

CICA HOIST SECTOR FAQs - CRANE OPERATION

A. What are the necessary skills and licenses for operation in my State?

Summary: Necessary skills of crane operation for bridge and gantry cranes are: assess and secure equipment and work area; secure and transfer load. CB license is required for operating bridge and gantry cranes under certain conditions.

Licensing requirements

The following states operate under the WHS Regulations: ACT, NSW, NT, QLD, SA, and TAS. These states require licenses for overhead cranes if the crane is:

- *controlled from a permanent cabin or control station on the crane, or*
- *remotely controlled with more than three powered operations, for example:*
 - *a single hoist with four powered operations e.g. traversing, travelling, hoisting and rotating, and*
 - *multiple hoists with four or more powered operations e.g. two non-synchronised hoists would typically have at least five powered operations—traversing by two, hoisting by two and travelling*

Western Australia requires a license for operation if the crane is controlled from a:

- *permanent cabin or control station on the crane; or*
- *location remote to a permanent cabin/control station on the crane, i.e. from a pendant or radio controlled, and if the crane has four or more powered motions of operation*

Victoria requires a license for operation if the crane is:

- *consists of one or more bridge beams mounted at each end to an end carriage*
- *is capable of travelling along elevated runways*
- *has one or more hoisting mechanisms that are able to travel across the bridge beam or beam*
- *but does not include a crane that has 3 or less powered operations and that is controlled from a location remote to a permanent cabin or control station on the crane;*

Even for crane types that licence is not required, the operator should still be trained in the following competencies.

Competency units required for operating bridge and gantry cranes:

- *Assess and secure equipment and work area*

Lifting Industry Standards

- *Conduct routine checks.*
 - *Routine pre-operational equipment checks are carried out in accordance with the checklist provided for the crane.*
 - *The service log book for the crane is checked to ensure all service requirements have been met and action taken as required.*
 - *Prior to operation, equipment and site area are visually checked for any evidence of damage, structural weakness or interference, and any faults reported to an authorised person for corrective action.*
- *Plan Work*
 - *A workplace operations plan is developed in consultation with the relevant authorised workplace personnel. The plan takes into account job requirements, priorities, workplace rules and procedures, identified hazards and hazard control measures.*
 - *Site hazards including: obstructions - structures - facilities - other equipment - dangerous materials - underground services – personnel and correct hazard control strategies developed in accordance with the appropriate Australian Standard*
 - *Plans for emergency procedures take into account the location of first aid and firefighting equipment, amenities and access/egress points in the workplace.*
 - *Precautions are taken to accommodate the effects of weather conditions in accordance with the appropriate Australian Standard. This includes, where necessary, deciding to abort crane operation where weather conditions exceed acceptable limits.*
 - *The operations plan ensures that the work area is correctly illuminated.*
 - *The rig's load chart is located and information on permissible loads, radii, weights, boom and jib configurations noted and taken into account in operational plans.*
 - *The signals and signalling systems to be used are confirmed with associated personnel in accordance with the appropriate Australian Standard.*
 - *The use of safety tags on electrical switches/isolators (where relevant) is noted and correct hazard control procedures developed in consultation with authorised personnel*
- *Check controls and lifting gear.*
 - *The crane is started in accordance with equipment procedures and checks made for any abnormal noise or movement. Any abnormal operation is reported to an authorised person for corrective action.*

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- *The operating and emergency controls and safety devices are located and identified and their correct operation tested in accordance with prescribed procedures.*
- *All communication equipment, lighting and alarm systems are checked for correct operation.*
- *Defective controls, communication equipment, safety devices, lighting, or alarms are reported to authorised personnel for corrective action and the defects entered into the crane's service log book.*
- *Slings and lifting gear are checked. Defective slings or lifting gear are identified and segregated and reported to an authorised person for disposal, repair and/or replacement in accordance with the appropriate Australian Standard.*
- *Shut down crane*
 - *The crane is shut down using the correct sequence of procedures in accordance with manufacturer's instructions.*
 - *Routine post-operational equipment checks are carried out in accordance with the checklist provided for the crane.*
 - *The relevant motion locks and brakes are applied.*
 - *All lifting equipment is checked in consultation with associated personnel for any signs of wear or damage in accordance with the appropriate Australian Standard.*
 - *All defective equipment is segregated and reported to an authorised person for corrective action and/or replacement.*
 - *The crane and equipment are correctly stowed and secured in accordance with manufacturer's instructions and the appropriate Australian Standard.*
- *Secure and transfer load*
 - *Secure load*
 - *The weight of the load is correctly estimated in consultation with associated personnel.*
 - *The sling configuration and choice of lifting gear are checked, in consultation with associated personnel, to ensure: - they are appropriate for safe operation - they will not damage the load - they satisfy the requirements of the appropriate Australian Standard. Corrective action is taken if required.*
 - *The use of packing or dunnage to protect the load or to facilitate the connection of lifting gear is checked for correct application in consultation with associated personnel. Corrective action is taken if required.*
 - *Conduct trial lift*

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- A trial lift, particularly for near capacity loads or loads of unusual weight distribution or shape, is carried out according to workplace procedures.
 - With the load just suspended off the lifting plane, checks are made in consultation with associated personnel that: the load is correctly slung, all crane equipment is functioning properly, hydraulic or pneumatic systems (where relevant) are at the required operating pressure.
 - Where a trial lift reveals an unacceptable operational situation, the load is lowered and appropriate corrective action taken.
 - Where load-measuring devices are fitted, the estimated weight is verified and load/radius calculations are revised as required.
 - Planned hazard control strategies are implemented.
- Transfer load
- Load is hoisted and lowered into position using all relevant crane movements in accordance with the appropriate Australian Standard. The necessary movements may include: luffing, slewing, hoisting (raising and lowering), telescoping boom, travelling.
 - Boom is positioned to ensure load to be lifted is plumbed under hook.
 - Each load is assessed in consultation with associated personnel for the need for a tag handline. Where control of the load is critical, a decision is made to attach a suitable tagline.
 - All required signals are correctly given and interpreted in accordance with the appropriate Australian Standard.
 - Planned hazard control strategies are implemented.

