

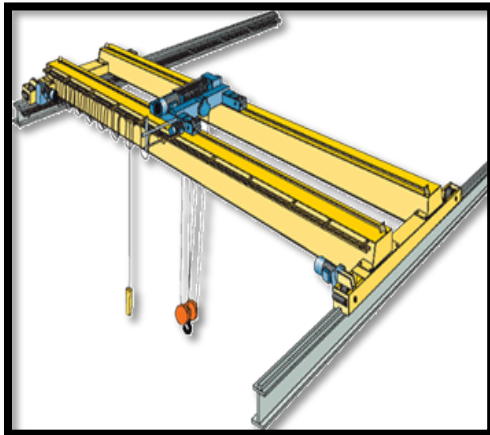


SAFETY / ENVIRONMENTAL TOOLBOX TRAINING – OVERHEAD AND GANTRY CRANE SAFETY

SUPERVISOR INSTRUCTIONS:

- Use toolbox trainings to encourage safety / environmental discussions during monthly meetings with employees
- Submit the employee sign-in sheet to your designated administrative assistant /training coordinator as a record of training

A crane is a versatile and important piece of equipment used for lifting, lowering, or moving a load horizontally using a hoisting mechanism. An overhead crane has a movable bridge carrying a hoisting mechanism that travels on an overhead fixed runway structure. A gantry crane is similar to an overhead crane, except that the bridge is rigidly supported by two or more legs running on fixed rails. Examples of each are provided below:



Overhead crane



Gantry crane

Overhead and gantry cranes are particularly well suited for lifting and moving heavy objects. The largest gantry cranes can lift loads of up to 840 tons to a height of 70 meters. While cranes are useful, the equipment and heavy loads they lift make them dangerous for crane operators and people working in the vicinity of cranes. For example, according to the Occupational Health and Safety Administration (OSHA), falls and crane accidents are the leading causes of work-related fatalities in the construction industry. According to the Bureau of Labor Statistics, there were 72 crane-related fatal occupational injuries in 2006, 30 of which were caused by workers being struck by falling objects. Only 9 of these fatalities were due to the crane striking them. The other workers were killed when an object the crane was transporting fell from the crane onto them.

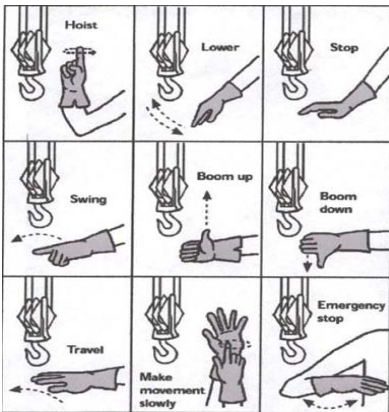
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General Requirements

- Only designated trained personnel are permitted to operate a crane.
- The rated load of the crane shall be clearly marked on each side of the crane.
- A minimum clearance of 3 inches overhead and 2 inches laterally must be maintained between the crane and any obstruction.
- Sufficient barriers must be positioned to keep unauthorized personnel away from the crane.
- All moving parts that could create a hazard under normal operating conditions must be equipped with guards.
- All personnel in the area of a crane must wear a hard hat when there is the possibility of an overhead load.



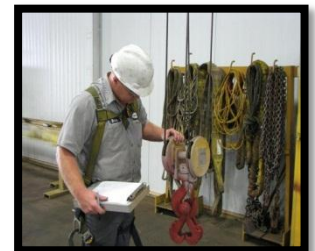
Safe Practices for Operators



- If there is doubt concerning the safety of a crane or hoisting means, immediately stop the crane, and report the condition to the supervisor.
- In the event of power failure, place all controllers in the “off” position.
- If leaving a crane unattended, land any attached load, place the controllers in the “off” position, and open the main switch.
- Communicate using standard hand signals.

Inspections

- Prior to initial use, all new and altered cranes must be inspected to ensure compliance with OSHA regulations.
- A visual inspection must be performed prior to each use.
- Monthly inspections must be performed and documented, including the date of inspection, name of a qualified inspector, and any deficiencies.
 - Inspect cranes to ensure proper functioning of all operating mechanisms.
 - Inspect all crane and hoisting components for excessive wear, deformation, leaks, as well as broken, frayed, stretched, or damaged chains or cables



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Maintenance

- A preventative maintenance program based on the manufacturer’s recommendations is required for each piece of equipment.
- Prior to maintenance on any equipment, the following precautions are taken:
 - The equipment is placed in a safe location where maintenance activities will not interfere with other operations.
 - All controls are switched to the “off” position.
 - “Warning” and “out of order” signs are placed on the crane.
 - All electrical and mechanical sources of energy must be locked and tagged out.
- Any unsafe deficiency noted during maintenance activities shall be corrected before the crane is placed back into service.

Questions for Discussion

- 1) True or False: A suspended load can be left unattended for a short period of time if a warning sign is posted.
 - False. No suspended load is ever to be left unattended by the crane operator.
- 2) Marcus and Martha are preparing to replace frayed rope on the hoisting mechanism of an overhead crane. Martha begins the lock-out/tag-out (LOTO) procedures, but Marcus tells her LOTO is not necessary, as long as the controls are switched to the “off” position. Who is correct?
 - Martha is correct. All electrical and mechanical sources of energy shall be locked and tagged out according to OSHA and EHSO LOTO procedures.
- 3) John the crane operator is preparing to use a gantry crane to move a large crate. He knows that another operator performed the monthly inspection on this crane yesterday, so he decides not to do a visual inspection. Did John make the right decision?
 - No, John did not make the right decision. He should have performed the visual inspection regardless of the monthly inspection. Visual inspections are to be performed prior to **each use** of a crane.

PHOTO CREDITS

Double girder overhead crane. <http://www.ambaticoncranes.com/cranes.html>

Light gantry crane. <http://www.directindustry.com/prod/abus/light-gantry-cranes-14275-33470.html>

Markings. http://safety.lle.rochester.edu/520_training/mechanical/crane.pdf

Recommended Hand Signals.

<http://www.elcosh.org/document/1584/d000517/Cranes%252C%2BDerricks%252C%2BHoists%252C%2BElevators%252C%2BAnd%2BConveyors-Subpart%2BN%2BSection%2B6.html>

Crane Inspections. <http://www.craneworks.com/osha-specified-inspections.html>