AS 5225:2021

Australian STANDARD®

STANDARDS Australia

Cranes other than mobile and floating cranes — General requirements for stability (ISO 4304:1987, MOD)

AS 5225:2021

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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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Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee ME-005, Cranes.

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 specify the conditions to be met when verifying, by calculation, the stability of all crane types defined in ISO 4306-1 that are subject to tipping, except mobile cranes and floating cranes.

This Standard does not cover the sliding of cranes on their tracks.

This Standard is an adoption with national modifications and has been reproduced from ISO 4304:1987, *Cranes other than mobile and floating cranes — General requirements for stability*. 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 4304:1987, 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 International Standard" 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 term "normative" is used in Standards to define the application of the appendices or annexes to which it applies. A "normative" appendix or annex is an integral part of a Standard.

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 4304 was prepared by Technical Committee ISO/TC 96, *Cranes, lifting appliances and related equipment.*

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Australian Standard®

Cranes other than mobile and floating cranes — General requirements for stability (ISO 4304:1987, MOD)

1 Scope and field of application

This International Standard specifies the conditions to be met when verifying, by calculation, the stability of all crane types defined in ISO 4306-1 that are subject to tipping (except mobile cranes and floating cranes) ; it assumes that they are standing on a firm, level supporting surface or track.

The sliding of cranes on their tracks is not covered by this International Standard.

2 References

ISO 4302, *Cranes — Wind load assessment.*

ISO 4306-1, *Lifting appliances — Vocabulary — Part 1: General.*

3 Stability

3.1 Calculations

3.1.1 A crane is said to be stable when the algebraic sum of the stabilizing moments is greater than the sum of the tipping moments.

3.1.2 Calculations shall be made to verify the stability of the crane by computing the sum of the tipping moments using the values given in the table.

In all calculations, the position of the crane and its components, and the effect of all loads and forces, shall be considered in their least favourable combination, direction and effect.

3.1.3 Where a crane is required to operate on an inclined surface, the manufacturer shall take the specified conditions into account in calculating stability.

3.1.4 For cranes designed to travel with load, the forces induced by the maximum allowable vertical track variation as specified by the manufacturer shall be taken into account, in addition to other loads specified in case II of the table.

3.1.5 For cranes that are to be permanently installed, earthquake effects appropriate to the particular site or zone shall be considered as an additional loading under cases I, II and III of the table.

3.1.6 In the calculations shown in the table, consideration shall be given to the loads induced by the weight of the crane and its components, including any lifting attachments which are a permanent part of the crane in its working condition.

3.2 Backwards stability in service conditions

When a crane is in an unladen state and with all operationally movable components retracted to positions closest to the backward tipping edge, backwards stability in service conditions shall be verified as indicated in either 3.2.1 or 3.2.2 (see also the table, case IV).