

AS 1418.1:2021



Cranes, hoists and winches

Part 1: General requirements



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- 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 Standards Australia/Standards New Zealand Committee ME-005, Cranes, to supersede 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 provide uniform requirements within Australia for the design and construction of cranes and similar lifting appliances.

The objective of this revision was to align the relevant sections of AS 1418.1 with the latest International Standards. This was done in conjunction with the publication of Australian adoptions of those International Standards such that the sections of this Standard refer to the internationally aligned Australian Standards. This approach was followed in preference to incorporating all the general requirements into this one part (AS 1418.1), so that when new editions of relevant ISO, IEC or EN Standards become available, they can be adopted and published within the framework of AS 1418.1 with minimum delay, so maintaining international alignment.

Wherever possible Committee ME-005 has published a direct text adoption of the relevant International Standard. This also accords with Australia's growing reliance on and participation in the global manufacturing environment and various international trade agreements. A direct text adoption is either an identical (IDT) or modified (MOD) adoption of an International Standard or EN Standard to become an Australian Standard.

Direct text adoption of International Standards introduces some duplication from Part to Part of the AS 1418 series, and involves extensive referencing to ISO, IEC and EN Standards. In some cases terminology might not be commonly used in Australia. Where necessary, Committee ME-005 has included qualifying or explanatory comment to the International Standard. Such comment does not alter or diminish the technical intent of the International Standard, but simply provides additional clarification within the Australian context. Such changes to the International Standards are added as informative appendices. In some instances requirements are modified to suit Australian conditions in normative appendices.

This Standard is one of a series of AS 1418 Standards as follows:

AS 1418.1 *Cranes hoists and winches, Part 1: General requirements* (this Standard)

This Standard outlines specific principles dealing with the design, manufacture, testing and commissioning of cranes in general including the provision of instructions for safe use and maintenance.

AS 1418.2, *Cranes (including hoists and winches), Part 2: Serial hoists and winches*

This Standard outlines specific principles for serial hoists and winches.

AS 1418.3, *Cranes, hoists and winches, Part 3: Bridge, gantry, portal (including container cranes) and jib cranes*

This Standard outlines specific principles for bridge, gantry, semi-gantry and portal cranes.

AS 1418.4, *Cranes, hoists and winches, Part 4: Tower cranes*

This Standard outlines specific principles for tower cranes that are either permanently erected or designed to be dismantled when they have served their purpose.

AS 1418.5, *Cranes, hoists and winches, Part 5: Mobile cranes (EN 13000:2010, MOD)*

This Standard outlines specific principles for the design, construction, installation of safety devices, testing and information for use and maintenance of mobile cranes. It is a modified adoption of EN 13000:2010.

AS 1418.6, Cranes, hoists and winches, Part 6: Guided storing and retrieving appliances

This Standard outlines specific principles for guided storing and retrieving appliances of the storage and retrieval machine and universal stacker cranes, or appliances intended to carry out similar functions, and for the interface between the elements of the total system, e.g. racking and the appliances. It does not apply to narrow aisle storage and retrieval machines of the top support bottom guided type, storage and retrieval trucks and industrial trucks complying with AS 2359, and gravity flow systems.

AS 1418.7, Cranes (including hoists and winches), Part 7: Builders hoists and associated equipment

This Standard outlines specific principles for temporary hoists for use in the building industry that are not covered by other parts of AS 1418.

It does not apply to mining hoists, rope-guided hoists or conveyors.

AS 1418.8, Cranes, hoists and winches, Part 8: Special purpose appliances

This Standard outlines specific principles for appliances used for the hoisting of materials or materials and personnel involved in lifting the materials that are not covered by other parts of AS 1418.

AS/NZS 1418.9, Cranes (including hoists and winches), Part 9: Vehicle hoist

This Standard outlines specific principles for vehicle hoists. It applies to wheel-supporting, axle-supporting and frame-supporting vehicle hoists and their accessories.

The Standard does not apply to vehicle jacks (refer to AS/NZS 2693), trolley jacks (refer to AS/NZS 2615), car stackers and vehicle roll-over equipment.

AS/NZS 1418.10, Cranes, hoists and winches, Part 10: Mobile elevating work platforms

This Standard outlines specific principles for mobile elevating work platforms (MEWPs), including insulated aerial devices and those designed for use in orchards. It does not apply to passenger and goods lifts, builders' hoists, fixed elevating work platforms, mast climbing platforms or aerial fire appliances.

AS 1418.11, Cranes, hoists and winches, Part 11: Vehicle-loading cranes (EN 12999:2011, MOD)

This Standard outlines specific principles for the design, examinations and tests of hydraulically powered loader cranes and their mountings on vehicle or static foundations. It does not apply to loader cranes used on ships or floating structures or to cranes which are designed as total integral parts of special equipment. It is a modified adoption of EN 12999:2011.

AS 1418.12, Cranes (including hoists and winches), Part 12: Crane collector systems

This Standard outlines specific principles for crane collector systems incorporating a sliding or rolling contact device, referred to herein as "CCS", intended for use on —

- (a) alternating current systems, the rated voltage of which is greater than 32 V and does not exceed 1 000 V, at frequencies from 25 Hz to 60 Hz; and
- (b) direct current systems, the rated voltage of which is greater than 115 V and does not exceed 1 500 V.

The Standard does not cover direct-connected systems such as slip rings, cable reelers or flexible cable systems.

