BS EN 12561-7:2011

BSI Standards Publication

Railway applications — Tank wagons

Part 7: Platforms and ladders

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee RAE/1/-/9, Railway Applications - Wagons (Tank/Freight).

A list of organizations represented on this committee can be obtained on request to its secretary.

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ISBN 978 0 580 72813 6

ICS 45.060.20

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2011.

Amendments issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12561-7

June 2011

ICS 45.060.20

Supersedes EN 12561-7:2004

English Version

Railway applications - Tank wagons - Part 7: Platforms and ladders

Applications ferrovaires - Wagons citernes - Partie 7: Plate-formes et échelles

Bahnanwendungen - Kesselwagen - Teil 7: Arbeitsbühnen und Leitern

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Ref. No. EN 12561-7:2011: E

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Foreword

This document (EN 12561-7:2011) 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of an identical text or by endorsement, at the latest by December 2011, and conflicting national standards shall be withdrawn at the latest by December 2011.

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This document supersedes EN 12561-7:2004.

This European Standard *Railway applications — Tank wagons* consists of the following parts:

— *Part 1: Identification plates for tank wagons for the carriage of dangerous goods;*

— *Part 2: Bottom emptying devices for liquid products including vapour return;*

— *Part 3: Bottom filling and emptying devices for gases liquefied under pressure;*

— *Part 4: Devices for top filling and emptying of liquid products;*

— *Part 5: Devices for vapour return while filling or emptying of liquid products;*

— *Part 6: Manholes;*

— *Part 7: Platforms and ladders;*

— *Part 8: Heating connections.*

The changes made during this revision are editorial because of the change of the title of part 1 and the necessary updates of references.

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, Croatia, 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.

1 Scope

This European Standard applies to ladders, platforms and walkways on tank wagons fitted with top devices. It does not apply to crossing gangways nor to steps in so far as they are covered by UIC leaflets. This European Standard defines the important dimensions for manufacturers and operators of such tank wagons and takes into consideration the relevant and applicable construction and safety guidelines.

This European Standard applies to new tank wagons built after the 1st January 2010.

In consideration of the smaller loading gauge within the UK, this European Standard does not apply to wagons operating exclusively therein.

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 795, *Protection against falls from a height — Anchor devices — Requirements and testing*

EN 14564,*Tanks for transport of dangerous goods – Terminology*

EN ISO 6346:1995, *Freight containers — Coding, identification and marking (ISO 6346:1995)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14564 and the following apply.

3.1
platform
level floor at the top of the tank for inspection, maintenance and operational purposes

3.2
walkway
structure supporting grating to provide access between ladders and platforms

3.3
protective device
device to deflect operating personnel from protruding parts of a moving tank wagon in accordance with UIC 535-2

4 Ladders

4.1 General

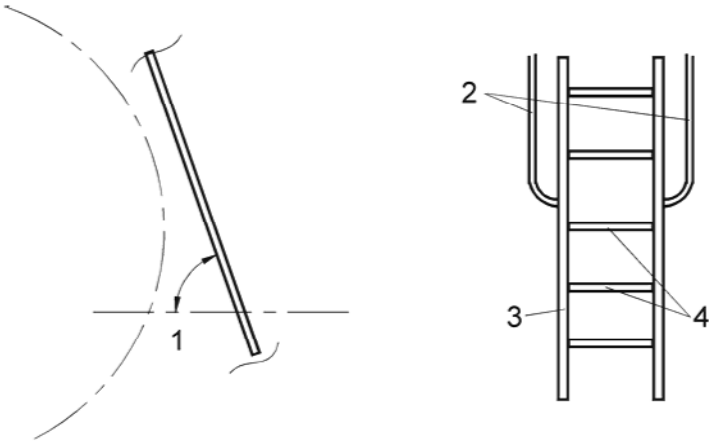
Where tank wagons are fitted with ladders, they shall either be fitted with one fixed ladder located at the end or with a fixed ladder on each side of the tank wagon.

NOTE 1 The end ladder is usually fitted at the crossing gangway.

Ladders shall be fitted with 2 lateral handrails.

NOTE 2 For traffic of continental tank wagons running in Great Britain, the kinematic gauge for Great Britain rules defined in the Technical Specification for Interoperability for freight wagons (TSI) also apply and to avoid conflict between these rules, local arrangement for handrail should be allowed to stay in the gauge.

The pitch of the ladder as shown in Figure 1 shall be between 75° and 90°. Where the pitch is less than 75° steps shall be used in place of rungs. The depth of the steps shall be at least 80 mm.



Key

1 Pitch

2 Handrails

3 String

4 Rung

Figure 1 — Terms

The rungs and the steps shall be welded to the strings and shall be slip-resistant. Rung slip resistance can, for example, be achieved by using square or flat bars with a cross section as shown in Figure 2.

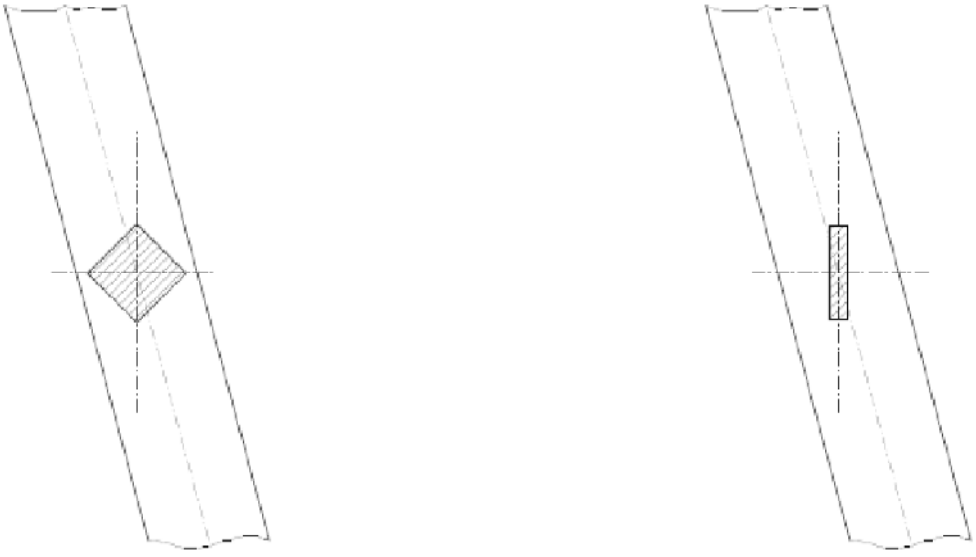


Figure 2 — Examples of rung cross sections

If they are from square or rectangular section, they shall not have sharp edges.

Steps shall have a grating according to the requirements of Clause 7.

4.2 Main dimensions

The main dimensions of ladders shall be as shown in Figure 3 and Figure 4. All the rungs shall be equally spaced.

The sides of square steel rungs shall be between 20 mm to 30 mm. Different shaped rungs of equivalent strength are permitted provided they are slip resistant (e.g. rectangular steel rungs with a cross section of 40 mm $\times$ 8 mm).

The clearance above and behind each rung shall be as shown in Figure 5.

The handrail shall be made from circular cross section tubes or bars of at least 20 mm outside diameter.

The ladder handrail shall be connected to the toe plates of the walkways or platforms.

The clearance around the handrail shall be at least 100 mm.

Where lateral ladders protrude more than 250 mm from the chassis of the tank wagon, a protective device shall be fitted at a height of between 1 200 mm to 1 400 mm above the rail (see Figure 6).

The lateral ladders shall not infringe the loading gauge.

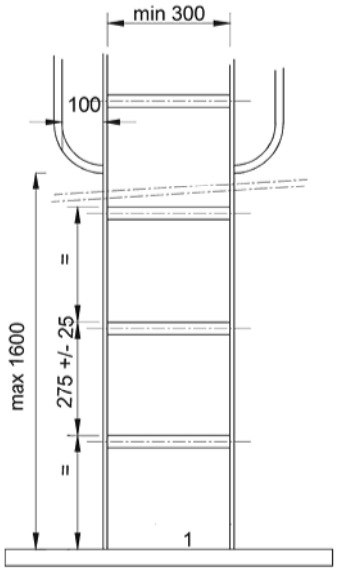
4.3 Design values

Ladders shall be designed to withstand a static load of 2,0 kN in the centre of any rung. The maximum allowable elastic deformation under this load shall not exceed 1/200 of the width.

