various seats from the diameter of the axle body or from the journals **8**

6 Changes to paragraph 7.3.5, Case of two non-adjacent seats **8**

7 Changes to Annex D.7, Content of the test report **8**

8 Changes to Annex ZA, Relationship between this European Standard and the Essential Requirements of EU Directive 2008/57/EC **9**

European foreword

This document (EN 13103-1:2017/prA1:2020) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

This document is currently submitted for CEN comment.

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) 2016/797.

For the relationship with the EU Directive, see informative annex ZA, which is an integral part of this document.

1 Change to paragraph 2, Normative references

Replace the reference to EN 13261:2009+ A1:2010, Railway applications – Wheelsets and bogies – Axles – Product requirements with:

"prEN 13261:2018[1], Railway applications – Wheelsets and bogies – Axles – Product requirements"

2 Changes to paragraph 3.4, Definition of the guiding axle

Replace the current definition 3.4 with the following:

"**guiding axle**
the axle of the first (i.e. guiding) bogie of a coach used at the head of a reversible trainset. If an axle can be used in both positions (guiding or non-guiding), it is to be considered as a guiding axle."

3 Changes to paragraph 6.2, Influence of masses in motion

Replace the current Table 2 with the following:

Table 2 — Masses to be taken into account according to the main types of rolling stock

Type of rolling stock	Mass (m_1+ m_2)
Freight wagons Traction units with no accommodation for passengers, luggage or post	Design mass in working order + Normal design payload (maximum payload) Design mass in working order and the normal design payload are defined in EN 15663
Coaches and traction units including accommodation for passengers, luggage or post High speed and long distance trains	Design mass in working order + 1.2 x Normal design payload Design mass in working order is defined in EN 15663 Normal design payload is defined in EN 15663, on which the standing passengers shall be: - 160 kg/m^2 (2 passengers per m^2) in standing and catering areas
Coaches and traction units including accommodation for passengers, luggage or post Passenger vehicles other than high speed and long distance trains	Design mass in working order + 1.2 x Normal design payload Design mass in working order is defined in EN 15663 Normal design payload is defined in EN 15663, on which the standing passengers shall be: - 210 kg/m^2 (3 passengers per m^2) in corridor areas; - 350 kg/m^2 (5 passengers per m^2) in vestibule areas; the value of 280 kg/m^2 (4 passengers per m^2) may be used for specific services (e.g. 1st class area) as described in the technical specification

[1] Under preparation. Stage at the time of publication: prEN 13261:2018.

4 Changes to paragraph 6.3, Effects due to braking

Replace the current Table 5 with the following:

Table 5 — Formulae for calculation of moments due to braking

Components M'_x, M'_z, M'_y	**Method of braking used**			
	Friction brake blocks on both sides of each wheel		Friction brake block on one side only of each wheel	
	Between loading plane and rolling circle	Between rolling circles	Between loading plane and rolling circle	Between rolling circles
M'_x	$M'_x = 0.3F_f \Gamma y$ a, b **Figure 5a**	$M'_x = 0.3F_f \Gamma (b - s)$ a, b	$M'_x = F_f \Gamma y$ b **Figure 5b**	$M'_x = F_f \Gamma (b - s)$ b
M'_z	$M'_z = F_f (0.3 + \Gamma) y$ a, b **Figure 5c**	$M'_z = F_f (0.3 + \Gamma) (b - s)$ a, b	$M'_z = F_f (1 + \Gamma) y$ b **Figure 5d**	$M'_z = F_f (1 + \Gamma) (b - s)$ b
M'_y	$M'_y = 0$	$M'_y = 0.3\ P'\ R$ c d	$M'_y = 0$	$M'_y = 0.3\ P'\ R$ c d

Table 5 (continued)

<table>
<tr><th>Components
M'_x, M'_z, M'_y</th><th colspan="5">Method of braking used</th></tr>
<tr><td></td><td colspan="3">Two disc brakes mounted on the axle</td><td colspan="2">Two disc brakes attached to the wheel hub [f]</td></tr>
<tr><td></td><td>Between loading plane and rolling circle</td><td>Between rolling circles and disc</td><td>Between discs</td><td>Between loading plane and rolling circle</td><td>Between rolling circles</td></tr>
<tr><td>M'_x</td><td colspan="2">$M'_x = F_f \Gamma y$
b</td><td>$M'_x = F_f \Gamma (b - s + y_i)$
b</td><td>$M'_x = F_f \Gamma y$
b</td><td>$M'_x = F_f \Gamma (b - s + y_i)$
b</td></tr>
<tr><td>M'_z</td><td colspan="2">$M'_z = F_f \Gamma \frac{R_b}{R} y$
b</td><td>$M'_z = F_f \Gamma \frac{R_b}{R} (b - s)$
b</td><td>$M'_z = F_f \Gamma \frac{R_b}{R} y$
b</td><td>$M'_z = F_f \Gamma (b - s) \frac{R_b}{R}$
b</td></tr>
<tr><td>M'_y</td><td>$M'_y = 0$</td><td colspan="2">$M'_y = 0.3\ P'\ R$
d, e</td><td>$M'_y = 0$</td><td>$M'_y = 0.3\ P'\ R$
d, e</td></tr>
</table>

