



ICSA N003

International Crane Stakeholder Assembly

- Guidance -

“Lifting of Persons with Mobile Cranes”

Members are:

- Association of Equipment Manufacturers [AEM]
- The Crane Industry Council of Australia [CICA]
- The European Association of abnormal road transport and mobile cranes [ESTA]
- European Materials Handling Federation [FEM]
- Specialized Carriers & Rigging Association [SC&RA]

Legal Note: This publication is only for guidance and gives an overview regarding in the assessment of risks related to lifting persons with cranes. It neither claims to cover any aspect of the matter, nor does it reflect all legal aspects in detail. It is not meant to, and cannot, replace own knowledge of the pertaining directives, laws and regulations. Furthermore the specific characteristics of the individual products and the various possible applications have to be taken into account. This is why, apart from the assessments and procedures addressed in this guide, many other scenarios may apply.

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1. INTRODUCTION

Mobile cranes are generally designed for the use of lifting loads and are not normally designed for the purpose of lifting persons. If a piece of equipment designed for personnel handling is available to complete the task it should be used. However, mobile cranes may be used to hoist persons in suspended platforms for working at height when it is the least hazardous way to complete the job.

2. SCOPE

This document provides guidance for the risk assessment of using a mobile crane to hoist persons in a suspended platform. This does not pertain to a platform fixed to a boom tip (not suspended). The document is considered as complementary information to the machine operator's manual. It applies to mobile cranes as defined in ISO 4306.

3. DEFINITION

The term "platform" used throughout this document is intended to describe a suspended personnel-carrying device that has been designed for the purpose of personnel working at height from the platform. Other common terms for a platform are work box, man box, personnel box, personnel handling basket, man basket, dog box, and suspended basket. Examples of platforms are shown (*Section 5.2.1*).

A rescue box is different from a platform and should not to be used as a platform. It should only be used for dedicated rescue operations.



4. STANDARDS AND LEGAL FRAMEWORK

There are various standards and regulations from different countries that address the complexity of using cranes for lifting persons and provide amongst others manufacturers and users with information and/or requirements for such operations:

- a) 2006/42/EC Machinery Directive
- b) United States OSHA Regulation 29CFR1926.1431
- c) ISO 12480-1: Cranes – Safe Use – Part 1: General
- d) European Standard EN 14502-1: Cranes – Equipment for lifting persons.
- e) ASME B30.23-2011 Personnel Lifting Systems
- f) Australian Standard 1418.1-2002 General Requirements
- g) Australian Standard 1418.17-1996 Design and construction of workboxes
- h) Australian Standard 2550.1-2011 Safe Use General Requirements
- i) FEM CLE MC N 0284, 16 May 2011

Further applicable national operational regulation may exist and shall be observed.

5. GUIDELINE

When determining the suitability of using a mobile crane to hoist persons the following risk assessment should be performed:

- Identification of the hazards that could be encountered;
- The likelihood of the hazard identified might be encountered;
- The degree of harm that would result if the hazard is encountered;
- The ability to detect and avoid the hazard;
- The availability and suitability of ways to eliminate the hazard or reduce the risk;

When a crane is to be used to hoist persons in a platform the guidelines for the operation of the crane outlined in this document should be followed. Annex 1, at the end of this document, is a checklist that should be used to assist all parties involved in review of the sub clauses of Section 5 prior to hoisting persons in a platform.

5.1. Planning Before Work Commences:

The use of cranes for hoisting persons requires preparation to ensure safe operation when the lift occurs. This preparation includes the:

- 5.1.1 Agreed method of communication between personnel in the platform and the crane operator, including backup system where applicable.
- 5.1.2 Location of crane on site to prevent or minimize the need for traveling (travel on rubber or tracks is prohibited with personnel in a platform) and allowance for operation within the crane's rated capacity.
- 5.1.3 Assessment of ground conditions should be verified or performed.
- 5.1.4 Agreed weather conditions for use of the crane and platform. Platforms should not be used in electrical storms, snow, ice, sleet or other adverse weather conditions that could affect safety. Platforms shall not be used if wind speed exceeds national regulations (AUS: 7 m/s, EU: 13.8 m/s, USA: 20 mph) or manufacturer's allowable crane wind speed capacities, if less than national regulations.

5.2. Lifting Gear:

Appropriately designed and rated lifting gear, including the platform, is critical to the safe operation of a crane while hoisting persons. Consideration includes:

- 5.2.1 The platform used meets any regulatory requirements for design and inspection for the region where used. If regional design requirements do not exist, refer to relevant standards of section 4.
- 5.2.2 Appropriate anchor points are provided for connecting the platform to the crane and securing personnel to the platform.
- 5.2.3 Shackles and Slings, i.e. chain or wire slings, have been inspected prior to use and found to be fit for purpose.
- 5.2.4 The platform shall not be used for bulk material transportation.

5.3. Personnel:

It is critical that personnel involved in the hoisting of persons in a platform meet a minimum set of guidelines. This applies to the crane operator and those in the platform. The following are recommended:

- 5.3.1 The crane operator shall be appropriately trained, as well as certified or licensed, where required, and familiar with the crane to be operated.
- 5.3.2 Personnel in the platform shall be trained to effectively communicate with the crane operator to provide direction for the movement of the platform. Where applicable, a backup communication method should be determined before the lift commences.

