



Australian Government

MEM11023 Operate a bridge and gantry crane

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Modification History

Release	Comments
2	Unit code updated in Application to reflect status.
1	This unit of competency was first released in MEM Manufacturing and Engineering Release 2.0.

Application

This unit of competency defines the skills and knowledge required for the operation of bridge and gantry cranes that are operated from a permanent cabin/control station on the crane in a manufacturing related environment, including a factory, raw material or finished goods store.

While this unit applies to work covered by licensing requirements, it also includes other manufacturing related skills, including integrating crane operations with production, jobbing, maintenance or warehouse operations.

This unit does not cover the bridge and gantry crane types that are controlled from a location remote to a permanent cabin/control station on the crane and that have three or less powered operations, i.e. hoist/raise and lower in one operation and also does not cover the slinging or rigging of loads.

This unit is not recognised by regulators for licensing requirements. In order to satisfy licensing requirements, the imported unit TLILIC0016 Licence to operate a bridge and gantry crane will be required.

Where the selection and use of tools is required unit MEM18001 Use hand tools and unit MEM18002 Use power tools/hand held operations, should also be selected as appropriate.

Band A

Unit Weight 4

Licensing/Regulatory Information

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite unit(s)

MEM11011	Undertake manual handling
MEM13015	Work safely and effectively in manufacturing and engineering

MEM16006	Organise and communicate information
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Competency field(s)

Materials handling

Unit sector(s)

N/A

Elements and Performance Criteria

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Determine job requirements	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs 1.4 Obtain load transfer authorisation, including lift time and load destination
2. Plan work	2.1 Identify potential hazards for load lift and transfer 2.2 Identify hazard control measures consistent with appropriate standards to ensure the safety of personnel and equipment 2.3 Estimate weight (mass) of the load in consultation with associated personnel 2.4 Determine appropriate paths for the movement of loads in the work area 2.5 Check crane capacity to the load, as appropriate 2.6 Identify appropriate communication methods with associated personnel
3. Conduct routine checks	3.1 Apply appropriate hazard prevention/control measures to the work area according to procedures 3.2 Access crane in a safe manner 3.3 Check crane visually for any damage or defects 3.4 Ensure all signage and labels are visible and legible according to the appropriate standard

	3.5 Carry out routine pre-operational crane checks according to SOPs 3.6 Locate and identify all controls 3.7 Check crane service logbook for compliance 3.8 Start crane and check for any abnormalities according to SOPs 3.9 Test crane safety devices according to SOPs 3.10 Carry out post-start operational checks according to SOPs 3.11 Check all communication equipment for serviceability 3.12 Report all damage and defects and record according to SOPs, and take appropriate action
4. Transfer loads	4.1 Position hoist block over load following directions from associated personnel 4.2 Carry out test lift according to SOPs 4.3 Transfer loads along planned path 4.4 Ensure all crane movements are according to SOPs and the appropriate standard 4.5 Interpret communication signals according to SOPs and the appropriate standard 4.6 Operate crane according to SOPs 4.7 Monitor load movements constantly ensuring safety to personnel and load, and structural stability 4.8 Respond to unplanned and/or unsafe situations in accordance with SOPs
5. Shut down and secure crane	5.1 Park crane according to SOPs 5.2 Stow crane and equipment and secure according to SOPs and the appropriate standard 5.3 Apply all relevant motion locks and brakes, as applicable 5.4 Shut down crane according to SOPs 5.5 Carry out routine post-operational crane checks according to SOPs 5.6 Remove hazard prevention/control measures, where applicable 5.7 Report all damage and defects and record according to SOPs, and take appropriate action

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.	
Hazards include one (1) or more of the following:	• ground stability (e.g. ground condition or slopes for load placement) • overhead hazards (e.g. powerlines and service pipes) • insufficient lighting • traffic (e.g. pedestrians, vehicles and plant) • environmental conditions (e.g. dust, wind, lightning and storms) • other specific hazards (e.g. dangerous materials)
Hazard control measures include the following:	• the systematic process of eliminating or reducing the risk to personnel and property through the application of controls consistent with appropriate standards • the application of the hierarchy of control, the six-step preference of control measures to manage and control risk: ○ 1. elimination ○ 2. substitution ○ 3. isolation ○ 4. engineering control measures ○ 5. using safe work practices ○ 6. personal protective equipment (PPE)
Appropriate standards include one (1) or more of the following:	• codes of practice and legislation • Australian Standards • crane manufacturer specifications • industry and workplace standards, as applicable

