

STN	Energetická účinnosť priemyselných vozíkov Skúšobné metódy Časť 2: Vozíky s vlastným pohonom s obsluhou, nákladné a osobné vozíky a ťahače (ISO 23308-2: 2025)	STN EN ISO 23308-2 26 8855
------------	---	--

Energy efficiency of industrial trucks - Test methods - Part 2: Operator-controlled self-propelled trucks, burden and personnel carriers and towing tractors (ISO 23308-2:2025)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 11/25

Obsahuje: EN ISO 23308-2:2025, ISO 23308-2:2025

Oznámením tejto normy sa ruší
STN EN 16796-2 (26 8855) z apríla 2017

141481

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2025
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii v znení neskorších predpisov.

EUROPEAN STANDARD

EN ISO 23308-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2025

ICS 53.060

Supersedes EN 16796-2:2016

English Version

Energy efficiency of industrial trucks - Test methods - Part 2: Operator-controlled self-propelled trucks, burden and personnel carriers and towing tractors (ISO 23308-2:2025)

Efficacité énergétique des chariots de manutention - Méthodes d'essai - Partie 2: Chariots automoteurs commandés par l'opérateur, transporteurs de charges et de personnel et tracteurs (ISO 23308-2:2025)

Energieeffizienz von Flurförderzeugen - Prüfverfahren - Teil 2: Bedienergeführte selbstangetriebene Flurförderzeuge, Schlepper und Lastentransportfahrzeuge (ISO 23308-2:2025)

This European Standard was approved by CEN on 6 June 2025.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN ISO 23308-2:2025 (E)

Contents	Page
European foreword.....	3

European foreword

This document (EN ISO 23308-2:2025) has been prepared by Technical Committee ISO/TC 110 "Industrial trucks" in collaboration with Technical Committee CEN/TC 150 "Industrial Trucks - Safety" the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2025, and conflicting national standards shall be withdrawn at the latest by December 2025.

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

This document supersedes EN 16796-2:2016.

Any feedback and questions on this document should be directed to the users' national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 23308-2:2025 has been approved by CEN as EN ISO 23308-2:2025 without any modification.



International Standard

ISO 23308-2

Energy efficiency of industrial trucks — Test methods —

Part 2: Operator-controlled self-propelled trucks, burden and personnel carriers and towing tractors

*Efficacité énergétique des chariots de manutention — Méthodes
d'essai —*

*Partie 2: Chariots automoteurs commandés par l'opérateur,
transporteurs de charges et de personnel et tracteurs*

**Second edition
2025-06**

ISO 23308-2:2025(en)



COPYRIGHT PROTECTED DOCUMENT

© ISO 2025

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
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

ISO 23308-2:2025(en)**Contents**

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Test conditions	2
5 Measurement procedure	2
5.1 General.....	2
5.2 Test layout.....	2
5.3 Operating requirements and sequence for counterbalance lift trucks and comparable truck designs.....	3
5.4 Operating requirements for other types of self-propelled trucks.....	4
5.4.1 General.....	4
5.4.2 Operating sequence for reach trucks.....	4
5.4.3 Operating sequence for straddle trucks, pallet-stacking trucks, double-stacker trucks and stacking tractors.....	5
5.4.4 Operating sequence for pallet and stillage trucks, pallet trucks end-controlled, centre-controlled order picking trucks.....	5
5.4.5 Operating sequence for towing tractors and burden carriers.....	6
6 Documentation	7
6.1 General.....	7
6.2 Test report.....	7
6.3 Declaration.....	7
Bibliography	8

ISO 23308-2:2025(en)**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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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 5, *Sustainability*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 150, *Industrial trucks - safety*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 23308-2:2020), which has been technically revised.

The main changes are as follows:

- the list of truck types in the Scope truck types has been adapted to align with ISO 5053-1;
- a new [Clause 6](#) on documentation has been added.

A list of all parts in the ISO 23308 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.

ISO 23308-2:2025(en)**Introduction**

The ISO 23308 series deals with the energy efficiency of industrial trucks including batteries and battery chargers.

ISO 23308-1 contains the procedures to determine the efficiency of trucks, traction batteries and battery chargers. The other parts of the ISO 23308 series provide specific test cycles for different truck types.

NOTE The test cycles are based on the VDI 2198 guideline.^[1] This guideline was widely accepted by industry and was used to measure the energy consumption of electric industrial trucks and internal combustion (IC) industrial trucks. The guideline has been in place since 1996 and it is widely used. This approach provides procedures for the evaluation of the energy efficiency of trucks by comparison.

ISO 23308-1:2025, Annex C includes information on calculation of the greenhouse gas equivalent.

The content of this document is of relevance for the following stakeholder groups:

- machine manufacturers (small, medium and large enterprises);
- market surveillance authorities;
- machine users (small, medium and large enterprises);
- service providers, e.g. for consulting activities.

The stakeholder groups above have been given the opportunity to take part in the drafting process of this document. The machines concerned are indicated in the scope of this document. This document provides specifications for testing. The machine instruction handbook includes information for the user, such as energy consumption.

Typical users of this document are technical experts involved in testing and/or simulation or calculation of the energy consumption of industrial trucks in the scope of this document.

Energy efficiency of industrial trucks — Test methods —

Part 2:

Operator-controlled self-propelled trucks, burden and personnel carriers and towing tractors

1 Scope

This document specifies the method of energy consumption measurement for the following types of industrial trucks as defined in ISO 5053-1:

- counterbalance lift truck;
- articulated counterbalance lift truck;
- reach truck (with retractable mast or fork arm carriage);
- straddle truck;
- pallet-stacking truck;
- pallet truck;
- platform and stillage truck;
- end-controlled pallet truck;
- order-picking truck;
- centre-controlled order-picking truck;
- towing tractor;
- pushing tractor;
- burden and personnel carrier;
- towing and stacking tractor;
- side-loading truck (one side only);
- lateral-stacking truck (both sides);
- lateral-stacking truck (three sides);
- multi-directional lift truck.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 3691-1:2011, *Industrial trucks — Safety requirements and verification — Part 1: Self-propelled industrial trucks, other than driverless trucks, variable-reach trucks and burden-carrier trucks*

ISO 23308-2:2025(en)

ISO 5053-1, *Industrial trucks — Vocabulary — Part 1: Types of industrial trucks*

ISO 23308-1:2025, *Energy efficiency of Industrial trucks — Test methods — Part 1: General*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN