Requirements for Driving Cabs of Railway Vehicles

Synopsis

This document sets out national technical rules for driving cabs of railway vehicles on visibility from within, emergency exit dimensions and audibility of detonators.
Issue record

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<tr>
<td>Two</td>
<td>06/06/2020 [proposed]</td>
<td>Replaces issue one. The complete document has been revised to define national technical rules only, in alignment with the contents of the LOC&amp;PAS TSI and EN 16186 series. Other appropriate content from issue one has been transferred to RIS-2761-RST.</td>
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Revisions have not been marked by a vertical black line in this issue because the document has been revised throughout.

Superseded documents

The following Railway Group documents are superseded, either in whole or in part as indicated:

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GMRT2161 issue one Requirements for Driving Cabs of Railway Vehicles | All | 06/09/2020 [proposed] |

Supply

The authoritative version of this document is available at [www.rssb.co.uk/railway-group-standards](http://www.rssb.co.uk/railway-group-standards). Enquiries on this document can be submitted through the RSSB Customer Self-Service Portal [https://customer-portal.rssb.co.uk/](https://customer-portal.rssb.co.uk/).
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Part 1  Purpose and Introduction

1.1  Purpose

1.1.1 This document sets out national technical rules (NTRs) for the design of driving cabs for railway vehicles.

1.2  Introduction

1.2.1  Background

1.2.1.1 The implementation of the technical specifications for interoperability (TSIs), mandated through a series of European Union Directives, has resulted in a review of all requirements mandated in Railway Group Standards (RGSs).

1.2.1.2 The Locomotives and Passenger Rolling Stock TSI (LOC & PAS TSI) sets out certain requirements for the driving cabs of rail vehicles in clause 4.2.9 and sub-clauses.

1.2.2  Principles

1.2.2.1 This document sets out requirements that meet the characteristics of NTRs and are applicable to the Great Britain (GB) mainline railway system. Compliance with NTRs is required under the Railways Interoperability Regulations 2011 (as amended).

1.2.2.2 The NTRs in this document are used for the following purposes:

a) To support GB or UK specific cases in TSIs;

b) To enable technical compatibility between vehicles that conform to the requirements of the TSIs, and the existing control, command and signalling subsystem.

1.2.3  Structure of this document

1.2.3.1 Where relevant, the national rules relating to relevant TSI parameters have been identified together with the relevant clause from the TSI.

1.2.3.2 This document sets out a series of requirements that are sequentially numbered. This document also sets out the rationale for the requirement, explaining why the requirement is needed and its purpose and, where relevant, guidance to support the requirement. The rationale and the guidance are prefixed by the letter ‘G’.

1.2.4  Related requirements in other documents

1.2.4.1 The European Standard BS EN 16186-1:2014+A1:2018 Railway applications - Driver’s cab. Part 1: Anthropometric data and visibility contains requirements that are related to the scope of this document:

1.2.5  Supporting documents

1.2.5.1 RIS-2761-RST issue one Rail Industry Standard for Driving Cabs and the European Standard BS EN 15152:2019 Railway applications - Windscreens for trains support this Railway Group Standard.
1.3 Approval and authorisation of this document

1.3.1 The content of this document will be approved by Rolling Stock Standards Committee on 13 March 2020 [proposed].

1.3.2 This document will be authorised by RSSB on XX April 2020 [proposed].
Part 2  National Requirements for Driving Cabs

2.1  Forward views from driving cabs

2.1.1  The driver’s windscreen of a driving cab shall provide clear unobstructed lines of sight (views) in each of the viewing cases and according to the reference conditions set out in Annex C of BS EN 16186-1:2014+A1:2018.

Rationale

G 2.1.2  The requirement addresses the GB specific case in clause 7.3.2.18 of the LOC & PAS TSI on Front Visibility.

Guidance

G 2.1.3  The viewing cases set out in Annex C of BS EN 16186-1:2014+A1:2018 lead to two, usually different, viewing points within the specified reference cube, namely a point for viewing cases (a) and (b) and a point for viewing case (c).