The following link is for crane guidance material published by Safe Work Australia:

<http://www.safeworkaustralia.gov.au/sites/swa/about/publications/pages/guidance-cranes>

B. When do I need a dogger?

Summary: Two scenarios: 1) exercises judgment in the selection of slings, the weight of the load or its centre of gravity, 2) where there is a need to direct the bridge and gantry crane operator in the movement of the load or the load is out of sight of the operator.

A rigger is qualified to do dogging work.

Note: It is recommended that for bridge and gantry crane operation, the crane operator maintains line of sight with the load at all times.

C. What is the difference between a rigger and a dogger?

Summary: a rigger is license to complete rigging tasks and dogging tasks. A Dogger is licensed to complete dogging tasks.

Rigging means the use of mechanical load shifting equipment and associated gear to move, place or secure a load including plant, equipment or members of a building or structure and to ensure the stability of those members and for the setting up and dismantling of cranes and hoists, but does not include the setting up of a crane or hoist which only requires the positioning of integral outriggers or stabilisers;

Dogging means the application of slinging techniques, including the selection or inspection of lifting gear, or the directing of a crane or hoist operator in the movement of a load when the load is out of the operator's view;

D. What is the benefit of Data logging?

Summary: Benefits of data logging include: accurately assessing design working period (DWP) of the crane (with the potential to extend inspection interval), assisting with assessing efficiency of operation and operator competency.

In reality, most cranes are usually working on duties below their classification (for crane classification, refer to FAQ-Crane Design Specification). Since crane inspection frequency specified by manufacture or in the standards are based on crane classifications, for most cranes, record the crane usage (data logging) can benefit crane owners economically by extend the intervals between each inspection. Data logging records containing state of loading, duration of operation and number of load cycles can be used to determine a more accurate inspection interval and avoid excessive effort spend on crane inspection.

Data logging can also benefit the crane owner with improve efficiency of operation by providing operation data to assist in selecting the correct crane for the task, for example, if the crane is always operating at 20-30% of its rated capacity, maybe a crane with a lower capacity can be considered for the task.

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Data logging can also provide an opportunity to look at operator competency, for example, if the data logging shows frequent overloading of the crane, one of the reasons can be the crane operator not familiar with the crane model or the crane operator is not competent to operate the crane, in this case, operator training can improve the operator competency and benefit the crane design life significantly.

E. How does overload occur?

Summary: Overloading happens when a crane lifts a load/loads greater than the capacity specified in the manufacture's rated capacity chart.

Overloading happens when a crane lift a load/loads greater than the capacity specified in the manufacture's rated capacity chart. Overloading a crane can cause severe damage to the crane structure.

Overloading can happen in the following scenarios:

- *When the crane is lifting a load/loads that's attaching to other objects or the ground*
- *When the crane is lifting a un-known weight or the weight of the load is calculated wrong*
- *When the crane rated capacity is not known or misunderstanding of the manufacture's rated capacity chart*
- *When the crane is dragging the load*
- *When environmental conditions (i.e. wind load) are not considered in the lift planning*

F. 'What do I do if I overload my crane?

Summary: Inspect the crane following an overload, if the crane passes the inspection, test all motions on the crane for functionality.

Crane overloads can significantly shorten the structural life of a crane. The damage is not always immediately evident but can manifest itself by unexpected cracking of the structure some time into the future.

Recommended immediate actions following an overload,

Following crane isolation, have a competent person,



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- *inspect the crane structure paying particular attention to main girders immediately under where the trolley was parked at the time of the overload. Looking for evidence of buckling or cracking.*
- *End carriage to girder connections*
- *Cross travel trolley structure, particularly at hoist ropes anchorages or the return sheave support beam connections.*
- *Hook and block*
- *Hoist mechanism- evidence of shaft cracking, loose coupling bolts, damage to rope drum and supports.*
- *Rope condition- particularly broken wires or birdcaging*
- *Hoist brake condition.*
- *Replace any suspect or damaged equipment in accordance with the recommendations of the competent person.*

If the crane passes the above inspection, test all motions on the crane for functionality. Test the crane hoist brakes are functioning correctly and will hold the rated load capacity. Note, the competent person will need to sign off that the crane is fit to return to service. Any limitations the competent person places upon that condition, will need to be adhered to.

Future,

As note, the effect of the overload may not show immediately and only surface after a period of the crane returned to service.

To overcome this issue, it is recommended that further structural inspections of the crane are carried out following a short period after the crane's return to service, say 24-48 hrs then say 1 week and another week following. If there is no evidence of damage, the normal maintenance and inspection regimes can be resumed.