

SS 536:2023
(ICS 53.020.20)

SINGAPORE STANDARD

**Code of practice for the safe use of mobile
cranes**



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Contents

	Page
Foreword _____	4
1 Scope _____	6
2 Normative references _____	6
3 Terms and definitions _____	6
4 Structural _____	11
5 Mechanical _____	13
6 Electrical equipment _____	21
7 Hydraulic equipment _____	21
8 Pneumatic equipment _____	23
9 Load capacity, strength and stability _____	24
10 Safety in mobile crane operation _____	30
11 Stability of mobile cranes on-site _____	39
12 Inspection _____	45
13 Maintenance and repair _____	53
14 Crane logs _____	55
15 Event recorder system _____	56

Annexes

A Types of mobile cranes _____	57
B Tipping line of mobile cranes _____	58
C Commissioning and acceptance testing of mobile cranes _____	62
D Standard crane hand signals _____	69
E Example of certificate of test/thorough visual examination of lifting equipment _____	70
F Factor of safety for foundation areas _____	71
G Example of a standard daily checklist _____	73
H Discard criteria for wire ropes _____	75
I Example of a standard checklist for inspection and testing of mobile cranes _____	80

Tables

1 Machine configuration stability calculation for applied load (Stability criteria I) _____	26
2 Machine configuration stability calculation with wind load and dynamic effects (Stability criteria II) _____	26
C.1 Test configurations for telescopic jib arrangements _____	63
C.2 Test configurations for strut jib arrangements _____	64
C.3 Test configurations for mast/tower and jib arrangements _____	64

Figures

1	Basic terminology and functions of typical mobile cranes_____	12
2	Crawler-mounted cranes_____	28
3	Wheel-mounted cranes_____	29
4	Safe distance from a slope with depth_____	43
5	Safe distance from a retaining wall with height of soil retained_____	44
6	Safe distance from a nearby building with basement with height of soil retained_____	44
B.1	Crane on wheels with suspension locked and without suspension locked, single tyre ___	58
B.2	Crane on wheels with suspension locked and without suspension locked, twin tyres___	59
B.3	Crane on wheels with the suspension unlocked_____	59
B.4	Cranes on riggers_____	60
B.5	Cranes on crawlers_____	61
F.1	Outrigger foundation areas on granular soils_____	71
F.2	Outrigger foundation areas on cohesive soils_____	71
H.1	Severe crushing on wire rope_____	76
H.2	Severe flattening of wire rope_____	77
H.3	Bird cage_____	77
H.4	Example of kinked wire ropes_____	78
H.5	Severe bulges_____	78
H.6	Core protrusion_____	78
H.7	Excessive clearance between strands_____	79
	 Bibliography_____	 84

Foreword

This Singapore Standard was prepared by the Working Group on Mobile Cranes set up by the Technical Committee on Safety and Health Involving Equipment under the purview of the Safety and Quality Standards Committee.

In this revision, the objectives are to review and update the standard with the industry's best practices as well as to take into consideration the latest technologies to enhance the safe operations of mobile cranes. The requirements of the structural, mechanical and electrical designs in this standard are applicable to the mobile cranes manufactured after 2010. The requirements and inspections of event recorders for the purpose of accident investigation and/or reconstruction are also included.

It is presupposed that in the course of their work, users will comply with all relevant regulatory and statutory requirements. Some examples of relevant regulations and acts are listed in the Bibliography. The Singapore Standards Council and Enterprise Singapore shall not be responsible for identifying all of such legal obligations.

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a) Construction Industry Research and Information Association (CIRIA)

- 1.5.2 Ground investigation
- 1.5.3 Ground bearing capacity
- 1.5.4 Settlement (The fundamentals – ground conditions)
- 2.4.1 Bearing capacity
- 2.4.2 Settlement (Mobile and crawler cranes – ground conditions)
- 2.4.3 Underground hazards
- 2.5.2 Outrigger foundation area
- 2.5.3 Outrigger foundations
- 2.6.1 Final siting checks

CIRIA publication, John Laing Construction Ltd and Sir William Halcrow & Partners Ltd, R (2003), Crane stability on site an introductory guide, CIRIA, C703, London (ISBN: 978-0-86017-703-6). Go to: www.ciria.org.

b) European Committee for Standardization (CEN)

- Clause 4.2.8.1.2 of EN 13000:2010+A1:2014, Cranes – Mobile cranes.

c) International Organization for Standardization (ISO)

- Table 1, Table 2 and Annex A of ISO 4305:2014 (2019), Mobile cranes – Determination of stability.
- Clause 5.2 of ISO 8686-2:2018, Cranes Design principles for loads and load combinations – Part 2: Mobile cranes.
- Clause 5.2, 8.2 and 10.3 of ISO 12480-1:1997, Cranes – Safe use – Part 1: General.
- 3rd and 4th paragraph of Annex B.4 from ISO 16625:2013, Cranes and hoists – Selection of wire ropes, drums and sheaves.

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Acknowledgement is made for the use of information from the above publications.

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- 1. Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as "mature standards". Mature standards will not be subject to further review unless there are requests to review such standards.*
- 2. An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore and the Singapore Standards Council shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR. Although care has been taken to draft this standard, users are also advised to ensure that they apply the information after due diligence.*
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Code of practice for the safe use of mobile cranes

1 Scope

This standard provides guidelines and requirements for the construction, application, operation, maintenance and testing of mobile cranes for their safe use.

The types of land-based mobile cranes covered by this standard include crawler-mounted cranes, wheel-mounted cranes and truck-mounted cranes, but exclude lorry loaders and excavators certified as lifting machines by authorised examiners.

Mobile crane with non-hydraulic boom types (i.e. rope-suspended boom) and hydraulic boom types are covered in this standard (see Annex A).

This standard does not include equipment used for specialised operations or operations that are not basically considered as lifting, for example:

- a) demolition with the use of a demolition ball;
- b) piling; and
- c) grabbing.

2 Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS EN 60204-32	Safety of machinery. Electrical equipment of machines Requirements for hoisting machines
ISO 3046-1	Reciprocating internal combustion engines – Performance – Part 1: Declarations of power, fuel and lubricating oil consumptions, and test methods — Additional requirements for engines for general use
ISO 4302	Cranes – Wind load assessment
ISO 4306-1:2007	Cranes – Vocabulary – Part 1: General
ISO 4310	Cranes – Test code and procedures
ISO 16625:2013	Cranes and hoists — Selection of wire ropes, drums and sheaves
SS 617	Code of practice for the lifting of persons in work platforms suspended from cranes