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**Road vehicles — Braking threshold pressures for heavy commercial vehicle combinations with fully pneumatic braking systems — Test with roller brake tester**

*Véhicules routiers — Seuil de pressions de freinage pour les ensembles routiers lourds à systèmes de freinage uniquement pneumatiques — Essais sur banc d'essai à rouleaux*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 20918 was prepared by Technical Committee ISO/TC 22, *Road vehicles*, Subcommittee SC 2, *Braking systems and equipment*.

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## Introduction

The braking performance compatibility between motor vehicles and trailers is governed by the compatibility bands contained in ECE Council Directive 71/320/EEC, Annex II (including ECE Commission Directive 75/524/EEC) and ECE Regulation No.13, Annex 10, and by brake force development requirements contained in ECE Regulation No.13, Annex 10. The purpose of these compatibility bands is to maintain the stability of a vehicle combination in all braking conditions, while the brake force development requirements are to provide a minimum standard regarding wear balance at low braking pressure.

The compatibility between motor vehicles and trailers relates not only to stability, but also to wear balance, or rather, to wear optimization.

Wear optimization and low adhesion utilization requires good braking balance between axles in the pressure range up to 200 kPa<sup>1)</sup>. This improvement in balance is achieved by minimizing the variation in pressure when all brakes start to develop a braking force.

This International Standard provides a best practice for determining the threshold pressure at which a brake starts to develop a braking force. It is applicable to all vehicles equipped with a conventional braking system and to trailers equipped with an electronic braking system (EBS) when used in conjunction with conventional equipped vehicles, the connector being connected in accordance with ISO 7638.

For EBS equipped motor vehicles, it is intended that the default values for the threshold pressure values of the EBS system comply with this International Standard as a minimum requirement. For EBS equipped vehicles, it is advisable that the vehicle/system manufacturer's manual be followed in order to obtain the appropriate threshold values.

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1) 100 kPa = 1 bar.

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# Road vehicles — Braking threshold pressures for heavy commercial vehicle combinations with fully pneumatic braking systems — Test with roller brake tester

## 1 Scope

This International Standard describes a method to evaluate the braking threshold of heavy commercial vehicle combinations with pneumatic braking systems, by means of a roller brake tester.

This International Standard describes procedures for workshops and garages and provides

- a recommended pressure range of the system threshold pressure for motor vehicles and trailers, and
- a recommended practice for determining the system threshold pressure.

**NOTE** Motor vehicles and trailer combinations with conventional braking systems are covered by the procedures given in this International Standard. Motor vehicles with a conventional braking system coupled to an EBS equipped trailer can also be tested using the procedure given in this International Standard, as the pneumatic control line is used.

This International Standard covers neither high-pressure compatibility, including the control of the coefficient of friction between lining/pad and drum/disc, nor dynamic influences. This International Standard is not for use at Type Approval.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 611, *Road vehicles — Braking of automotive vehicles and their trailers — Vocabulary*

ISO 21069-1, *Road vehicles — Test of braking systems on vehicles with a maximum authorized total mass of over 3,5 t using a roller brake tester — Part 1: Pneumatic braking systems*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 611 and the following apply.

### 3.1

#### rolling resistance

*A*

resistance force generated by rolling causing a braking force or torque

### 3.2

#### trailer pressure

$p_m$

pressure at the coupling head of the control line to the trailer