

**Rail Industry Standard**

**RIS-8217-TOM**

**Issue** One

**Date** December 2016

# **Rail Industry Standard for the Introduction and Use of Axle Counters – Managing the Risk**

## **Synopsis**

This document provides requirements for managing the introduction and use of axle counters so that operational risks are controlled during planning, implementation and operational stages.

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## Introduction and use of Axle Counters – Managing the Risk

### Issue record

Issue	Date	Comments
One	03 December 2016	Replaces Railway Group Standard GERT8217 issue three as it could not be retained as a National Safety Rule and is therefore reclassified as a Rail Industry Standard.

### Superseded or replaced documents

The following Railway Group documents are superseded or replaced, either in whole or in part as indicated:

Superseded documents	Sections replaced	Date when sections are superseded
GERT8217, issue three, Introduction and Use of Axle Counters – Management the Risk	All	04 March 2017

GERT8217 ceases to be in force and is withdrawn as of 04 March 2017.

### 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 forwarded to [enquirydesk@rssb.co.uk](mailto:enquirydesk@rssb.co.uk).

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## Part 1 Introduction

### 1.1 Purpose of this document

- 1.1.1 GERT8217 Introduction and Use of Axle Counters – Managing the Risk, issue three, duplicated GB and European requirements of the Common Safety Methods of risk evaluation and assessment (CSM RA) 352/2009.
- 1.1.2 GERT8217 sets out the industry's agreed process for the infrastructure manager (IM) and railway undertakings (RUs) to jointly manage the introduction and use of axle counters so that operational risks are managed during planning, implementation and operational stages. A risk management process must be applied whenever a new scheme introducing axle counters is proposed.
- 1.1.3 It was therefore formally 'redundant' as a National Safety Rule, and therefore also as a Railway Group Standard. As a consequence, it has been withdrawn.
- 1.1.4 However, the content of GERT8217 provided a basis for 'the IM and RUs in convening a compatibility review forum'
- 1.1.5 GERT8217 has therefore been replaced by this Rail Industry Standard (RIS-8217-TOM for the Introduction and Use of Axle Counters – Managing the Risk), which reproduces the content of GERT8217 in its entirety as Annex A of this document.

### 1.2 Application of this document

- 1.2.1 A member of RSSB may choose to adopt all or part of this document through internal procedures or contract conditions. Where this is the case the member of RSSB will specify the nature and extent of application.
- 1.2.2 Therefore, compliance requirements and dates have not been specified since these will be the subject of internal procedures or contract conditions.
- 1.2.3 The Railway Group Standards Code and the Standards Manual does not currently provide a formal process for deviating from RISs. However, a member of RSSB, having adopted a RIS and wishing to deviate from its requirements, may request a Standards Committee to provide observations and comments on their proposed alternative to the requirement in the RIS. Requests for opinions and comments should be submitted to RSSB by e-mail to [proposals.deviation@rssb.co.uk](mailto:proposals.deviation@rssb.co.uk). When formulating a request, consideration should be given to the advice set out in the 'Guidance to applicants and members of Standards Committee on deviation applications', available from RSSB's website.

### 1.3 Health and safety responsibilities

- 1.3.1 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.

### 1.4 Approval and authorisation of this document

- 1.4.1 The content of this document was approved by the Traffic Operation and Management Standard Committee on 05 April 2016.
- 1.4.2 This document will was authorised by RSSB on 18 October 2016.

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## **Annex A Content of GERT8217, issue three, Introduction and use of Axle Counters – Managing the Risk**

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**Railway Group Standard**  
**GE/RT8217**  
**Issue Three**  
**Date December 2009**

## **Introduction and Use of Axle Counters – Managing the Risk**

### **Synopsis**

This document mandates requirements for managing the introduction and use of axle counters so that operational risks are controlled during planning, implementation and operational stages.

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**Issue** Three

**Date** December 2009

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## **Issue record**

Issue	Date	Comments
One	May 2002	Original 'rapid response' document
Two	February 2003	Revised document – scope widened
Three	December 2009	Document revised to align scope with Strategy for Standards Management

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:

Superseded documents	Sections superseded	Date when sections are superseded
GE/RT8217 issue 2 Introduction and Use of Axle Counters – Managing the Risk	All	06 February 2010

GE/RT8217 issue 2 ceases to be in force and is withdrawn as of 05 February 2010.  
GE/RT8217 issue 3 comes into force as of 06 February 2010.

## **Supply**

The authoritative version of this document is available at [www.rgsonline.co.uk](http://www.rgsonline.co.uk).  
Uncontrolled copies of this document can be obtained from Communications, RSSB, Block 2, Angel Square, 1 Torrens Street, London EC1V 1NY, telephone 020 31425400 or e-mail [enquiries@rssb.co.uk](mailto:enquiries@rssb.co.uk). Other Standards and associated documents can also be viewed at [www.rgsonline.co.uk](http://www.rgsonline.co.uk).

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## **Part 1 Purpose and Introduction**

### **1.1 Purpose**

- 1.1.1 This document mandates requirements for managing the introduction and use of axle counters so that operational risks are managed during planning, implementation and operational stages.

### **1.2 Introduction**

#### **1.2.1 Background**

- 1.2.1.1 The railway industry has in recent years looked increasingly towards using axle counter systems, rather than track circuits, as the primary means of train detection.
- 1.2.1.2 When considering introducing an axle counter-based train detection system, the following operational issues need to be addressed by the compatibility review forum:
- a) the method adopted for resetting and restoring the axle counter system and any consequences for railway undertakings in requirements for examination of the line
  - b) the potential loss of a method of emergency protection, since track circuit operating clips will be ineffective
  - c) the need to assess the adequacy of driver to signaller communication systems
- 1.2.1.3 Issue 2 of this document was published in April 2003 to support the ongoing introduction and use of axle counters. It was recognised that axle counter technology was evolving rapidly as methods and processes developed and that it was likely the standard would need reviewing to remain fit for purpose. In accordance with the Railway Group Standards Code, and as part of a structured review of all standards, this document was examined to confirm whether it remained in scope. Some requirements have been found to be a single duty holder responsibility and therefore should no longer be mandated in a Railway Group Standard.
- 1.2.1.4 Information relating to sharing information between duty holders during the planning process can be found in GE/RT8270 Assessment of Compatibility of Rolling Stock and Infrastructure. Requirements that relate to operational requirements have been retained and revised to aid clarity.

#### **1.2.2 Principles**

- 1.2.2.1 The requirements of this document are based on the principle that the infrastructure manager and railway undertakings affected by a proposed axle counter scheme should share information in the compatibility review forum that address the issues listed in 1.2.1.2, so that transitional risks are managed as an axle counter scheme is introduced. In particular, consideration should be given to the need to improve train to signaller communication. In general, a system from the following hierarchy (referenced in paragraph 1.2.4.1), in order of preference may be adequate, subject to confirmation of adequate coverage, quality and availability in the particular area:
- i) GSM-R
  - ii) CSR

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- iii) IVRS
- iv) NRN
- v) lineside telephones

Where coverage, quality or availability is inadequate, the adequacy of two or more systems in combination with each other should be considered.

- 1.2.2.2 An axle counter system should not be brought into operational use until all the technical, procedural and operational systems required to support normal, degraded and emergency operations have been implemented. This may include the need to issue IVRS handsets.
- 1.2.2.3 Staff affected by an axle counter scheme should be provided with appropriate information and training to facilitate transition to the new mode of train detection, and ongoing safe operation (particularly during failure conditions, or recovery from failures or engineering possessions when reset and restoration procedures are invoked).

