



*This safety resource was written for the recycled materials industry by the recycled materials industry and was developed to assist you in making your recycling operation a safe place for employees, customers, and visitors. This resource covers OSHA requirements that may or may not be applicable to your operation.*

## **CRAWLER CRANES**

**DEFINITION:** A crawler crane consists of an upper carriage mounted on a crawler type undercarriage. The upper deck and attachments rotate 360°. A crawler crane features either a box or a lattice type straight boom and it may be equipped with an optional jib (boom extension).

At the end of the boom and/or jib is a wire rope suspended implement such as a grapple, clamshell, crane hook, or electric magnet.

Crawler cranes are implemented for many applications and are therefore exposed to a wide range of external hazards during normal operation, not only to the operator but also to the maintenance personnel and others nearby.

### **Primary Hazards:**

- Falling and ejected objects
- Slipping and falling
- Cutting
- Pinching and crushing
- Burning and explosions

### **Safety Solutions:**

- Wearing personal protective equipment
- Pre-startup inspections
- Scheduled inspections and maintenance
- Safe operating and working procedures
- Employee safety training
- Operator and maintenance training

### **Pre-Start Up Procedures and Inspections:**

- Ensure that the operator is properly trained and certified to operate the equipment
  - Only authorized personnel may operate the crawler crane
  - The crane operator must be mentally and physically fit, have good vision, spatial perception, adequate hearing and quick reaction times (response)
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- The operator must always adhere to the guidelines for the appropriate use of the crane. The crane can pose a hazard if these safety practices and the instructions in the instruction and safety manual operating are not adhered to at all times
- The operator must be completely familiar with the layout and operation of all controls
- The operator must know precisely the crawler crane's capabilities and limitations
- The operator must be familiar and trained on all electronic overload and warning features of the crawler crane
- Identify the clear and safe approach to the crane
- Perform a daily walk around inspection of the equipment and jobsite surroundings
- Check for secured pin and bolt connections, wear and tear items, hydraulic and fuel leaks, any structural damage and the presence of all safety devices
- Pay attention to obvious maintenance deficiencies including but not limited to clogged radiator and cooler cores, combustion air intake system, frayed or otherwise damaged hoses, hose assemblies, or leaking hydraulic lines
- Never attempt to operate a defective or damaged crawler crane
- Access the crane using a three-point stance on ladders and steps
- Perform inspections and checks prior to every shift change and as outlined in the manufacturer's instruction manual
- Verify that all maintenance has been completed and documented
- Ensure that all doors are unlocked but closed and secured
- Ensure that all windows and mirrors are clean and not obstructed. Mirrors must be properly positioned for best visibility
- Adjust the seat and armrests to the most comfortable operating position
- Ensure that the area of operation is clear of personnel and obstructions
- Ensure that other personnel is aware that the crane has started and the operation commences
- Operate crane only outdoors or in a well-ventilated interior space

### **Starting and Operating the Crawler Crane:**

- Maintain good communications and visibility at all times
- Use one of the following signals to alert all personnel in the area of the impending crane operation
- Sound the horn twice
- Energize the beacon or flasher light (if applicable)
- Never allow any other person on or near the crawler crane during operation
- A signal-person should be provided if the crane operates in a confined area with limited visibility. The signal-person should remain out of reach of the crane at all times
- Test and verify radio contact to the crane operator
- Keep the cab and control levers and pedals clean and do not place drinking cups or magazines on controls and/or control panels
- Do not store tools or equipment in the cab
- Start the engine as specified by the manufacturer and allow the systems such as coolant and hydraulic fluid to warm up to operating temperatures
- Test all crane functions including, but not limited to, boom hoist, winch and brake systems
- Check and adjust the overload warning devices of the crane as outlined in the manufacturer's instruction manual
- During operation always proceed carefully with sufficient clearance to power lines and other obstructions
- Know the weight, dimensions and center of gravity of the load to be lifted
- Ensure the loading slings chains or wire ropes are in good working condition and have the required lifting capacity
- Place the crane in the proper working position and assure that you work within the crane's capabilities at all times
- Use slow and progressive joystick movements when operating under load conditions
- Allow plenty of time and space for stopping the movement of a load

- Be aware at all times of the strength and shifting wind forces. Lower the load and shut the crane down if the maximum permitted wind velocity has been reached

### **Shut-Down Procedure:**

- Park the crane on firm and level ground
- Lower the suspended load to the ground. Never leave a load suspended from the boom/jib over an extended period of time or while the crane is parked
- Lower the attachment as outlined in the manufacturer's instruction manual
- Gradually reduce the engine speed and idle it for three minutes prior to shut-off
- Shut and secure windows and covers and lock doors
- Climb down facing the crane using a three-point stance
- Remove the battery disconnect switch (if applicable)

### **Maintenance Procedure:**

- Maintenance Procedure
- Always follow the manufacturer's scheduled and preventive maintenance, and inspection procedures and instructions
- Prior to any maintenance and/or repair service follow the proper lock-out / tag-out procedure
- Only properly trained and qualified mechanics/technicians should attempt repairs
- When servicing the crane or attachments, never use hands and/or fingers to align bolts or pins
- Always use the appropriate tools to service the equipment and always wear personal protective equipment (PPE) as required by OSHA and local jobsite regulations

### **Visitor/Vendor/Supplier Alert:**

- Visitor/Vendor/Supplier Alert
- Post safety signs that inform of all jobsite hazards
- Inform visitors, vendors and suppliers to maintain the proper and safe distance from operational equipment, especially in the loading and unloading area

- Instruct truck drivers to leave their cab and to proceed to a designated safe area

**General Safety Instructions:**

- Make the crane operator aware of the dangers and risks involved with the operation of his crane
- Train every employee what each warning signal or audible alarm represents
- Identify potential areas where flying debris may occur
- Frequently check the placement of safety signs, make certain they are legible and complete. Replace missing or illegible safety signs at once
- Adhere fully to the instructions on the safety signs
- Identify and cordon off or mark specific areas that are prohibited to enter during operation
- Ensure that trip and fall hazards are kept out of drive and walk ways
- Always follow good housekeeping procedures
- No one is permitted to stay underneath the crane or attachment when being serviced