NOTE: If the platform is not continuously visible to the crane operator additional communication methods or personnel should be considered.

- 5.3.3 The crane operator and personnel in the platform shall communicate in the same language.
- 5.3.4 Workers shall wear appropriate personal protective equipment (PPE) for the task.

NOTE: Personal fall arrest system should not be used to secure personnel to the platform when operating over water. Life vests should be worn.

- 5.3.5 The crane operator shall remain at the crane controls while the platform is suspended.
- 5.3.6 Additional safety considerations may be required based on the task or environment where a platform is used, e.g. use in confined space or use of flammable liquids.
- 5.3.7 All national and regional requirements shall be met.

5.4. Crane:

Mobile cranes used for hoisting persons in platforms should be well maintained and assessed to be in good working order. In addition to general maintenance requirements specific operational requirements shall be fulfilled. These include:

- 5.4.1 Crane hooks shall be fitted with a positive locking safety latch (catch)
- 5.4.2 Return to neutral controls shall be fitted
- 5.4.3 Power lowering capability (any freefall features shall be made inoperable.)
- 5.4.4 Anti-two-blocking (vertical hoist limit) and all other limiters shall be functioning,
- 5.4.5 The crane shall have a minimum capacity at the working radius of 1000kg (2200lbs), regardless of the mass of the platform and contents.
- 5.4.6 The crane capacity in all areas of the platform travel path shall exceed 200% of the overall mass of the platform and contents, e.g. a 700kg overall mass requires at least a 1400kg crane capacity (1500lbs overall mass required at least a 3000lbs crane capacity).

NOTE: The mass of the hook block and any other lifting attachment shall be considered as part of the load.

- 5.4.7 The load in the hoist rope shall not exceed 50% of the hoist rated line pull. Minimum overall weight required for proper spooling during hoisting should be considered.
- 5.4.8 Additional loads (except a hook block) shall not be lifted by the crane when a platform is suspended.

5.5. Operations:

Where a test lift can be performed without the guidance of personnel in the platform, a test lift shall be performed before personnel are hoisted and suspended in a platform. The test lift conditions include:

- 5.5.1 Platform and rigging proof test of 125% of the platform rated capacity should be performed before first use of platform on site. Load should be evenly distributed in workbox and suspended for 5 minutes. Visual inspection should be performed on platform and rigging after each proof test.

NOTE: Where local regulations do not allow for greater than 100% rated capacity load testing, local regulations shall be followed for the test weight.

- 5.5.2 Unoccupied test weight of 100% of the anticipated platform capacity including personnel, materials, and tools to simulate the travel path of the platform. The trial lift shall occur before lifting personnel if the crane has been relocated, configuration change, or operator change.

Workers should not enter or exit the platform except when the platform is firmly supported and secured from movement.

ANNEX 1 Pre-Operational Checklist (INFORMATIVE)

All Parties involved should discuss and agree on the operational procedures before work commences.

5.1 Planning Before Work Commences	Pass	Comments
Communication method determined	Y / N	Method: Backup(where applicable):
Crane will remain stationary	Y / N	
Crane rated capacity will not be exceeded (with appropriate reductions accounted for)	Y / N	
Maximum permitted wind speed during platform operation determined	Y / N	Wind Speed:
Overhead obstructions have been considered	Y / N	
Ground conditions have been verified	Y / N	

“rescue plan determined” as additional item

5.2 Lifting Gear	Pass	Comments
Platform designed to accepted standard	Y / N	e.g. AS1418.17
Platform condition found to be fit for purpose	Y / N	
Anchor points are fit for purpose	Y / N	
Shackles have been inspected and found to be fit for purpose	Y / N	
Slings have been inspected and found to be fit for purpose	Y / N	

5.3 Personnel	Pass	Comments
Crane operator appropriately trained for crane	Y / N	
Crane operator certified or licensed for crane, where applicable	Y / N	License:
Crane operator familiar with crane	Y / N	
Communication method determined	Y / N	Language:
Crane operator to remain in crane during operation	Y / N	
Appropriate PPE	Y / N	
Platform personnel appropriately trained	Y / N	

5.4 Crane		Pass	Comments
Maintenance and Service Completed		Y / N	
Crane hooks shall be fitted with a positively locking safety latch (catch)		Y / N	
Anti-two-blocking (vertical hoist limit) and all other travel limits shall be functioning		Y / N	
The crane shall have a minimum capacity of 1000kg (2200lbs)		Y / N	
The crane capacity in all areas of the platform travel path shall exceed 200% of the overall mass of the platform and contents.		Y / N	
The load on the crane hoist rope shall not exceed 50% of the hoist rope capacity		Y / N	
The crane shall be equipped with power lowering		Y / N	
Return to neutral controls shall be fitted in the crane		Y / N	
No other loads shall be lifted by the crane when a platform is suspended		Y / N	

5.5 Operations				Pass	Comments
Proof Test Load:		Time:		Y / N	
Trial Lift Load:		Radius:		Y / N	

Sign-off			
Name	Signature	Role (examples shown)	Date
		Crane Operator	
		Rigger	
		Site Safety Officer	
		Lift Supervisor/Director	
		Occupant(s)	

6. REFERENCES

This document has been reviewed and jointly adopted by the following member associations of the ICSA:

- **Association of Equipment Manufacturers [AEM]**
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