

BRIDGE AND GANTRY CRANES

INFORMATION SHEET

Overview

This Information Sheet provides advice on managing risks associated with operating bridge and gantry cranes in the workplace.

Further information on bridge and gantry cranes is in the [General guide for cranes](#).

What are bridge and gantry cranes?

A **bridge crane**. See Figure 1:

- consists of a bridge beam or beams that are mounted to end carriages at each end
- is capable of travelling along elevated runways, and
- has one or more hoisting mechanisms arranged to traverse across the bridge.

A **gantry crane**. See Figure 2:

- consists of a bridge beam or beams supported at one or both ends by legs mounted to end carriages
- is capable of travelling on supporting surfaces or deck levels, whether fixed or not, and
- has a crab with one or more hoisting units arranged to travel across the bridge.

A gantry crane with a carriage that travels on an elevated runway on one side and a leg mounted to a carriage on the other side is sometimes referred to as a 'one-legged gantry crane', a 'combination crane' or a 'semi-gantry crane'. See Figure 3.

Operating bridge and gantry cranes

Bridge and gantry cranes are operated from within a cabin mounted on the crane or remotely from the ground, for example by a hard-wired pendant or radio control.

Where a bridge or gantry crane is to be configured for a specific use this requirement should be discussed with the crane manufacturer and supplier before purchase.

Where two hoists are fitted, verification is to be provided from the manufacturer that the bridge beam has been designed to support both hoists when loaded to the maximum capacity at the most adverse position.

Figure 1 Bridge crane

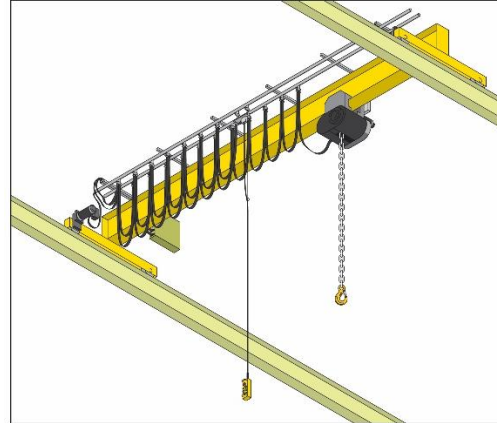


Figure 2 Gantry crane

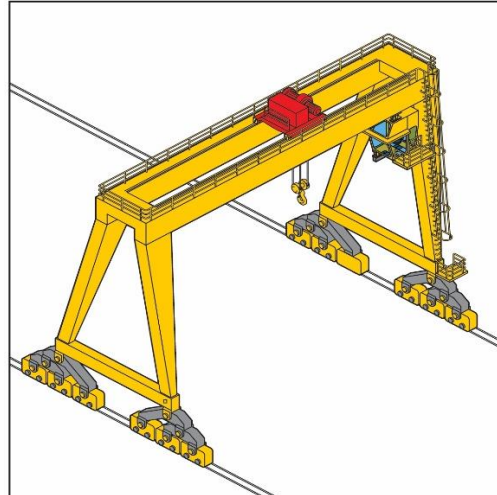
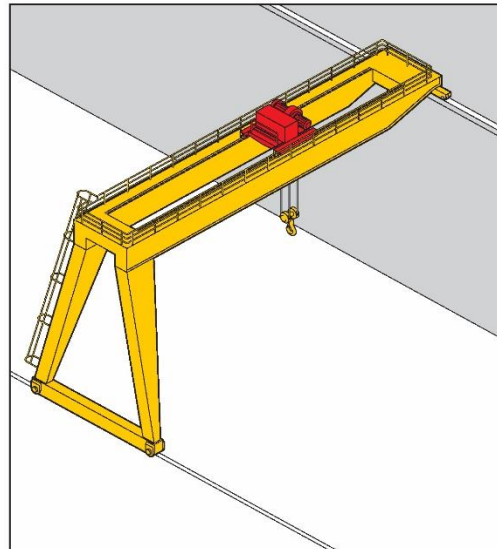


Figure 3 Semi-gantry crane



High risk work licensing

A Bridge and Gantry Crane High Risk Work licence is required to operate a bridge or gantry crane that is:

- controlled from a permanent cabin or control station on the crane, or
- remotely controlled with more than three powered operations.

