



Part A

Synopsis

This document prescribes design and maintenance requirements for traction and rolling stock and for on-track plant to ensure that interactive forces and stresses generated between vehicles and track are limited to acceptable levels. Vehicle performance limits relating to wheel loads, wheel diameters, unsprung masses and suspension characteristics are specified.

Permissible Track Forces for Railway Vehicles

Approval and authorisation

signatures removed from electronic version

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Permissible Track Forces for Railway Vehicles

GM/TT0088

Issue: 1

Revision: A

Date: OCT 1993

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This standard will be updated when necessary by distribution of a complete replacement.

Amended or additional parts of revised pages will be marked by a vertical black line in an adjacent margin.

Issue	Rev	Date	Comments
1	A	Oct 93	Original Document

Responsibilities and distribution

This standard applies to BR businesses, private owners and other organisations that operate railway vehicles on BR lines. Businesses shall ensure that the provisions of the standard are communicated to all persons and organisations with responsibilities for vehicles and suspensions in the fields of technical specification, design, development, procurement, testing and maintenance.

Implementation

The provisions of this standard are mandatory. The process of implementation shall begin immediately on receipt of this document. The standard shall be applicable from 1 December 1993 to all new procurement contracts for new vehicles and to all new programmes involving engineering change to existing vehicles.

Supply

Controlled and uncontrolled copies of this standard may be obtained from the TDCC Manager, Central Services, Dovedale House, RTC, Derby.

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Part B

1 Purpose

This standard prescribes design and maintenance performance requirements for railway vehicles and their suspension arrangements to ensure that interactive forces between vehicles and track are acceptable and will ensure operational safety on BR lines.

2 Scope

The requirements of this standard apply to traction and rolling stock vehicles, and also to on-track plant that is required to undertake movements outside possessions. The requirements apply to all new vehicles. The requirements also apply to existing vehicles undergoing engineering change, insofar as it is practicable to incorporate them.

3 Definitions

For the purposes of this document, the following definitions apply:

Dynamic Stability

The degree to which a wheelset, bogie or vehicle body avoids the onset of unstable or hunting oscillations in the horizontal plane.

Engineering Change

Any alteration or modification to the design of a vehicle that affects its technical performance, particularly where it influences vehicle ride and track interaction.

On-Track Plant

All types of mobile rail-mounted plant and machinery that are permitted to undertake movements on BR tracks outside possessions.



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Definitions (Continued)

P2 Force

The total vertical force generated at the interface between a wheel and a rail, comprising the static gravitational loading on the wheel and the inertia forces associated with the dynamic response of the unsprung masses to variations in the vertical alignment of the rail.

Unsprung Mass

The mass of a wheel, or wheelset, and other associated components which are not dynamically isolated from the track by vehicle suspension arrangements.

4 General Requirements

- 4.1** Trains that operate on British Railways tracks shall be designed and maintained so that they do not generate excessive forces between wheels and rails, between vehicles and track, and between trains and track infrastructure when operating under normal conditions on those routes where they are permitted to run.

These requirements apply:

- (a) over the full normal operating speed range for each vehicle;
- (b) over the appropriate range of track and rail configurations, features, and associated tolerances, as defined in references (1) and (2);
- (c) over the permissible range of interface geometries between wheels and rails as defined in reference (3).

- 4.2** Vehicles shall meet the requirements of this standard over the full range of variations in vehicle condition that are likely to be experienced. Account shall be taken of tolerances in vehicle dimensions, masses and suspension characteristics; variations and asymmetries in payload and wheel loadings; normal variations in vehicle maintenance condition and wear; and any other relevant variables.