



SLOVENSKI STANDARD
SIST EN 12663-1:2010/FprA1:2014
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**Železniške naprave - Konstrukcijske zahteve za grode železniških vozil - 1. del:
Lokomotive in potniška železniška vozila (tudi alternativna metoda za tovarne
vagone)**

Railway applications - Structural requirements of railway vehicle bodies - Part 1:
Locomotives and passenger rolling stock (and alternative method for freight wagons)

Bahnanwendungen - Festigkeitsanforderungen an Wagenkästen von
Schienenfahrzeugen - Teil 1: Lokomotiven und Personenfahrzeuge (und alternatives
Verfahren für Güterwagen)

Applications ferroviaires - Prescriptions de dimensionnement des structures de véhicules
ferroviaires - Partie 1: Locomotives et matériels roulants voyageurs (et méthode
alternative pour wagons)

Ta slovenski standard je istoveten z: EN 12663-1:2010/FprA1

ICS:

45.060.20 Železniški vagoni Trailing stock

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English Version

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Applications ferroviaires - Prescriptions de dimensionnement des structures de véhicules ferroviaires - Partie 1: Locomotives et matériels roulants voyageurs (et méthode alternative pour wagons)

Bahnanwendungen - Festigkeitsanforderungen an Wagenkästen von Schienenfahrzeugen - Teil 1: Lokomotiven und Personenfahrzeuge (und alternatives Verfahren für Güterwagen)

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

This draft amendment A1, if approved, will modify the European Standard EN 12663-1:2010. 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.

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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.

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Foreword

This document (EN 12663-1:2010/FprA1:2014) has been prepared by Technical Committee CEN/TC 256 "Railway applications", the secretariat of which is held by DIN.

This document is currently submitted to the Unique Acceptance Procedure.

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.

NOTE Due to fact that the Framework Partnership Agreement between the Commission and CEN & CENELEC is not signed yet, there are currently no New Approach Consultants in place for 2014. Therefore the provisions of CEN-CENELEC Guide 15 cannot be met.

This shall not prevent the processing of draft standards nor the offering of harmonized standards to the Commission. In particular, draft standards can be sent to vote without Consultant assessment.

This note will be removed from the Foreword of the finalized publication.

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1 Modification to Clause 2, Normative references

Add:

"EN 16404:2014, *Railway applications — Re-railing and recovery requirements for railway vehicles*".

2 Modifications to Clause 5, Structural requirements

Add in 5.1 after indent c):

"d) loads due to re-railing and recovery operations without catastrophic failure."

and correct punctuation in c) (not tagged).

3 Modifications to Clause 6, Design load cases

Replace Table 1 with the following:

"

Table 1 — Definition of the design masses

Definition	Symbol	Description
Design mass of the vehicle body in working order	m_1	The design mass of the vehicle body in working order according to EN 15663 without bogie masses.
Design mass of one bogie or running gear	m_2	Mass of all equipment below and including the body suspension. The mass of linking elements between vehicle body and bogie or running gear is apportioned between m_1 and m_2 .
Normal design payload	m_3	The mass of the normal design payload as specified in EN 15663.
Exceptional payload	m_4	The mass of the exceptional payload as specified in EN 15663.
Recovery payload	m_5	The mass of the normal design payload as specified in EN 15663 less the mass of any passengers or staff.

"

Replace Table 10 with the following:

"

Table 10 — Lifting and jacking at one end of the vehicle at the specified positions

Load in N

Locomotives	Passenger rolling stock					Freight wagons	
Category	Category	Category	Category	Category	Category	Category	Category
L	P-I	P-II	P-III	P-IV	P-V	F-I	F-II
$1,1 \times g \times (m_1 + m_2)^a$						$1,0 \times g \times (m_1 + m_2 + m_3)$	
^a For passenger vehicles with luggage compartments or luggage areas as defined in EN 15663 the mass m_5 as defined in Table 1 shall be added, i.e. $1,1 \times g \times (m_1 + m_2 + m_5)$.							

"

Replace the note with:

"The other end of the vehicle body shall be supported at the secondary spring supports constrained in the vertical direction."

Add new subclause 6.3.4:

"

6.3.4 Re-railing and recovery

The re-railing and recovery scenarios set out in EN 16404 require that the vehicle body and lifting points have sufficient strength to ensure that these operations can be conducted safely. This objective shall be satisfied by compliance with the following requirements.

For freight wagons, the requirements of 6.3.2 and 6.3.3 and consideration of the requirements of 5.4 provide sufficient safety for these recovery scenarios.

For vehicles of categories L and P-I to P-V sufficient strength can be proved with one of the following procedures:

a)

For vehicles equipped with air springs the load case of Table 10 shall be considered with one of the two lifting points displaced vertically relative to the other of 10 mm. For vehicles equipped with other spring types (no air springs), the load cases of Table 10 and Table 11 and the offset requirement of 6.3.3 (10 mm at workshop jacking pads when lifting the whole vehicle) and consideration of the requirements of 5.4 already provide a general sufficient safety for these recovery scenarios.

NOTE The re-railing and recover scenarios in EN 16404 include the possibility of one of the jacks sinking by up to 100 mm. For vehicles without air suspensions, it is considered that almost all of the resulting twist loading will be absorbed by the vehicle suspension but due to the normally high stiffness of a deflated air suspension during recovery an additional structural twist loading is considered necessary.

An additional local safety factor of 1,5 shall apply for lifting points that

— are predominately loaded in tension and

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- where there is a single load path whose failure would be catastrophic (e.g. application of lifting/jacking brackets according to EN 16404:2014, Annex D).

This additional safety factor shall apply at and around the lifting points until multiple load paths are established in the surrounding structure. Demonstration of strength can be made by raising the required safety factors S_1 of 5.4.2 and S_2 of 5.4.3 by a factor of 1,5 or by increasing the applied loads by a factor of 1,5.

NOTE The increased load capacity at the lifting points compared to the nominal lifting point loads, due to the combination of the dynamic factor of 1,1 given in Table 10, the vertical displacement requirements of the lifting points of 6.3.3 and 6.3.4 and the additional safety factor at the lifting points, are considered to provide an appropriate level of safety against failure for re-railing and recovery operations.

Lifting points should be designed to sustain lateral forces which might act during recovery operations up to 15 % of the acting vertical force. For each lifting point, its maximum vertical force due to the required load cases of 6.3.2, 6.3.3 and 6.3.4 shall be determined separately. For each lifting point, it shall be demonstrated that the design is able to support its separately determined maximum vertical force in combination with a lateral force equal to 15 % of its separately determined maximum vertical force. This can be demonstrated by a well founded technical justification.

b)

As an alternative to the above, it is also permissible to directly assess (by analysis or testing) the recovery scenarios 1 to 3 of EN 16404:2014, 6.3, to demonstrate that they do not cause ultimate failure of the vehicle body and the lifting points shall not deform in a way to affect the stability of the lifting operation.

In this case, the yield strength requirement of 5.4.2 of this standard does not apply and for the safety against ultimate failure according to 5.4.3 and instability according to 5.4.4 of this standard the following values for S_2 and S_3 are applicable:

- for validation based on analyses: $S_2 = S_3 = 1,15$
- for validation based on tests or with analyses where correlation between test and calculation has been successfully established: $S_2 = S_3 = 1,0$

NOTE The procedure according to item b) is an alternative procedure. It is only necessary to apply it if the procedure described in item a) is not applied."