Further information is in the [Information Sheet: High risk work licensing for bridge and gantry cranes](#).

Crane controls

Crane controls should:

- have 'fail-safe' control buttons e.g. constant pressure type
- have function buttons appropriately labelled, and
- be fitted with a manually reset emergency stop button.

Cabin controls

Modern cabin-controlled bridge and gantry cranes will normally have joysticks to control movement of the crane.

Cabins may be cramped so controls should be protected so the operator getting in and out of the cabin seat will not cause accidental operation. A dead-man's brake pedal or mechanical protection of the joy stick control levers can prevent this.

Pendant controls

Hard-wired pendant controls should:

- be energised by extra-low voltage that is not greater than 50 V AC or 12 V DC, and
- have the support cable and catenary insulated from the crane structure.

Radio, microwave and infrared controls

Radio, microwave and infrared controls should:

- limit the reception range to within a distance that provides effective visual interface with the operator
- have a unique frequency to prevent interference with other cranes operating in the vicinity
- be able to be automatically de-energised when unable to receive a signal within 550 metres
- be able to be de-energised when interfered with by other signals, and
- be able to be de-energised when the stop or

emergency buttons are activated.

Where there are high risk areas it is important that bridge and gantry crane workers are operating from a safe area. This can be done by operating the bridge or gantry crane from a viewing platform or making sure the controls will only work in a predetermined safe area.

Isolation and lockouts

To operate bridge and gantry cranes safely there should be an ability to isolate or lock them out, for example to:

- prevent unauthorised use when the crane is not being used
- ensure the safety of maintenance workers or operators when the crane is being worked on
- prevent use when the crane is deemed unfit for use either after an incident, inspection or before commissioning, and
- de-energise the crane when people are working near potential power sources, such as buzz bars and electrical tracks.

Lockable isolation switches

Lockable isolation switches should also be fitted to other plant within the crane's operating area.

Interlocking devices

Interlocking devices prevent more than one piece of plant being operated in one area at the same time. For example, to prevent two bridge or gantry cranes colliding where they operate in the same area.

This might occur where the runways are either above or below each other or cross over each other. This could require a bridge or gantry crane to be limited to a set area or parked while the other one is working in a designated area.

Safety devices

There are a number of safety devices that can be fitted to bridge and gantry cranes including:

- **Anti-collision devices** to prevent:
 - a bridge or gantry crane colliding with the end of the runway, and
 - two or more bridge or gantry cranes that operate on the same runway from colliding with each other.
- **Deceleration devices** to slow the bridge or gantry crane down—regardless of what control is being pressed when a travelling crane is approaching the end of the runway—to prevent end stop collision or over run e.g. limit switches

and two-stage decelerators.

- **Load-limiting and movement controlling devices** to assess the load and prevent lifting should the rating capacity of the crane be exceeded.
- **Upper and lower limit devices** to prevent the hoist from winding the hook into the hoist drum or winding the hoist rope off the hoist drum.
- **Anti-fall devices** to prevent falls of plant in the event of travel-wheel failure e.g. anti-drop plates.

Signage

The crane classification and working load limit of the crane must be displayed on bridge and gantry cranes.

Commissioning bridge and gantry cranes

When first occupying premises a bridge or gantry crane may already be installed. A common mistake is to use the crane without specific knowledge of its specifications including its limitations.

In these circumstances the crane's manufacturer, or if this is not practicable a competent person, should be contacted to find out the crane's specifications and if there are limitations.

For a new crane installation, the installation and commissioning activities must be supervised by a competent person.

Inspection and maintenance

Bridge and gantry crane inspection and testing must include:

- a major inspection
- regular inspection and testing required for the crane, and
- inspection and testing for plant item re-registration.

Further information is in the [Guide to inspecting and maintaining cranes](#).

Further information

The following technical standards provide further information on bridge and gantry cranes:

- AS 2550.1-2011: *Cranes, hoists and winches—Safe use Part 1: General requirements*, and
- AS 2550.3-2002: *Cranes, hoists and winches—Safe use Part 3: Bridge, gantry, portal (including container cranes) and jib cranes*.

For further information see the Safe Work Australia website www.swa.gov.au.