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## **Cranes — Classification —**

### **Part 1: General**

*Appareils de levage à charge suspendue — Classification —  
Partie 1: Généralités*

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

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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 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](http://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](http://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.



# Cranes — Classification —

## Part 1: General

### 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
$P [P]$	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
U	Classes of total numbers of working cycles C