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Railway applications - Gangway systems between vehicles - Part 1: Main applications

Applications ferroviaires - Système d'intercirculations entre
véhicules - Partie 1 : Applications générales

Bahnanwendungen - Übergangssysteme zwischen
Fahrzeugen - Teil 1: Hauptanwendungen

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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 (prEN 16286-1:2011) 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 CEN Enquiry.

This series of European Standards EN 16286 „*Railway applications – Gangway systems between vehicles*“ consists of the following parts:

- *Part 1: Main applications*
- *Part 2: Acoustic measurements*

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Introduction

The railway system requires technical rules for train concepts for train concepts with flexible connections which allow passage from one vehicle to the next vehicle. This standard describes main requirements for the design and validation of gangway systems.

The requirements set out in this standard are based on long term existing practices and procedures developed and currently in use by railway undertakings and industry. The application of these systems has changed over the years.

For many years the majority of gangway systems consisted of rubber tubes pressed together when coaches were coupled. This solution is standardized in UIC leaflet 561 with the aim to reconfigure train sets . Main requirements of this leaflet have been incorporated in this standard as Annex A.

This document is up today the only reference document available, but does not cover project specific solutions, which have been developed for each train set, for example for multiple units, metros or tramways. The aim of this standard is to close this gap and to cover the complete range of gangway systems.

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1 Scope

This standard defines the technical and safety requirements applicable to gangway systems used in all railway vehicles such as tram, tram trains, coaches, metro, suburban, main line and high speed trains that carry passengers. A gangway system gives comfortable passage from one vehicle to the other and consists of a flexible component which allows relative movement between vehicles.

It also defines:

- the safe use of the gangway system by passengers and/or staff while the train is running;
- the assessment methods as well as pass/fail criteria for gangways installed on vehicles.

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 12663-1, *Railway applications — Structural requirements of railway vehicle bodies — Part 1: Locomotives and passenger rolling stock (and alternative method for freight wagons)*

EN 15153-1, *Railway applications — External visible and audible warning devices for trains — Part 1: Head, marker and tail lamps*

EN 15551, *Railway applications — Railway rolling stock — Buffers*

EN 15566, *Railway applications — Railway rolling stock — Draw gear and screw coupling*

EN 50125-1, *Railway applications — Environmental conditions for equipment — Part 1: Equipment on board rolling stock*

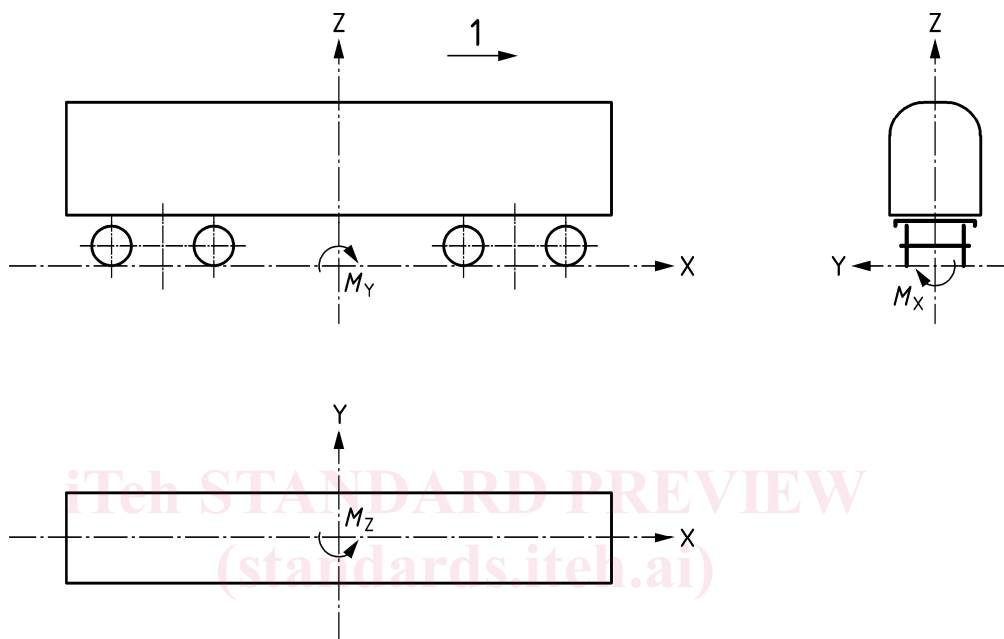
EN 50126, *Railway applications — The specification and demonstration of Reliability, Availability, Maintainability and Safety (RAMS)*

