

## **Environment Inside Railway Vehicles (Audibility of detonators and control of pressure pulses)**

### **Synopsis**

This document mandates requirements for the audibility of **detonators** in driving cabs and the control of **pressure pulses** on the inside of railway vehicles when they pass through railway tunnels.

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## Issue record

Issue	Date	Comments
One	September 1994	Original document Based on draft GM/TT0090
Two	October 2000	Replaces issue one Revised only to address high speed (> 125 mile/h) trains and tilting trains
Three	April 2008	Replaces issue two Revised to reflect the introduction of legislation on control of noise and vibration. Relevant information transferred to guidance in <a href="#">GM/GN2460</a> .

Revisions have not been marked by a vertical black line in this issue because the revision is limited to the removal of clauses.

## Superseded documents

The following Railway Group documents are superseded, either in whole or in part as indicated:

Superseded documents	Sections superseded	Date when sections are superseded
<a href="#">GM/RT2160</a> , issue two, October 2000 Ride Vibration and Noise Environment Inside Railway Vehicles	All	07 June 2008

## Supply

Controlled and uncontrolled copies of this Railway Group Standard may be obtained from the Corporate Communications Department, Rail Safety and Standards Board, Evergreen House, 160 Euston Road, London NW1 2DX, telephone 020 7904 7518 or e-mail [enquiries@rssb.co.uk](mailto:enquiries@rssb.co.uk). Railway Group Standards and associated documents can also be viewed at [www.rgsonline.co.uk](http://www.rgsonline.co.uk).

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Railway Group Standard  
GM/RT2160  
Issue Three  
Date April 2008

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## Part 1 Purpose and Introduction

### 1.1 Purpose

- 1.1.1 This document mandates requirements for the audibility of **detonators** in driving cabs and the control of **pressure pulses** on the inside of railway vehicles when they pass through railway tunnels.

### 1.2 Introduction

#### 1.2.1 Background

- 1.2.1.1 [GM/RT2160](#) issue two (Ride Vibration and Noise Environment Inside Railway Vehicles) was reviewed against the Railway Group Standards Code and, more fundamentally, the recent changes to Regulations induced by the coming into force of the following Regulations:
- a) The Control of Noise at Work Regulations 2005, Statutory Instrument 2005 No. 1643
  - b) The Control of Vibration at Work Regulation 2005, Statutory Instrument 2005 No. 1093
- 1.2.1.2 The Control of Noise at Work Regulations transpose into UK legislation European Directive 2003/10/EC, which consolidates and repeals the existing EC Noise Directive 86/188/EEC, implemented in the UK by the Noise at Work Regulations 1989.
- 1.2.1.3 The Control of Vibration at Work Regulations transpose into UK legislation the European Directive 2002/44/EC. There were no UK health and safety regulations that previously dealt specifically with the risks from vibration.
- 1.2.1.4 The result of the review was that majority of the former mandatory requirements in [GM/RT2160](#) issue two were withdrawn, as they are superseded by the more generic legislation.
- 1.2.1.5 At the request of industry, comprehensive guidance has been developed to assist them in complying with the changed legislation. This is published in [GM/GN2460](#).
- 1.2.1.6 Two residual mandatory requirements are retained in this document ([GM/RT2160](#) issue 3). These requirements, relating to detonator audibility and control of **pressure pulses**, will, in due course, be published in new Railway Group Standards that are under development. This document will then be withdrawn.

#### 1.2.2 Supporting documents

- 1.2.2.1 There are no Railway Group documents supporting this Railway Group Standard.

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## Part 2 Requirements for Detonator Audibility

### 2.1 Audibility of **detonators**

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

## Part 3 Requirements for Pressure Pulses

### 3.1 Control of pressure pulses

- 3.1.1 Non-audible transient variations in air pressure caused by the passage of trains through tunnels, and by aerodynamic interaction with other trains and track features, shall not result in the inside of railway vehicles being subjected to pressure pulses which exceed:
- a) A maximum change in pressure of 10 kPa within any part of the time taken by the train to pass through any tunnel
  - b) A maximum change in pressure of 7 kPa within any time period of four seconds.
- 3.1.2 Limit a) shall not be exceeded in the event of the sudden failure of the sealing of a pressure-sealed train. In such an event it is permissible for limit b) to be infringed.
- 3.1.3 The requirements of 3.1.1 and 3.1.2 shall be verified by calculation, testing or comparison with other vehicles.

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## Part 4 Application of this document

### 4.1 Application - infrastructure managers

4.1.1 There are no requirements applicable to infrastructure managers.

### 4.2 Application - railway undertakings

#### 4.2.1 Scope

4.2.1.1 The requirements of this document apply to all work undertaken on railway vehicles, whether new or altered, that affects the audibility of **detonators** in driving cabs and / or the control of **pressure pulses** inside railway vehicles where people may be present.

#### 4.2.2 Exclusions from scope

4.2.2.1 There are no exclusions from the scope specified in 4.2.3 for railway undertakings.

#### 4.2.3 General compliance date for railway undertakings

4.2.3.1 This Railway Group Standard comes into force and is to be complied with from 07 June 2008, except as specified in 4.2.4. Where the dates specified in 4.2.4 are later than the above date, this is to allow railway undertakings sufficient time to achieve compliance with the specified exceptions.

4.2.3.2 After the compliance dates or the date by which compliance is achieved if earlier, railway undertakings are to maintain compliance with the requirements set out in this Railway Group Standard. Where it is considered not reasonably practicable to comply with the requirements, authorisation not to comply should be sought in accordance with the Railway Group Standards Code.

#### 4.2.4 Exceptions to general compliance date

4.2.4.1 There are no exceptions to the general compliance date specified in 4.2.3 for railway undertakings.

### 4.3 Health and safety responsibilities

4.3.1 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.

## References

The Catalogue of Railway Group Standards and the Railway Group Standards CD-ROM give the current issue number and status of documents published by RSSB. This information is also available from [www.rgsonline.co.uk](http://www.rgsonline.co.uk).

### Documents referenced in the text

RGSC 01 The Railway Group Standards Code

#### Railway Group Standards

[GM/RT2160](#) Ride Vibration and Noise Environment Inside Railway Vehicles (issue two withdrawn)

#### RSSB documents

[GM/GN2460](#) Guidance on Compliance with Noise and Vibration Legislation in the Railway Environment

#### Other references

BR 0640A Specification for Railway **Detonators**, Single Chamber Type for Hand or Machine Placing (1964)

SI 2005 No. 1093 The Control of Vibration at Work Regulations 2005

SI 2005 No. 1643 The Control of Noise at Work Regulations 2005