AS 5246.1:2021

Australian STANDARD®

STANDARDS Australia

Cranes — Classification

Part 1: General (ISO 4301-1:2016, MOD)

AS 5246.1:2021

This Australian Standard® was prepared by ME-005, Cranes. It was approved on behalf of the Council of Standards Australia on 19 January 2021.

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The following are represented on Committee ME-005:

Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Institute for Non-Destructive Testing
Better Regulation Division (Fair Trading, Safework NSW, TestSafe)
Bureau of Steel Manufacturers of Australia
Crane Industry Council of Australia
Department of Regional NSW
Elevating Work Platform Association of Australia
Engineers Australia
National Heavy Vehicle Regulator
Office of Industrial Relations, Qld
Transport for NSW
Victorian WorkCover Authority (WorkSafe Victoria)
WorkSafe Division — Department of Mines, Industry Regulation and Safety (DMIRS) WA

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Originated as part of AS CB2—1938.
Revised and redesignated as AS 1418.1—1977.
Fourth edition 2002.
Revised and redesignated in part as AS 5246.1:2021.

Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee ME-005, Cranes, to supersede in part AS 1418.1—2002, *Cranes, hoists and winches, Part 1: General requirements*.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to establish a general classification of cranes and mechanisms based on the service conditions.

This Standard is an adoption with national modifications and has been reproduced from ISO 4301-1:2016, *Cranes — Classification — Part 1: General*. The modifications are additional requirements and are set out in Appendix ZZ, which has been added at the end of the source text.

Appendix ZZ lists the variations to ISO 4301-1:2016, for the application of this Standard in Australia.

As this Standard is reproduced from an International Standard, the following applies:

(a) In the source text "this part of ISO 4301" should read "this Australian Standard".

(b) A full point substitutes for a comma 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.

Contents

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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 96, *Cranes*, Subcommittee SC 10, *Design principles and requirements*.

This third edition of ISO 4301-1 constitutes a technical revision of ISO 4301-1:1986, which is provisionally retained as it specifies another approach to the classification of cranes that will continue to be used within the industry for some time. See also Annex B.

ISO 4301 consists of the following parts, under the general title *Cranes — Classification*:

— *Part 1: General*

— *Part 2: Mobile cranes*

— *Part 3: Tower cranes*

— *Part 4: Jib cranes*

— *Part 5: Overhead travelling and portal bridge cranes*

Introduction

Cranes play a part in the handling of materials by raising and moving loads the mass of which is within their rated capacity. However, there may be wide variations in their duty. The design of the crane has to take account of the duty in terms of conditions of service, in order to reach an appropriate level of safety and useful life which is in line with the purchaser's requirements.

Classification serves as a reference framework between purchaser and manufacturer, by which a particular appliance can be matched to the intended service. It also is the system used to provide a means of establishing rational bases for the design of structures and machinery.

NOTES

Australian Standard®

Cranes — Classification

Part 1: General (ISO 4301-1:2016, MOD)

1 Scope

This part of ISO 4301 establishes a general classification of cranes and mechanisms based on the service conditions, mainly expressed by the following:

— the total number of working cycles to be carried out during the specified design life of the crane;

— the load spectrum factor which represents the relative frequencies of loads to be handled;

— the average displacements.

2 Normative references

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

ISO 4306 (all parts), *Cranes — Vocabulary*

3 Definitions

For the purposes of this document, the terms and definitions given in ISO 4306 apply.

4 Symbols

The main symbols used in this document are given in Table 1.

Table 1 — Main symbols

Symbol	Description
A	Classes for group classification
C	Total number of working cycles
D	Classes for average displacement
K_p	Load spectrum factor
K_{cp}	Load effect spectrum factor of components
P [P_1]	Individual load magnitudes (load levels) of the crane [classes]
Q_p	Classes Q of load spectrum factors K_p
Q_{cp}	Classes Q of load effect spectrum factor K_{cp} of components
T	Classes of total numbers of working cycles C

5 Use of classification

5.1 General

Classification has two applications in practice (see 5.2 and 5.3), which although related can be regarded as separate objectives.