

Railway Group Standard

GK/RT0055

Issue One

Date September 2013

Block System Interface Requirements

Synopsis

This document mandates the requirements for block systems interfaces between signalling infrastructure and railway operations.

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Documents

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Railway Group Standard**GK/RT0055****Issue One****Date** September 2013**Block System Interface Requirements****Issue record**

Issue	Date	Comments
One	07 September 2013	Original document

Superseded documents

The following Railway Group documents are superseded, in part as indicated:

Superseded documents	Sections superseded	Date when sections are superseded
GK/RT0041 issue one Track Circuit Block	4 para 1, 7, 5 para 2	07 Dec 2013
GK/RT0042 issue one Absolute Block	5 para 2 sentence 1, 6.4 para 1 & 2, 7	07 Dec 2013
GK/RT0051 issue one Single Line Control	Various – refer to impact assessment for details	07 Dec 2013
GK/RT0054 issue one Radio Electronic Token Block	Various – refer to impact assessment for details	07 Dec 2013
GK/RT0060 issue four Block Systems Interface Requirements	C5.1.9 Para 1 and C2.3	07 Dec 2013
GK/RT0063 issue one Approach Locking and Train Operated Route Release	4.2 para 5 bullet point 2	07 Dec 2013
GK/RT0064 issue one Provision of Overlaps, Flank Protection and Trapping	4.6, 4.9.2a)	07 Dec 2013

Other parts of GK/RT0041 issue one, GK/RT0042 issue one, GK/RT0051 issue one, GK/RT0054 issue one, GK/RT0060 issue four, GK/RT0063 issue one, are superseded by GK/RT0077 issue one, Ground Frames and Shunters' Releases.

Remaining parts of the superseded documents are withdrawn and cease to be in force as of 07 December 2013.

Supply

The authoritative version of this document is available at 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 3142 5400 or e-mail enquirydesk@rssb.co.uk. Other Standards and associated documents can also be viewed at www.rgsonline.co.uk.

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Railway Group Standard**GK/RT0055****Issue One****Date** September 2013**Block System Interface Requirements****Part 1 Purpose and Introduction****1.1 Purpose**

- 1.1.1 This document mandates the requirements for block systems interfaces between signalling system infrastructure and railway operations.
- 1.1.2 The requirements are applicable to routes signalled using lineside signalling in accordance with GK/RT0045: Lineside Signals, Indicators and Layout of Signals, and are not applicable to routes solely operated using the European Rail Traffic Management System (ERTMS).

1.2 Introduction**1.2.1 Background**

- 1.2.1.1 Signalled movement authorities are generated by the infrastructure manager and displayed to railway undertakings at the signalling system interface by lineside signals and indicators (see GK/RT0045 Lineside Signals, Indicators and Layout of Signals).
- 1.2.1.2 Block systems are the means by which the signalling system regulates the generation of movement authorities so that only one train is authorised in a block section at a time (with some specific exceptions where shunting or permissive working is allowed).
- 1.2.1.3 Depending on the type of block system used, movement authorities at some locations can include additional signalling system interfaces (for example, single line tokens).
- 1.2.1.4 The railway between two adjacent block sections may be designated as station limits, which may comprise one or more signal sections controlled by the same signal box as the adjacent block sections. Guidance on station limits is set out in Appendix A of GK/GN0655 Guidance on Block System Interface Requirements.
- 1.2.1.5 Signallers are responsible for authorising train movements in accordance with the GK/RT8000 Rule Book. This includes the rules for:
 - a) Operation of block systems in accordance with the relevant block signalling regulations and any local operating instructions.
 - b) Controlling train movements within station limits.
 - c) Operation of the signalling control and display system.
 - d) Communication with train crew.
- 1.2.1.6 Train crew are responsible for controlling train operations in accordance with the GE/RT8000 Rule Book. This includes the rules for:
 - a) Controlling train movements in accordance with the movement authorities received, using their route knowledge and traction knowledge.
 - b) Operating signalling equipment where it is specifically provided for use by train crew.
 - c) Communication with signallers.

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1.2.2 Principles

- 1.2.2.1 Irrespective of the type of block system used, there are two key block principles associated with the interface between the infrastructure manager and railway undertakings:
- a) Except where permissive working or shunting is specifically permitted, each block section is reserved for one train at a time, and
 - b) Where permissive working is permitted, a train may only enter an occupied block or signal section under the authority of a position light signal, semaphore subsidiary signal or semaphore shunting signal.