EN 50153, *Railway applications — Rolling stock — Protective provisions relating to electrical hazards*

3 Terms and definitions

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

The coordinate system is shown in Figure 1. The positive direction of the x-axis (corresponding to vehicle body longitudinal axis) is in the direction of movement. The positive direction of the z-axis (corresponding to vehicle body vertical axis) points upwards. The y-axis (corresponding to vehicle body transverse axis) is in the horizontal plane completing a right hand coordinate system.



Key

- 1 direction of movement
- x longitudinal axis
- y lateral axis
- z vertical axis

Figure 1 — Vehicle body coordinate system

3.1 nominal geometric dimensions

nominal dimensions are defined on straight level track

3.1.1

length

distance between mounting interfaces of gangways at vehicle ends

3.1.2

width

distance between lateral inner face of the passage

NOTE 1 The width is often measured at shoulder height.

NOTE 2 See Figure 2.

3.1.3

horizontal clearway

unobstructed distance between lateral inner face of the bottom area of the gangway system to allow movement of passengers

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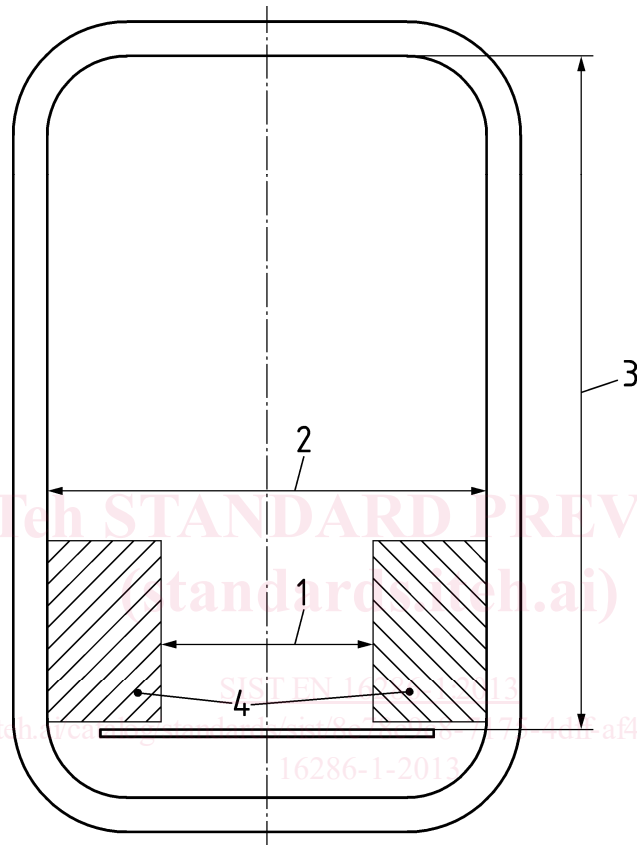
NOTE See Figure 2.

3.1.4

vertical clearway

unobstructed distance between gangway floor level to the top of the passage (panel, ceiling, etc.) to allow movement of passengers

NOTE See Figure 2.

**Key**

- 1 horizontal clearway
- 2 width
- 3 vertical clearway
- 4 skirts, inner panel, etc.