4.4 Marking

A warning sign for overhead electrical danger shall be located near to each ladder in accordance with EN ISO 6346:1995, Annex C or Technical Specification for Interoperability for Freight Wagons.

Dimensions in millimetres

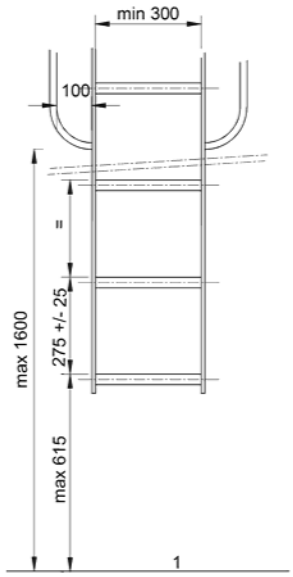


Key

1 Top of crossing gangway

Figure 3 — Main dimensions of end ladders

Dimensions in millimetres

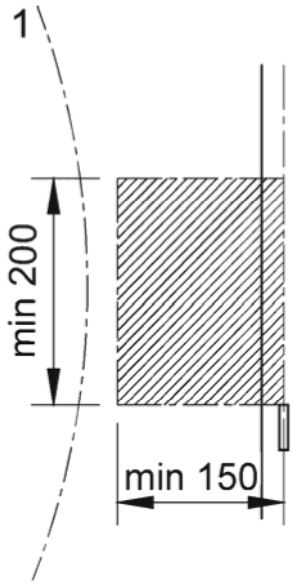


Key

1 Top of rail

Figure 4 — Main dimensions of lateral ladders

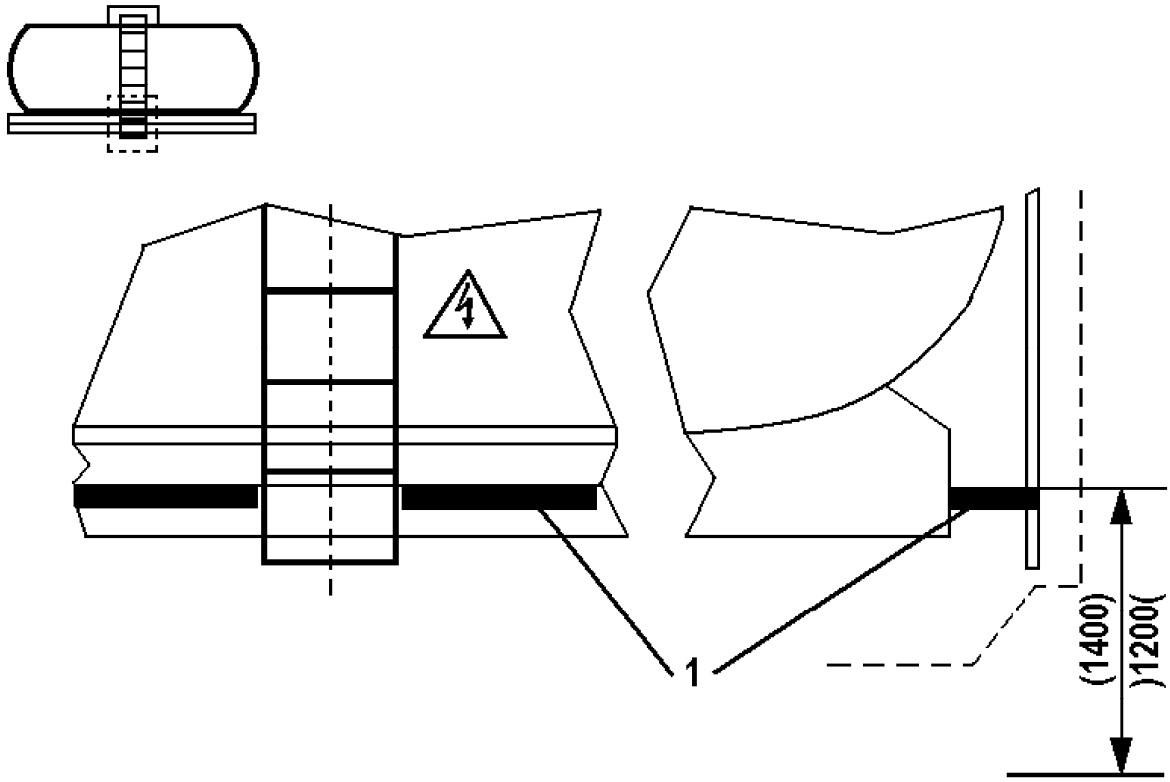
Dimensions in millimetres



Key

1 Tank

Figure 5 — Clearance above and behind rung



Key

1 Protective device

Figure 6 — Location of protective device

5 Platforms

5.1 General

Platforms shall be built in accordance with the following requirements:

— to be at least around the manhole, protective covers and the area around the nozzles;

— to be flat and horizontal;

— to have a free width of at least 300 mm;

— to have sufficient clearance around manlid swing bolts to allow easy operation;

— to be surrounded by a toe plate of 20 mm minimum height, except where a ladder or a walkway is attached;

— to be fitted with a fixed point in accordance with EN 795 to which a safety line can be attached;

— to have a grating according to the requirements of Clause 7.

The platform, including the toe plates shall not infringe the loading gauge.

The width of the platform and the height of the toe plates may need to be reduced for domestic traffic in Great Britain (see Technical Specification for Interoperability for Freight Wagons).

5.2 Design values

The platform shall be designed to withstand a load of 3 kN uniformly distributed over an area of 600 mm × 300 mm.

The deflection under this load shall not exceed 10 mm or 1/200 of the span, whichever is the smaller.

6 Walkways

6.1 General

Walkways shall be built in accordance with the following requirements:

— to be flat and may have a maximum longitudinal slope of 5°;

— to be surrounded by a toe plate of minimum 20 mm height, except where a ladder or a platform is attached;

— to be fitted with a safety rail with a minimum clearance of 100 mm around it (see Figures 3 and 4);

— to have a grating according to the requirements of Clause 7.

It is recommended to have walkways at the same level as the platform.

6.2 Main dimensions

The width of the walkways shall not be less than 500 mm and shall not infringe the loading gauge.

The width of the walkways, the height of the toe plates and the clearance around the safety rail may need to be reduced for domestic traffic in Great Britain (see Technical Specification for Interoperability for Freight Wagons).

6.3 Design values

The walkway shall be designed to withstand a load of 3 kN uniformly distributed over an area of 600 mm × 300 mm.

The deflection under this load shall not exceed 10 mm or 1/200 of the span, whichever is the smaller.

7 Characteristics of the grating

7.1 Resistance to friction

The average value of the friction coefficient measured in three directions (lengthwise, breadthwise and diagonally) shall reach the following minimum values:

a) in dry condition 0,65;

b) in wet condition (water) 0,65;

c) in oiled condition 0,30.

Friction coefficient values shall be ascertained by means of a 100 mm × 100 mm movable plate, on which a rubber pad with 80 I.R.H.D. hardness shall be glued; this plate shall be loaded to 750 N. For the measurements carried out with water or oil, the grating shall be fully immersed.

7.2 Grating structure

To ensure that the gratings are sufficiently well adapted to winter conditions, a ratio of at least 50 % of void area to total area shall be observed. Only apertures with a minimum area of 400 mm² shall be taken into account to determine this ratio. The void area is the free space afforded, in the vertical direction, by the grating apertures.

8 Fixing

Where ladders, platforms and walkways are fixed to the shell of the tank wagon, doubler plates shall be used.

The fixings shall be properly secured to discourage theft and minimise the risk of working loose.

The attachment of the ladder to the vehicle shall not introduce unacceptable stresses during all conditions of operation.

Bibliography

[1] ISO 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

[2] ISO 1496-3, *Series 1 freight containers — Specification and testing — Part 3: Tank containers for liquids, gases and pressurized dry bulk*

[3] *RID, Regulations concerning the International Carriage of Dangerous Goods by Rail*[1)] *implementing Commission Directives 2003/28/EC and 2003/29/EC.*

[4] TSI Rolling Stock — *Freight Wagons*

[5] UIC 535-2, *Standardisation and positioning on wagons of steps, end platforms, gangways, handrails, tow hooks, automatic coupler (AC), automatic draw-on coupling and brake valve controls on the UIC member RUs and OSJD member Rus* [2)]

1) Commonly known as RID.

2) May be purchased from: Railway Technical Publications (ETF), 16 rue Jean Rey, F-75015 Paris.

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