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/RT8075	AWS and TPWS Interface Requirements
GI/RT7033	Lineside Operational Safety Signs
GK/RT0044	Permissive Working
GK/RT0045	Lineside Signals, Indicators and Layout of Signals
GK/RT0077	Ground Frames and Shunters' Releases
GK/RT0192	Level Crossing Interface Requirements

1.2.4 Supporting document

- 1.2.4.1 The following Railway Group document supports this Railway Group Standard:
- GK/GN0655 Guidance on Block System Interface Requirements

Railway Group Standard**GK/RT0055****Issue One****Date** September 2013**Block System Interface Requirements****Part 2 Block System Requirements****2.1 Compatibility requirements for block systems****2.1.1 Compatibility between block systems and train operations**

- 2.1.1.1 Before any new or changed infrastructure or rolling stock (including lineside and / or on-board control, command and signalling equipment) is brought into use, it is necessary to check that it is compatible with the infrastructure and rolling stock assets and operations on the routes on which it is to be used.
- 2.1.1.2 GE/RT8270 sets out the requirements and responsibilities for the assessment of compatibility between rolling stock and infrastructure assets, including control, command and signalling equipment and their operations. It sets out the arrangements by which the assessment of compatibility is undertaken and identifies those responsible for managing that assessment.
- 2.1.1.3 This document GK/RT0055 mandates the specific requirements for the assessment of compatibility for the different types of block systems.
- 2.1.1.4 The assessment shall check that the block system is compatible with the movement authorities required by railway undertakings, including:
 - a) Passenger and non-passenger movements.
 - b) Permissive working.
 - c) Shunting.
- 2.1.1.5 The assessment shall check that the signalling system is compatible with the risk mitigation measures that will be put in place by railway undertakings, including:
 - a) Compatibility between the omission of opposing route locking on shunt class routes and the shunting that will take place.
 - b) Compatibility between approach locking release times and the time required for trains to stop when a movement authority is shortened or withdrawn.
 - c) Compatibility between the length of overlaps (including reduced and restricted overlaps), and the overrun risk that needs to be controlled.
- 2.1.1.6 The assessment shall check the method of displaying movement authorities at the lineside using:
 - a) Worked signals (see GK/RT0045).
 - b) Lineside signs and buffer stops used as signals (see GK/RT0045).
 - c) Lineside operational signs (see GI/RT7033).
- 2.1.1.7 The assessment shall check the risk of driver misunderstanding where AWS equipment is not suppressed on bi-directional lines (see GE/RT8075 and GI/RT7033).
- 2.1.1.8 The assessment shall check that, where required, facilities are provided for authorised railway personnel to either:
 - a) Verify and report train completeness to the signaller at the end of block sections and at token control points, or

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- b) On lines fitted with radio electronic token block (RETB), report train location to the signaller.
- 2.1.1.9 The assessment shall check that, where token or one-train staff systems are used, the requirement for token or one-train staff exchange on single lines is compatible with train operations:
- a) Using direct transfer of the single line token / one-train staff between the signaller and the driver.
 - b) Where an auxiliary token instrument or one-train staff instrument is provided for drivers to obtain and / or return tokens without requiring direct transfer between the signaller and the driver.
 - c) Where a no signaller token instrument is provided as part of a no signaller token block or no signaller token block – remote system.
- 2.1.1.10 The assessment shall check that, where a signal box controlling two adjacent single line sections can be switched out:
- a) The applicability of each long section token / one-train staff and short section token / one-train staff is compatible with train operations, and
 - b) The different arrangements for token exchange / one-train staff exchange when an intermediate signal box is opening and closing is compatible with train operations.
- 2.1.1.11 The assessment shall check that the risk mitigation measures are sufficient to reduce risk to an acceptable level:
- a) At the transition between lines worked in accordance with different block regulations.
 - b) When either a token or one-train staff is carried beyond the end of the applicable single line section.
 - c) To prevent the insertion of a token or one-train staff in the wrong single line instrument.
 - d) To manage a discrepancy between the number of trains in each direction and the number of available tokens.
- 2.1.1.12 The assessment shall check that the facilities required to support voice communication between the driver and the signaller are in accordance with the GE/RT8000 Rule Book at the following locations:
- a) Stop signals.
 - b) Token control points.
 - c) At other locations where there is an anticipated or known requirement for communication.
- 2.1.1.13 The assessment shall check that the risk mitigation measures necessary to control the risk accruing from secondary hazards introduced by the fail-safe design of the interlocking that result in degraded situations (for example, hand signalling), are sufficient to reduce risk to an acceptable level.