AS ISO 23308.1:2025
ISO 23308-1:2025

Energy efficiency of industrial trucks — Test methods

Part 1: General



AS ISO 23308.1:2025

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Australian Forklift and Industrial Truck Association
Australian Industry Group
Australian Institute of Health & Safety
Construction and Mining Equipment Industry Group
Elevating Work Platform Association of Australia
Engineers Australia
Hire and Rental Industry Association of Australia
National Road Transport Association
SafeWork NSW Agency
Telescopic Handler Association of Australia
Victorian WorkCover Authority (WorkSafe Victoria)

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How to read this Standard

This page explains the meaning of the language and structure of this Standard.

Refer to Standards Australia's Standardisation Guide 006 for more details about drafting rules.

Australian and Australian/New Zealand Standards are voluntary unless they are referenced in legislation or called up in contracts.

Requirements

To conform to a Standard, all requirements in the Standard need to be met.

A requirement is any statement in the Standard which uses the word "shall".

Recommendations, permissions and possibilities

The following words are commonly used in Standards, but statements using them do not have to be followed to conform to the Standard:

(a) "should" means that something is recommended.

(b) "may" means that something is permitted.

(c) "can" means that something is possible.

Structure of Standards

A Standard always has the following parts:

(i) The Preface states who developed the Standard, what the Standard is aiming to do, and how it relates to other documents.

(ii) The Scope states what the Standard is about, what it covers and what it does not cover.

(iii) The Normative references clause lists other documents that are referenced in the Standard as part of requirements.

(iv) The Terms and definitions clause defines important terms to help with understanding the Standard.

A Standard may also include other parts, such as the following:

(1) A normative appendix sets additional requirements that need to be conformed to.

(2) An informative appendix provides additional information or guidance. They usually do not contain requirements. If an informative appendix does contain requirements, the Standard will explain when those requirements apply.

(3) A Bibliography lists documents referenced in the Standard but not as part of requirements.

Many Standards include notes. Notes provide recommendations and/or guidance only. They never contain requirements.

Preface

This Standard was prepared by the Standards Australia Committee ME-026, Industrial Trucks.

The objective of this document is to specify general test criteria and requirements to measure the energy consumption for self-propelled industrial trucks (hereinafter referred to as trucks) during operation. For electric trucks, the efficiency of the battery and the battery charger is included.

AS ISO 23308.2, AS 23308.3, ISO 23308-4 and ISO 23308-6 contain additional, truck-specific requirements which build on those expressed in this document.

This document is applicable to the in-use phase of the product life cycle.

It applies to the following truck types as defined in AS ISO 5053.1:

(a) Counterbalance lift truck.

(b) Articulated counterbalance lift truck.

(c) Reach truck (with retractable mast or fork arm carriage).

(d) Straddle truck.

(e) Pallet-stacking truck.

(f) Pallet truck.

(g) Platform and stillage truck.

(h) End-controlled pallet truck.

(i) Order-picking truck.

(j) Centre-controlled order-picking truck.

(k) Towing tractor.

(l) Pushing tractor.

(m) Burden and personnel carrier.

(n) Lorry-mounted truck.

(o) Towing and stacking tractor.

(p) Side-loading truck (one side only).

(q) Variable-reach container handler.

(r) Counterbalance container handler.

(s) Lateral-stacking truck (both sides).

(t) Lateral-stacking truck (three sides).

(u) Multi-directional lift truck.

(v) Variable-reach truck.

(w) Platform truck.

(x) Double-stacker.

(y) Rough-terrain truck.

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(z) Rough-terrain variable-reach truck.

(aa) Slewing rough-terrain variable-reach truck.

(bb) Stacking high-lift straddle carrier.

This document is identical to, and has been reproduced from, ISO 23308-1:2025, *Energy efficiency of industrial trucks — Test methods — Part 1: General.*

As this document has been reproduced from an international document, a comma is to be read as a full point when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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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.

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.

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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 23308-1:2020), 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;

— the normative references have been updated;

— in 6.1, a reference to the relevant part of the ISO 23308 series 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.

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Introduction

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

This document 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.

Annex C of this document 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, for example for consulting activities.

These stakeholder groups 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.

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