## 1.2.3 Related requirements in other documents

- 1.2.3.1 The following Railway Group Standards contain requirements that are relevant to the scope of this document:

GE/RT8270	Assessment of Compatibility of Rolling Stock and Infrastructure
GK/RT0011	Train Detection
GK/RT0217	Technical Requirements for Axle Counters
GM/RT2149	Requirements for Defining and Maintaining the Size of Railway Vehicles
GM/RT2466	Railway Wheelsets
GO/RT3215	Requirements for WON, PON and Sectional Appendix

## 1.2.4 Supporting documents

- 1.2.4.1 RSSB report 'Risk Assessment of Failure of the Interim Voice Radio System (IVRS)' dated May 2006. Authors: David Harris, Kaj Somaiya and Katherine I' Anson.

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## **Part 2 Requirements for Introduction and Use of Axle Counters – Managing the Risk**

### **2.1 Responsibilities of the infrastructure manager and railway undertakings affected by an axle counter scheme**

#### **2.1.1 Requirement for communications systems**

2.1.1.1 The infrastructure manager and railway undertakings shall, for double and multiple track routes, assess the adequacy of communications systems between train and signaller, to mitigate against the potential loss of protection to adjacent lines provided by application of track circuit operating clips.

2.1.1.2 The infrastructure manager and railway undertakings shall provide people working on or near the line, whenever they are required to be in possession of track circuit operating clips, with a means of direct communication with the controlling signaller.

#### **2.1.2 Requirement to implement mitigating measures before bringing an axle counter system into operational use**

2.1.2.1 The infrastructure manager and railway undertakings shall not bring an axle counter system into operational use until all the technical, procedural and operational systems required to support normal, degraded and emergency operations have been implemented.

### **2.2 Responsibilities of the infrastructure manager**

#### **2.2.1 Requirement to consider plans**

2.2.1.1 The infrastructure manager shall convene a compatibility review forum, including participants with suitable expertise in axle counter systems, to consider the specific axle counter proposal and share information on the need for mitigation measures to address issues listed in paragraph 2.2.2.1.

#### **2.2.2 Requirements when proposing to introduce an axle counter scheme**

2.2.2.1 The infrastructure manager shall, when proposing to introduce an axle counter scheme, share information with affected railway undertakings through the compatibility review forum to confirm that the scheme plan addresses and mitigates operational risks arising from the following issues (as a minimum):

- a) the method adopted for resetting and restoring the axle counter system
- b) the potential loss of a method of emergency protection (where applicable in relation to the current method of train detection)
- c) the adequacy over the line of route of train to signaller communication systems.

2.2.2.2 The infrastructure manager shall identify to railway undertakings all lines where axle counters provide the means of train detection.

### **2.3 Responsibilities of railway undertakings affected by an axle counter scheme**

#### **2.3.1 Requirement to provide additional emergency communications equipment on trains**

2.3.1.1 Railway undertakings shall only permit a train to operate over a route equipped with axle counters when the train and/or the driver of the train has been provided with any communication equipment required to be provided for that route as a result of the compatibility review forum.

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## **Part 3 Application of this document**

### **3.1 Application - infrastructure manager**

#### **3.1.1 Scope**

3.1.1.1 The requirements of this document apply to all axle counter installations used as the primary means of train detection for double and multiple track systems in signalling schemes introduced from the date this standard comes into force.

#### **3.1.2 Exclusions from scope**

3.1.2.1 There are no exclusions from the scope specified in clause 3.1.1.1 for the infrastructure manager.

#### **3.1.3 General compliance date for infrastructure managers**

3.1.3.1 This Railway Group Standard comes into force and is to be complied with from 06 February 2010, except as specified in section 3.1.4. Where the dates specified in section 3.1.4 are later than the above date, this is to allow infrastructure managers sufficient time to achieve compliance with the specified exceptions.

#### **3.1.4 Exceptions to general compliance date**

3.1.4.1 There are no exceptions to the general compliance date specified in clause 3.1.3 for infrastructure managers.

### **3.2 Application - railway undertakings**

#### **3.2.1 Scope**

3.2.1.1 The requirements of this document apply to all axle counter installations used as the primary means of train detection for double and multiple track systems in signalling schemes introduced from the date this standard comes into force.

#### **3.2.2 Exclusions from scope**

3.2.2.1 There are no exclusions from the scope specified in clause 3.2.1 for railway undertakings.

#### **3.2.3 General compliance date for railway undertakings**

3.2.3.1 This Railway Group Standard comes into force and is to be complied with from 06 February 2010, except as specified in section 3.2.4. Where the dates specified in section 3.2.4 are later than the above date, this is to allow railway undertakings sufficient time to achieve compliance with the specified exceptions.

#### **3.2.4 Exceptions to general compliance date**

3.2.4.1 There are no exceptions to the general compliance date specified in clause 3.2.3 for railway undertakings.

### **3.3 Health and safety responsibilities**

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## **Definitions**

### **Axle counters**

Throughout this document the term 'axle counters' refers to all the axle counters being installed within the geographic limits of a particular named scheme.

### **Axle counter system**

A method of train detection in which track-mounted equipment counts the number of axles (by detecting wheels passing a detection point) entering and leaving a track section at each extremity, and this information is evaluated to determine whether the track section is occupied or clear.

### **Compatibility review forum**

A meeting convened by the proposer (the infrastructure manager in the case of an axle counter scheme) with affected parties to exchange information and review the compatibility of a proposed change with the assets of the affected parties. The functioning of a compatibility review forum is described in GE/RT8270 Assessment of Compatibility of Rolling Stock and Infrastructure.

### **CSR**

A legacy analogue train radio system (cab secure radio) providing secure direct communication between driver and controlling signaller.

### **GSM-R**

A digital radio system (Global System for Mobile communications – Railways) based on the GSM Mobile communication standard adapted for use on European railways. The GSM-R system for the purposes of this document is one that complies with the EIRENE Functional Specification (version 5) and the System Requirement Specification (version 13).

### **IVRS**

A portable communication system (interim voice radio system) utilising mobile telephone handsets issued to traincrew providing an emergency link to the controlling signaller.

### **NRN**

A legacy analogue non-secure train radio system providing a dial telephone facility, also emergency call facility between driver and local operations control.

### **Reset**

The action of setting the number of axles registered in a track section to zero.

### **Restoration**

The final action in accepting an axle counter back into service after failure, disturbance or miscount.

### **Scheme**

A systematic plan to install or upgrade axle counters within defined geographic limits.

### **Track circuit**

For the purposes of this document, the term 'track circuit' refers to the detection of trains, within a particular section of track, by means of the electrical circuit created between the running rails by one or more train axles.

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## 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

#### Railway Group Standards

GE/RT8270	Assessment of Compatibility of Rolling Stock and Infrastructure
GM/RT2466	Railway Wheelsets
GM/RT2149	Requirements for Defining and Maintaining the Size of Railway Vehicles
GO/RT3215	Requirements for WON, PON and Sectional Appendix
GK/RT0217	Technical Requirements for Axle Counters
GK/RT0011	Train Detection

### Other relevant documents

GE/RT8000	Rule Book
RGSC 01	The Railway Group Standards Code

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## Definitions

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Relevant definitions are given in Annex A, and are not reproduced here.

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## References

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RGSC 01	Railway Group Standards Code
RGSC 02	Standards Manual

## Documents referenced in the text

### Railway Group Standards

GERT8217	Introduction and Use of Axle Counters – Managing the Risk (Ceases to be in force on 04 March 2017)
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## Other relevant documents

### Other references

CSM CA	Common safety method for assessing conformity with the requirements for obtaining a railway safety authorisation (Commission Regulation (EU) No 1169/2010) / Common safety method for assessing conformity with the requirements for obtaining railway safety certificates (Commission Regulation (EU) No 1158/2010)
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