AS 1418.13, Cranes (including hoists and winches)—Building maintenance units, Part 13: Building maintenance units

This Standard outlines specific principles for building maintenance units and their supporting structures, permanently provided for use and which incorporate power-operated suspension equipment. It does not include requirements for suspended scaffolding.

AS 1418.14, Cranes (including hoists and winches), Part 14: Requirements for cranes subject to arduous working conditions

Withdrawn standard

AS 1418.15, *Cranes (including hoists and winches), Part 15: Concrete placing equipment*

Withdrawn standard

AS 1418.16, *Cranes (including hoists and winches), Part 16: Mast climbing work platforms*

This Standard outlines principles for the design requirements for mast climbing work platforms.

AS 1418.17, *Cranes (including hoists and winches), Part 17: Design and construction of workboxes*

This Standard outlines principles relating to the design and construction of work boxes generally having one working deck level, to accommodate a maximum of three persons.

AS 1418.18, *Cranes, hoists and winches, Part 18: Crane runways and monorails*

This Standard outlines principles for crane runway girders and monorails constructed of structural steel.

[Sections 2](#) to [14](#) of this Standard make reference to new Australian Standards, which have been developed to provide individual technical documents to support this Standard. These new documents are direct text adoptions of ISO, IEC and EN Standards. While AS 1418 series standards are mandatory, use of referenced standards, such as the AS 52XX series, may depend on the application. For example, another AS 1418 series standard may make normative reference to a different standard to this Standard for a requirement. The referenced document to be used depends on the particular application.

AS 1418 Parts 2 to 18 apply to particular types of cranes, and they show how the principles set out in Part 1 (and any relevant standard referenced in [Sections 2](#) to [14](#)) may be applied to a particular crane type.

In accordance with Australian legislation, these Standards, in setting out a reasonably practicable framework of minimum requirements, do not prevent a designer or user from implementing another strategy, provided that it affords an equal or better level of safety.

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

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Introduction

This Standard is an authoritative source of fundamental principles for application by responsible and competent persons and organizations. It has no legal authority in its own right but it may acquire legal standing in one or more of the following ways:

- (a) Adoption by a regulatory authority.
- (b) Reference to compliance with the Standard as a contractual requirement.
- (c) Claim, by a manufacturer or manufacturer's agent (or both), of compliance with the Standard.

This Standard has been prepared in the knowledge that it will be used by a number of different categories of users, with different requirements.

The users of this Standard and their requirements are as follows:

- (i) Crane and hoist manufacturers, importers and agents — Used in the design, manufacture, testing and acceptance inspection of cranes and hoists for both general and particular applications.
- (ii) Crane and hoist owners — For specification and selection of cranes and hoists. In this situation, applications can be more specific.
- (iii) Crane and hoist users and operators — Where statements of responsibilities in the safe use of equipment are required.

NOTE The AS 2550 series, *Cranes, hoists and winches — Safe use*, provides requirements relating to safe use, inspection and maintenance of cranes.

- (iv) Regulatory and legal authorities — Require Standards as a framework on which regulations, directives and other legislation can be based. The legal aspects of Standards need to be understood as they may be utilized as measures of legal responsibility. However, conformance to a Standard does not guarantee compliance with present Work (Occupational) Health and Safety Law. Users of this Standard need to refer to the relevant legislation to determine their legal obligations.

A general requirement for safety is that, upon the occurrence of a high risk condition, a safety device or system (or both) halts the condition or reverts the crane to a non-dangerous condition. Depending on the risk assessment of the application, it may be necessary to exceed the minimum safety requirements.

[Appendix A](#) illustrates the suite of AS 1418 series standards, which is based on the structure of International Standards. This consists of three levels of Standards which users will find set out in a number of the Standards embedded in the series. Although the international A, B and C level standards have no relevance in Australia, this structure and interrelationship provided a template for the development of the Australian and joint Australian/New Zealand Standards.

NOTES

Australian Standard®

Cranes, hoists and winches

Part 1: General requirements

1 Scope and general

1.1 Scope

This Standard specifies the general requirements for cranes, hoists, winches, and their components, and appliances intended to carry out similar functions, as defined in AS 2549 and ISO 4306 (series). It does not include powered industrial trucks as defined in AS 2359.

The term “crane” used herein applies to a crane, hoist or winch as applicable.

NOTE 1 Specific requirements for particular types of cranes and associated equipment are specified in other parts of AS 1418; these requirements take precedence over corresponding requirements in this Standard where any difference exists. [Appendix A](#) outlines the structure of the AS 1418 series of Standards.

NOTE 2 Requirements for the selection, operation and maintenance of cranes are given in the applicable part of AS 2550.

1.2 Application

1.2.1 General

Unless otherwise specified in the applicable part of AS 1418, the principles and methods specified in this Standard shall apply.

1.2.2 Contact surface temperature

Surfaces with temperatures exceeding 55 °C, which may cause pain by contact with human skin, shall be protected over all areas that can be touched during normal operation, daily maintenance and assembly/erection, such that the touchable surfaces are below 55 °C.

Except where surface temperatures can be increased by solar radiation, surfaces on which the temperature exceeds 55 °C shall be located more than 300 mm from hand-related access points.

1.3 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:

NOTE Documents for informative purposes are listed in the Bibliography. Documents for further information are also provided.

AS/NZS 1554 (series), *Structural steel welding*

AS 2549, *Cranes (including hoists and winches)—Glossary of terms*

AS 2550.1, *Cranes, hoists and winches—Safe use, Part 1: General requirements*

AS 2671, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413:2010, MOD)*

AS 2788, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414:2010, MOD)*