Figure 2 — Clearway – design example

3.1.5

outer gangway width

overall outer width of the gangway

3.1.6

outer gangway height

overall outer height of the gangway

3.1.7

vehicle floor height

distance between floor level of the vehicle and top of the rail

3.1.8**gangway floor height**

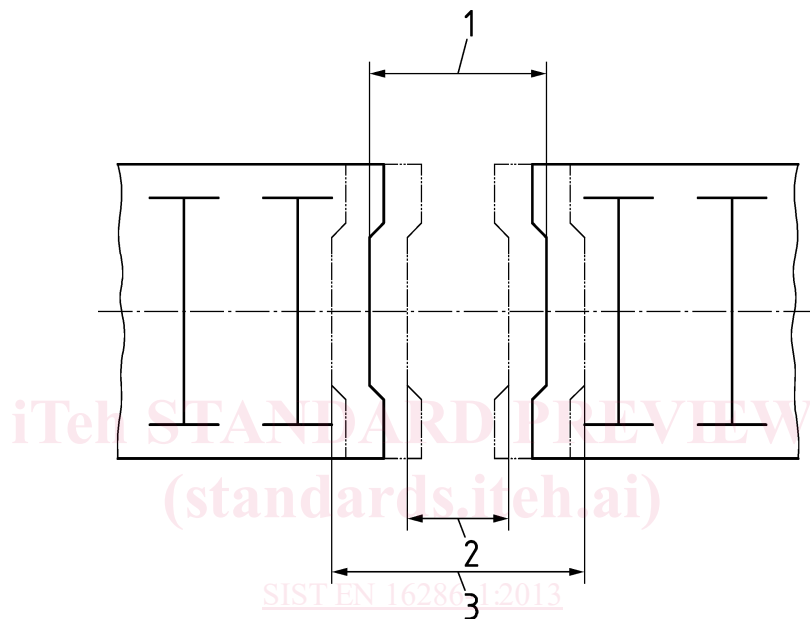
distance between floor level of the gangway and top of the rail

3.2 Relative movements of the vehicle

real relative movements of the vehicles may consist of any combination of the movements defined in 3.2.1 till 3.2.7

3.2.1**longitudinal displacement**

deflection of the length of the gangway in longitudinal direction on track



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NOTE Longitudinal displacement is generated, for example by buff and draw of the connected coupling system.

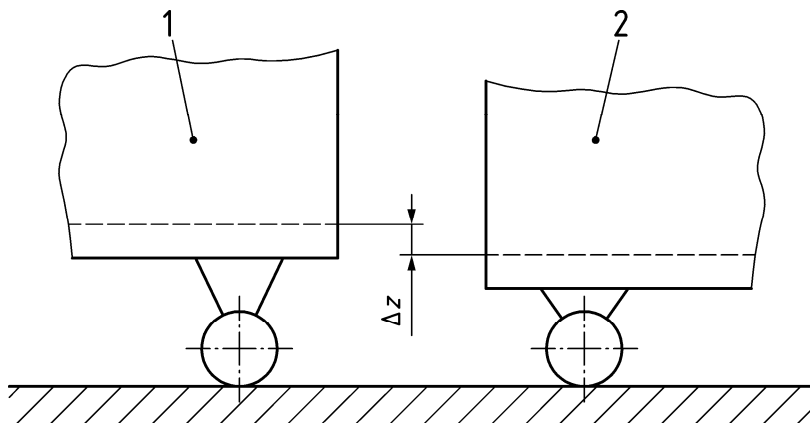
Key

- 1 length
- 2 buff (compression) Δx_b
- 3 draw (extension) Δx_d

Figure 3 — Longitudinal displacement

3.2.2**vertical displacement Δz**

distance between top of floor of car centre line of vehicle 1 and top of floor of vehicle centre line of vehicle 2

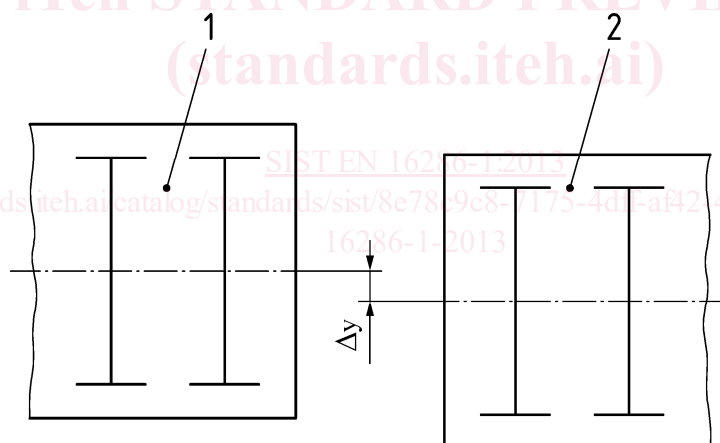
**Key**

1 vehicle 1

2 vehicle 2

 Δz vertical displacement**Figure 4 — Vertical displacement****3.2.3****lateral displacement Δy**

distance between vehicle centre line 1 and vehicle centre line 2

**Key**

1 vehicle 1

2 vehicle 2

 Δy lateral displacement**Figure 5 — lateral displacement**