

Greetings all. In today's bulletin we are going to talk about how to read/use Australian Standards.

In the previous bulletin (Bulletin 302) we talked about AS1418 and AS2550 Standards. Today we are going to share some standard drafting rules to help you read, understand and use the contents correctly from these standards.

Modified adoption of International Standards

We mentioned that AS1418.1 was recently updated, and a number of international standards were adopted or referenced to in the new version. The updated Australian standard was created with direct text adoptions of the original international standard. 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.

We will use an example to explain how MOD works. AS5221.1 Cranes – Design Principles for loads and load combinations Part 1: General (ISO 8686-1:2012, MOD) is a standard for establishing general methods for calculating loads, and principles to be used in the selection of load combinations for proof of competence for the structural and mechanical components of cranes. This standard is an adoption with national modifications and has been reproduced from ISO 8686-1:2012. The modifications and additional requirements are set out in **Appendix ZZ**, which was added at the end of the source text. Appendix ZZ lists the variations to ISO 8686-1:2012 for the application of this standard in Australia.

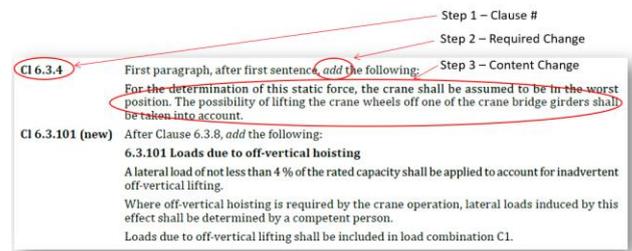
Clause 6.3.4 from ISO 8686-1 is quoted below:

6.3.4 Tilting forces

If a crane with horizontally restrained load can tilt when it, its load or its lifting attachment collides with an obstacle, the resulting static forces shall be determined.

If a titled crane can fall back into its normal position in an uncontrolled manner, the resulting impact on the supporting structure shall be taken into account.

When ISO 8686-1 was adopted into AS 5221.1, the committee decided to add more specifications into this clause, this change is listed in Appendix ZZ Cl 6.3.4 as below:



Cl 6.3.4 First paragraph, after first sentence, add the following:

“For the determination of this static force, the crane shall be assumed to be in the worst position. The possibility of lifting the crane wheels off one of the crane bridge girders shall be taken into account.”

When reading AS5221.1, clause 6.3.4 should read as below:

6.3.4 Tilting forces

*If a crane with horizontally restrained load can tilt when it, its load or its lifting attachment collides with an obstacle, the resulting static forces shall be determined. **For the determination of this static force, the crane shall be assumed to be in the worst position. The possibility of lifting the crane wheels off one of the crane bridge girders shall be taken into account.***

If a titled crane can fall back into its normal position in an uncontrolled manner, the resulting impact on the supporting structure shall be taken into account.

All MOD standards (this is usually noted in the title of the standard) should be read with source text plus Appendix ZZ. Appendix ZZ in these standards provide essential information in regard to the specific Australian requirements.

Shall vs Should

Shall and should are two words that used a lot in the standards. The difference between these two words is:

- Shall indicates that a statement is mandatory for compliance with the objectives and intent of the standard.
- Should indicates a recommendation (Note: Neither following nor ignoring the recommendation results in non-compliance with the standard).

For example, in AS2550.1 Clause 7.3.4 Periodic third-party inspections, it specifies that “Each crane **shall** undergo a periodic third-party inspection to provide



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independent advice on whether the level of maintenance and repairs are in accordance with this Standard.” This means to comply with AS2550.1, a periodical inspection has to be carried out.

While in clause 9.3.2 Schedule, it says “Assessments of DWP **should** be carried out in conjunction with the periodic third-party inspections.” This is a recommendation, there maybe other ways to assess the design working period (DWP) that can be used.

Informative vs Normative

The terms **normative** and **informative** have been used in the Standards to define the application of the appendix to which they apply. A **normative** appendix is an integral part of a Standard, whereas an **informative** appendix is only for information and guidance.

AS2550.1, Appendix G (see picture below, the screenshot is only part of the appendix) is a normative appendix, complying with the requirements in this appendix is required as part of the compliance to the AS2550.1 Standard.

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APPENDIX G
 CHECKLIST TO DETERMINE SUITABILITY OF MANUFACTURER'S INSTRUCTIONS
 (Normative)

G1 SCOPE

This Appendix sets out a checklist to be used to assess the adequacy of the instructions available for the crane.

NOTE: The scope of the necessary instructions is described in Clause 1.5.

G2 APPLICATION

The checklist shall be applied to each model type. Where an item can be confirmed as adequate, the reference section in the Table shall be completed noting the reference Clause or Section(s) contained in the instructions. Where the item cannot be confirmed as adequate, the matter shall be referred to the manufacturer or competent person for assessment and preparation of supplementary instruction.

Where some items contained in the checklists cannot be adequately addressed, the crane shall be subject to the appropriate series of inspections and maintenance specified in Clause 7.4.

Table below in AS3775.2 (2014) Appendix C gives guide information on chain sling periodical inspection intervals. This Appendix is an Informative appendix, this table is the suggested guide for inspection schedule. As suggested by the Note, “inspection schedule has to be determined by the end user based on the duty cycle (of M3 as specified in AS 1418.1) and the environmental conditions of use.”

APPENDIX C
 PERIODIC INSPECTION GUIDE FOR ALLOY CHAIN SLINGS—T(80) OR V(100)
 (Informative)

Number of lift cycles per week	Inspection monthly	Inspection 3 monthly	Inspection 6 monthly	Inspection 12 monthly
1 to 5	—	—	—	Yes
6 to 25	—	—	Yes	—
26 to 200	—	Yes	—	—
201 plus	Yes	—	—	—

NOTE: The above is a guide and the inspection schedule has to be determined by the end user based on the duty cycle (of M3 as specified in AS 1418.1) and the environmental conditions of use.

CICA Standard subscription

CICA members have access to crane related standards as part of their membership benefits, below is a list of standards that can be downloaded from the SAI Global website through CICA membership.

- AS 1418 Crane, Hoist and Winches Design (part suite only)
- AS 2550 Crane, Hoist and Winches Safe Use (part suite only)
- AS 5221.1 Cranes - Design principles for loads and load combinations - General (ISO 8686-1:2012, MOD)
- AS 5233.1 Cranes - Graphic symbols – General
- AS 5236.1 Cranes - Limiting and indicating devices - General (ISO 10245-1:2008, MOD)
- AS 5246 Cranes - Classification - General (ISO 4301-1:2016, MOD)
- AS 1353.2-1998 Flat Synthetic-webbing Slings
- AS 1666.2-2009 Wire Rope Slings
- AS 2740-2001 Wedge Type Sockets
- AS 2759-2004 Steel Wire Rope
- AS 3850-2013 Tilt Up Concrete Construction
- AS 4497.2-1997 Flat Synthetic-round Slings
- AS 4991-2004 Lifting Devices
- AS 2741-2001 Shackles
- AS 3775.2-2014 Chain Slings for Lifting Purposes—Grade T(80) and V(100) Care and Use

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