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## Using workboxes to lift personnel - Braking and operational requirements for cranes

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### Purpose

This Alert informs owners, operators, manufacturers, and hirers of the requirements for a dual braking system where the crane is required to suspend a workbox for the purposes of hoisting personnel.

### Background

WorkSafe Victoria has investigated several incidents where crane components have failed. If the cranes had been suspending personnel in workboxes at the time of these failures, the incidents could have resulted in the serious injury or death of the personnel.

### Minimum standards for cranes to suspend workboxes

Only cranes that comply with the requirements of Australian Standard AS 2550.1 – 2002 *Cranes, hoists and winches – Safe use, Part 1: General requirements*, clause 6.18 *'Suspension of persons by crane'* should be used to lift personnel in a workbox.

The design of crane should be such that it has either:

- (i) two brakes, one of which acts directly on the hoist drum, or
- (ii) a brake acting directly on the hoist drum and a hoisting mechanism capable of holding the load when not under power.

### Crane brake design

Clause 7.12.8.5 *'Special lifting applications'* of Australian Standard AS 1418.1 – 2002 *Cranes, hoist and winches, Part 1: General requirements*, stipulates that for special lifting applications where the loss of one component of the hoist drive train will result in loss of control of the workbox, an additional brake must be fitted to the hoist drum that complies with clause 7.12.8.3 *'Multiple brake hoists'*. WorkSafe advises that:

- Where a crane has not been specifically designed for lifting personnel, such as mobile and tower cranes, the lifting of personnel in a workbox is considered to be a special lifting application.
- Where there is either a coupling, spline, clutch, gearing or other non-rigid connection between a brake and the hoist drum, this brake is not considered to be *'fitted to the hoist drum'* and an additional brake, fitted to the hoist drum through a rigid mechanical connection must be installed.
- Where the crane incorporates a single brake fitted to the hoist drum and relies on the braking system of the drive train to act as a secondary brake, the pre-testing requirements identified in the maintenance and monitoring requirements below shall be complied with.
- To fully comply with the requirements of clause 7.12.8.5, the further requirements of automatic overspeed control; emergency stop function and utilization coefficient must be complied with.

## Condition of the crane

All cranes that are to be used to lift personnel should have full service records. A crane greater than 10 years old that has not undergone a ten year inspection in accordance with the requirements of Australian Standard AS 2550.1 should not be used to lift personnel in a workbox.

A crane that has suffered damage or been overloaded and has not then been subjected to a 10 year major inspection should not be used to lift personnel.

## Maintenance and monitoring requirements

Where a crane utilizes a single brake, acting directly on the drum, confirmation of the braking efficiency of the hoisting drive train shall be confirmed.

Confirmation of the braking efficiency shall as a minimum incorporate the following requirements.

Before commencing the lift of personnel, the crane shall hoist and hold a load:

- (i) equivalent to the line pull of the hoist winch, or
- (ii) at least 200% of the maximum hoisted load as defined in clause 1.4.3 of AS 1418.17.

With the load stationary all power and hydraulic / pneumatic power shall be released and the brake 'backed-off' to the extent it no longer applies a restraining force.

The load shall then be monitored for movement or creep. The drive train shall be considered to be a satisfactory braking system if no movement or creep is detected over a 5 minute testing period.

Note:

1. Where the crane is used to lift loads other than the workbox, the above test shall be repeated prior to re lifting the workbox.
2. During operation of the crane with a workbox, the line pull of the hoist winch shall not exceed that used in the above test.

## Further information

WorkSafe Victoria's Guidance Note *Maintaining plant in safe working order* provides additional information.

Copies of this and other publications can be accessed and downloaded from WorkSafe's website at [www.worksafe.vic.gov.au](http://www.worksafe.vic.gov.au)

Further general advice to improve health and safety at your workplace can be obtained by contacting WorkSafe's Advisory Service toll-free on 1800 136 089.

**Note:** This Alert has been prepared using the best information available to WorkSafe Victoria. Any information about legislative obligations or responsibilities included in this material is only applicable to the circumstances described in the material. You should always check the legislation referred to in this material and make your own judgement about what action you may need to take to ensure you have complied with the law. Accordingly, the Victorian WorkCover Authority extends no warranties as to the suitability of the information for your specific circumstances.