G 2.1.4  The specific case in the LOC & PAS TSI only addresses visibility for the driver at the seated driving position. Where the main driving position is designed to also permit the driver to stand whilst controlling the train, the requirements of the three viewing cases continue to apply. This is consistent with the requirement in 4.2.9.1.3.1(2) of the LOC & PAS TSI, which mandates that the visibility requirements for the seated driving position are also met from a standing position if the vehicle is intended to also be operable from a standing position.

G 2.1.5  BS EN 16186-1:2014+A1:2018 sets out further requirements for the driving cab, including for the front windscreen, lateral and rear visibility, and also provides details of anthropometric data on which the requirements are based.

G 2.1.6  BS EN 15152:2019 sets out requirements for the functional, optical and mechanical properties of driver’s windscreens.

2.2  Cab emergency exit

2.2.1  For driving cabs located at the front of a vehicle, the interior emergency exit shall have minimum dimensions of 1700 mm (height) x 430 mm (width). Where the interior emergency exit is positioned perpendicular and adjacent to the vehicle side, it is permissible to reduce its width above 1430 mm height to align with the vehicle gauge.

Rationale

G 2.2.2  This requirement addresses the GB specific case in clause 7.3.2.17 of the LOC & PAS TSI on Driver’s Cab Emergency Exit allowing minimum dimensions in accordance with notified NTRs.

G 2.2.3  The minimum height and width dimensions specified in clause 2.2.1 are the same as those given in the LOC & PAS TSI, but with a greater permissible reduction in width of the upper section for gauge clearance.
G 2.2.4 The height above which the width reduction is allowed is derived from the cab emergency exit on the Class 70 locomotive.

Guidance

G 2.2.5 The LOC & PAS TSI sets out requirements for arrangements for access to and egress from the driving cab, including emergency access and exit. The LOC & PAS TSI requires at least an interior emergency exit to be provided, and specifies minimum dimensions for this exit.

G 2.2.6 The GB specific case permits the interior emergency exit to be of different dimensions to those specified in the LOC & PAS TSI. This is because the GB loading gauge is smaller than is used in continental Europe.

G 2.2.7 The requirement does not permit the minimum height dimension to be reduced.

G 2.2.8 In this instance, an interior emergency exit means an emergency exit that does not give direct access to the trackside, but instead gives access to a refuge area on-board the vehicle and to the rear of the cab. This may be an internal (that is, enclosed) area or an external area (such as a walkway).

G 2.2.9 The purpose of the interior emergency exit is to provide a route for the driver to escape to the refuge area in the event of imminent danger in the cab, such as a collision.

2.3 Audibility of detonators

2.3.1 Driving cabs shall have acoustic characteristics such that exploding detonators, as specified in BR 0640A, can be heard inside the cab at any vehicle speed and be readily distinguished from background noise.

Rationale

G 2.3.2 This requirement is to ensure technical compatibility between rolling stock and the legacy signalling subsystem.

G 2.3.3 Detonators are also known as railway fog signals, and serve as an audible alternative to visible signals in certain situations which are set out in the Rule Book (GERT8000). It is therefore necessary that the acoustic characteristics of the driving cab enable detonators to be heard in the cab.

Guidance

G 2.3.4 Rules governing the use of detonators, and action to be taken on hearing a detonator explosion, are set out in the Rule Book (GERT8000).

G 2.3.5 Requirements in the Noise TSI (NOI TSI) and in the LOC & PAS TSI on noise levels in the driving cab do not specifically consider the use of external audible warnings such as detonators.

G 2.3.6 The LOC & PAS TSI sets out requirements for the minimum noise level of audible information, such as alarms, generated by onboard equipment inside the cab, above a reference level. The reference level is established by performing measurements under conditions set out in the NOI TSI. These noise levels may also be considered as...
minimum requirements for the audibility of external audible warnings such as detonators.

G 2.3.7 The NOI TSI sets out limit values for the background noise level permitted in the driver’s cab;
   a) at a standstill with horns sounding; and
   b) at maximum speed.

