Railway applications — Calculation of braking performance (stopping, slowing and stationary braking) ~~— Part 1: General algorithms utilizing mean value calculation~~ —

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Part 1:
General algorithms utilizing mean value calculation

Applications ferroviaires — Calcul des performances de freinage (freinage d'arrêt, de ralentissement et d'immobilisation) —

Partie 1: Algorithmes généraux utilisant le calcul par la valeur moyenne

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 269, *Railway applications,* Subcommittee SC 2, *Rolling stock*.

This second edition cancels and replaces the first edition (ISO 20138-1:2018), which has been technically revised.

The main changes are as follows:

— a normative reference to ISO 24478 has been added to Clause 2;

— new terms "brake subsystem" and "mean swept radius" have been added to 3Clause 3;;

— 4 Clause 4 "Symbols"" with Table 1Table 1 have been revised;

— the symbols that are explained in Table 1Table 1 have been deleted infrom formulae keys;

— 5 Clause 5 "Stopping and slowing distances calculation" has been revised;

— 6 Clause 6 "Stationary braking" has been revised;

— Annex A Annex A "Methodology of stopping and slowing distance calculation" has been revised;

— Annex B Annex B "Workflow for stationary brake calculations" has been revised;

— Annex C Annex C "Examples for brake calculation" has been revised;

— Annex D Annex D "Calculation of braking forces (non-stationary)" has been revised;

— Annex E— Annex E "Additional results for stationary brake calculation for rail vehicle or unit with a different relationship between braking force and load per wheelset" and Annex FAnnex F "Tread brake with different lever length ratios" have been added;

— the Bibliography has been revised.

A list of all parts in the ISO 20138 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The objective of this document is to enable the railway industry and operators to work with common calculation methods.

This document (i.e. ISO 20138-1) and ~~the second part (~~ISO 20138-2~~)~~ complement each other but also can be used separately, depending on the requirements of the user.

— In this document, the braking force equals the retarding force, as the assumed braking forces used in a brake calculation never exceed the values which can be transferred by the assumed wheel/rail adhesion.

— ISO 20138-2 details the step by step calculation methodology utilizing instantaneous values of braking force provided by each operational brake system throughout the stopping or slowing time.

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