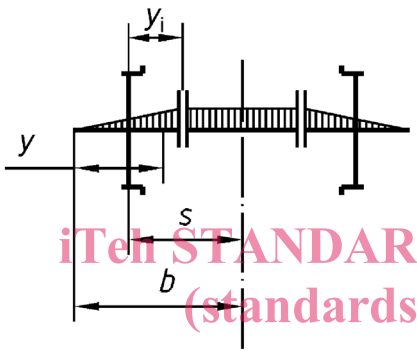


Figure 5e

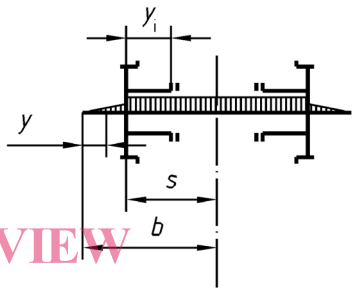


Figure 5f

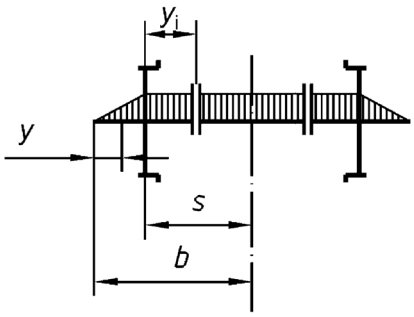


Figure 5g

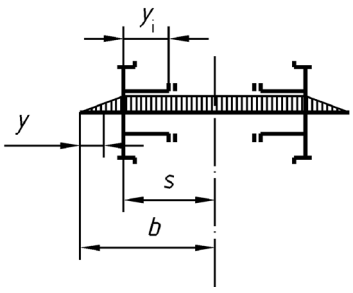


Figure 5h

Table 5 (continued)

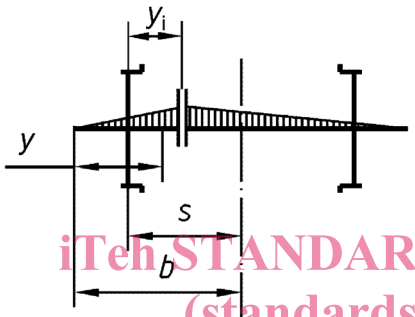
<table>
<tr><th>Components
M'_x, M'_z, M'_y</th><th colspan="4">Method of braking used</th></tr>
<tr><td></td><td colspan="2">One disc brake mounted on the axle</td><td colspan="2">One disc brake attached to the wheel hub[f]</td></tr>
<tr><td></td><td>Between first loading plane and disc</td><td>Between disc and second loading plane</td><td>Between first loading plane and rolling circle</td><td>Between rolling circle and second loading plane</td></tr>
<tr><td>M'_x</td><td>$M'_x = F_f \Gamma \frac{(b+s-y_i)}{2b} y$
b</td><td>$M'_x = F_f \Gamma \frac{(b-s+y_i)}{2b}(2b-y)$
b</td><td>$M'_x = \frac{1}{2}\frac{}{b} F_f \Gamma y\,(b+s-y_i)$
b</td><td>$M'_x = F_f \Gamma \frac{(b-s+y_i)}{2b}(2b-y)$
b</td></tr>
<tr><td></td><td colspan="2"> 

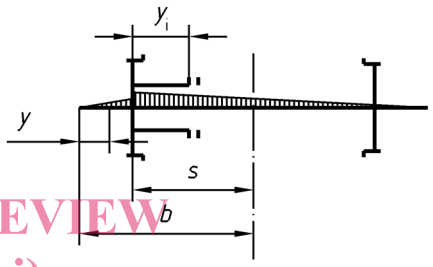
Figure 5i</td><td colspan="2"> 

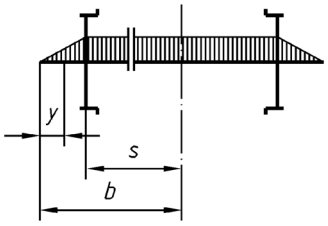
Figure 5j</td></tr>
<tr><td>M'_z</td><td>Between loading planes and rolling circle
$M'_z = \frac{1}{2} F_f \Gamma \frac{R_b}{R} y$
b</td><td>Between rolling circles
$M'_z = \frac{1}{2} F_f \Gamma \frac{R_b}{R}(b-s)$
b</td><td>$M'_z = \frac{1}{2} F_f \Gamma \frac{R_b}{R} y$
b</td><td>$M'_z = \frac{1}{2} F_f \Gamma (b-s)\frac{R_b}{R}$
b</td></tr>
<tr><td></td><td colspan="2"> 

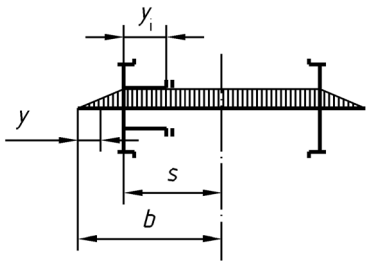
Figure 5k</td><td colspan="2"> 

Figure 5l</td></tr>
<tr><td>M'_y</td><td>Between loading planes and rolling circle
$M'_y = 0$</td><td>Between rolling circles
$M'_y = 0.3\ P'R$
d, e</td><td>$M'_y = 0$</td><td>$M'_y = 0.3\ P'R$
d, e</td></tr>
</table>