These values do not include the contribution of internal or external audible warnings, other than the train horns at standstill.

G 2.3.8 RSSB research project T326 (2009) included the production of an alarms and alerts guidance evaluation tool.

G 2.3.9 Further information on detonators is available in GEGN8532.
Part 3 Application of this document

3.1 Scope

3.1.1 If a change to a railway vehicle is considered new, renewal or upgrade as defined in the Railways (Interoperability) Regulations 2011 (as amended), then all or part of the railway vehicle is required to comply with the LOC&PAS TSI and other relevant TSIs and NTRs, unless given exemptions allowed for in the Regulations.

3.1.2 The requirements of this document apply to all new and modified (excluding like-for-like replacement of components) railway vehicles where 3.1.1 applies to the subsystem.

3.1.3 Action to bring existing railway vehicles into compliance with the requirements of this document is not required.

3.2 Exclusions from scope

3.2.1 The requirements in this document are not applicable to either on-track machines (OTMs) or to on-track plant (OTP). Requirements for the driving cabs of OTMs and OTP are set out in GMRT2400 and RIS-1530-PLT respectively, and associated referenced standards.

3.3 General enter into force date

3.3.1 The requirements in this document enter into force from 06 September 2020 [Proposed], except where exceptions to the general enter into force date are specified.

3.4 Exceptions to general enter into force date

3.4.1 There are no exceptions to the general enter into force date.

3.5 Applicability of requirements for projects already underway

3.5.1 The Office of Rail and Road (ORR) can be contacted for clarification on the applicable requirements where a project seeking authorisation for placing into service is already underway when this document enters into force.

3.6 Deviations

3.6.1 Where it is considered not reasonably practicable to comply with the requirements of this document (including any requirement to comply with a TSI requirement referred to in the Scope), permission to comply with a specified alternative should be sought in accordance with the deviation process set out in the Railway Group Standard Code.

3.6.2 In the case where TSI compliance is required for a new, renewed or upgraded vehicle or structural subsystem, the derogation process to be followed is set out in the Railways (Interoperability) Regulations 2011 (as amended).
3.7 Health and safety responsibilities

3.7.1 Users of documents published by RSSB are reminded of the need to consider their own responsibilities to ensure health and safety at work and their own duties under health and safety legislation. RSSB does not warrant that compliance with all or any documents published by RSSB is sufficient in itself to ensure safe systems of work or operation or to satisfy such responsibilities or duties.
Definitions

detonator  A device placed on a running rail which explodes when impacted by a vehicle wheel, causing an audible warning to the driver and to persons on or near the track in the vicinity of the train. Also known as Railway Fog Signals.

driver’s windscreen  Glazing in front of a driver through which the track and signals ahead can be observed.

vehicle gauge (also called loading gauge)  The space, defined by a set of rules, that can be occupied by a vehicle under defined conditions, or the space to be kept clear of obstructions on the infrastructure.
References

The Standards catalogue gives the current issue number and status of documents published by RSSB: http://www.rssb.co.uk/railway-group-standards.

RGSC 01 Railway Group Standards Code
RGSC 02 Standards Manual

Documents referenced in the text

Railway Group Standards
GMRT2400 Engineering Design of On-Track Machines in Running Mode

RSSB documents
GEGN8532 Guidance on ‘Signals, Railway Track, Explosive’ (also known as ‘Detonators’)  
GERT8000 Rule Book
 RIS-1530-PLT Rail Industry Standard for Technical Requirements for On-Track Plant and their Associated Equipment and Trolleys
RIS-2761-RST Rail Industry Standard for Driving Cabs
T326 RSSB (2009) Human factors good practice guide to managing alarms and alerts

Other references
BR 0640A Specification for Railway Detonators, Single Chamber Type for Hand or Machine Placing (1964)
BS EN 15152:2019 Railway applications. Windscreens for trains
SI 2011/3066 Railways (Interoperability) Regulations 2011 (as amended)