Appropriate paths include one (1) or more of the following:	• ensure clearances of fixed machinery, equipment, fixtures and work in progress • minimise transfers across workstations and walkways • minimise disruption to work unrelated to the load transfer • minimise transfer time and distance subject to safety and disruption assessments
Associated personnel include the following:	• riggers and doggers • supervisory and expert personnel to advise on any special features of the load or transfer
Cranes are operated from a permanent cabin/control station on the crane and include one (1) or more of the following:	• bridge crane, a bridge beam mounted at each end to an end carriage, capable of travelling along elevated runways and having one or more hoisting mechanisms arranged to traverse across the bridge • gantry crane, a bridge beam, supported at each end by legs mounted on end carriages, capable of travelling on supported surfaces or deck levels, whether fixed or not and which has a crab with one or more hoisting units arranged to travel across the bridge
Communication methods include one (1) or more of the following:	• verbal and non-verbal language • written instructions • signage • hand signals • listening • questioning to confirm understanding • appropriate worksite protocol
Signage and labels include one (1) or more of the following:	• crane data plates/labels • load charts • crane decals • control labels
Procedures include one (1) or more of the following:	• manufacturer guidelines (instructions, specifications or checklists) • industry operating procedures

	workplace procedures (work instructions, operating procedures and checklists)
Controls include one (1) or more of the following:	- long travel levers - cross travel levers - hoisting and lowering levers - rotating hook levers, where applicable
Service logbook includes one (1) or more of the following:	- service book and any logbook - history record system where the service and maintenance history is kept
Safety devices include the following:	- horns/sirens and lights - audible and visual motion devices - operator restraint devices, where applicable
Communication equipment includes one (1) or more of the following:	- two-way radios - whistles - bells and buzzers
Hazard prevention/control measures include one (1) or more of the following:	- safety tags on electrical switches/isolators - insulated powerlines - safety observer used inside exclusion zone - disconnected power - traffic barricades and controls - pedestrian controls - movement of obstructions - PPE - adequate illumination
Test lift includes the following:	- lifting the load just clear of the lifting plane to allow for checks to be safely made in consultation with associated personnel to ensure that: - near capacity loads do not overload the crane - loads of unusual shape or weight distribution are correctly slung - load measuring equipment can be used to verify the calculated weight of the load

	○ all crane equipment is functioning properly ○ adjustments to the slinging can be made in a safe manner
Relevant crane movements include the following:	● hoisting (raise and lower) ● traversing (moving hoisting mechanisms along bridge) ● travelling (at minimum speed, gentle acceleration and braking, to minimise load swing)
Communication signals include the following:	● stop – hand and whistle ● hoist up – hand and whistle ● hoist down – hand and whistle ● traverse - hand ● travel - hand ● creep - hand
Unplanned and/or unsafe situations include the following:	● failure/loss of control (e.g. brakes and steering) ● failure of equipment (e.g. hydraulic system) ● environmental conditions (e.g. wind, lightning and storms)
Shutdown includes the following:	● retracting hoist rope and hook block ● travelling crane to park position ● removing key from control panel, as applicable ● locking and securing cabin, as applicable ● isolating power to crane

Unit Mapping Information

Current Code and Title	Previous Code and Title	Comments	Equivalence
MEM11023 Operate a bridge and gantry crane	MEM11023A Operate a bridge and gantry crane	Supersedes and is equivalent to MEM11023A Operate a bridge and gantry crane	Equivalent

Assessment Requirements for MEM11023 Operate a bridge and gantry crane

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting safety signs, manufacturers' specifications and data, including maximum load information to ensure crane is not overloaded
- complying with work health and safety (WHS) licensing legislation
- communicating and working safely with others in the work area, including the use of hand signals, whistles and two-way radios
- applying risk assessment and management procedures (particular awareness of the risks associated with overhead powerlines/electrical cables, access to cabin, other personnel and equipment in the work area, including vehicles and clear access whilst travelling)
- conducting pre- and post-operational checks of the bridge and gantry crane
- planning load transfer path for safety and efficiency in a manufacturing related environment
- operating a bridge and gantry crane, including all functions to their maximum capacity in the lifting and moving of loads to the maximum rated capacity, in conjunction with other associated personnel
- applying appropriate mathematical procedures for estimation of loads.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- appropriate mathematical procedures for estimation of loads
- bridge and gantry crane characteristics
- federal, state or territory WHS legislation, standards and codes of practice relevant to the full range of processes for the crane class
- emergency procedures, including escape routes
- hierarchy of hazard identification and control
- organisational and workplace standards, requirements, policies and procedures for conducting operations for the crane class
- typical hazards in manufacturing related environments, including:
 - process areas that must be avoided, ceased or special procedures adopted before load transfers occur, including welding, machining, melting and casting
 - transfers across areas frequented by personnel, including workstations and walkways
 - hazardous loads, including hot or liquid metals, chemicals, heavy and non-standard shaped loads
- procedures for the recording, reporting and maintenance of workplace records and information
- typical routine problems encountered in the operation of the crane and equipment and adjustments required for correction.

Assessment Conditions

- Assessors must:
 - have vocational competency in operating a bridge and gantry crane at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications

- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Link

Companion volumes, including implementation guides, are found on the national training register - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=45a7f1d5-61a5-447a-9688-7abbd7e1a5c7>.