
**Powered industrial trucks and
tractors — Brake performance and
component strength**

*Chariots de manutention et tracteurs industriels automoteurs —
Performance de freinage et résistance des éléments de frein*



This document is a preview generated by ERS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Requirements	3
4.1 Required brake systems	3
4.2 Operating means	3
4.3 Service braking system	3
4.4 Parking braking system	3
4.5 Brake control forces	3
4.6 Brake component strength	4
4.7 Stored energy systems	5
4.7.1 Service brake recovery capacity	5
4.7.2 Warning device for loss of stored energy	5
4.8 Additional requirements	6
5 Test conditions	6
5.1 General	6
5.2 Stopping distance test	6
5.3 Drawbar drag test	7
6 Performance tests	7
6.1 General	7
6.2 Parking braking system performance	7
6.3 Service braking system performance	8
6.3.1 Stopping distance test	8
6.3.2 Drawbar drag test	8
6.3.3 Alternative test procedures	8
6.4 Test of warning device for loss of stored energy	8
6.5 Heat fade test	8
Annex A (informative) Additional requirements	11
Bibliography	12

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.

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 110, *Industrial trucks*, Subcommittee SC 2, *Safety of powered industrial trucks*.

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.

This third edition cancels and replaces the second edition (ISO 6292:2008), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the definition for drawbar drag has been added as [3.13](#);
- [Subclause 4.7](#) (previously 4.8) has been technically revised;
- for service brake systems, the heat fade test is now compulsory in all test methods.
- the scope has been extended to industrial tractors with 66 750 N drawbar pull.

Introduction

Industrial trucks, generally referred to as trucks, can satisfy the braking system requirements of this document by complying with either the stopping distance requirements or the drawbar drag requirements. Based on the requirements for brakes of rubber-tired earthmoving machinery (ISO 3450), the stopping distance as a measurement value has been established. The brake performance is limited by consideration of the load. For further reference as to how the measurement of stopping distance and measurement of brake reaction time were derived, see ISO/TR 29944.

Powered industrial trucks and tractors — Brake performance and component strength

1 Scope

This document specifies performance, test methods, controls, control forces and component strength for brake systems fitted to the following, as defined in ISO 5053-1:

- powered industrial trucks of all capacities;
- towing and pushing tractors up to and including 66 750 N drawbar pull (hereafter referred to as industrial tractors);
- burden carriers; and
- industrial trucks handling freight containers.

Loss of electrical power and loss of any other form of power assistance is not covered by this document. Braking systems used in emergency situations (e.g. activating the emergency switch or control system shut down) are not covered in this document.

This document only includes requirements for newly manufactured trucks.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

braking force

force at the contact surface between a wheel and the ground, produced by the effect of a *braking system* (3.3), which opposes the speed or the tendency to movement of the truck

[SOURCE: ISO 611:2003, 9.11.3]

3.2

braking performance

performance of a *braking system* (3.3) as measured by the braking distance in relation to the initial speed of the truck and/or by *braking force* (3.1) and the capability to hold the truck at a standstill on a gradient

3.3

braking system

combination of parts which fulfil one or more of the following functions:

- control (usually to reduce) a truck's speed;