

# Mobile (Truck) Cranes

Definition: A truck or mobile crane consists of an upper carriage with front end attachment such as a box or lattice type boom and optional jib (boom extension). The upper carriage with attachment rotates 360° on the undercarriage or truck chassis (carrier frame). The carrier also features the adjustable front and rear outrigger box assemblies.

Truck (mobile) cranes are utilized in many scrap yard applications and are equipped with wire rope suspended implements such as grapple, clamshell, crane hook, or electric magnets.

In such applications the machines are exposed to a wide range of 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 Procedure and Inspection**

Ensure that the operator is properly trained and certified if required 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)

The operator always must adhere to the appropriate use of the crane. Be aware that the crane can pose a hazard if the following safety practices and the instructions as outlined in the manufacturer's instruction and safety manual are not adhered to at all times

The operator must be completely familiar with the layout and operation of all crane controls

The operator must know precisely the crane's capabilities and limitations

Prior to start up the crane operator must plan thoroughly the operating procedure of the crane based on existing working conditions and prevailing environment

This planning must include the crane's attachment configuration, the reeving of the hoist rope, the required counterweight, and the size of the lifting devices as well as the size of the matting/blocking that support the outrigger pads.

The operator must be familiar and trained on all electronic overload and warning devices on the truck crane

Identify the clear and safe approach to the machine

Perform a daily walk-around inspection of the equipment and jobsite surroundings

Check for worn or damaged wire ropes/strands, secured pin and bolt connections, wear and tear items, hydraulic and fuel leaks and any structural damage and the presence of all safety devices

Pay attention to obvious maintenance deficiencies including but not limited to worn tires, clutch or brake failures, clogged radiator and cooler cores, damage to the combustion air intake system, frayed or otherwise damaged hoses, hose assemblies, or leaking hydraulic lines

Never attempt to operate a defective or damaged crane

Access the crane using a three-point stance on ladders and steps

Perform machine 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 unobstructed and clean. 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 in the vicinity is aware that the machine is started and the operation commences

### **Starting and Operating the Crane**

Maintain clear communications with co-workers and good visibility at all times

Operate the crane only outdoors or in a well-ventilated interior space

Position the outriggers of the crane to the required distance and assure that the outrigger pads have sufficient ground support (load bearing pressure). Use supporting mats and/or blocks as required by prevailing ground conditions

Use one of the following signals to alert all personnel in the area of the impending crane operation

by sounding the horn twice

by energizing the beacon or flasher light (if so equipped)

Never allow any other person on or within the reach of the crane during operations

A signal-person should be provided if the crane operates in a confined area with limited visibility. The signal-person should remain at all times out of reach of the crane

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 or other objects on the control panel

Do not store any 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, all cable winch and brake systems

Check (test) and adjust the overload warning and other safety devices of the crane as outlined in the manufacturer's instruction manual

During road travel observe all federal and local highway regulations and street signs and consider all overpass clearances and bridge load and street width limitations

Prior to road travel retract the telescopic boom, lower the attachment into its transport position and secure the block and hook arrangement to the car body without limiting the view of the crane/truck operator

Do not exceed the documented machine weight and/or axle load limits

During operation always proceed carefully with sufficient clearance to electric power lines, nearby buildings and other obstructions

Know the weight, dimensions and center of gravity of the load to be lifted

Select the appropriate attachment configuration

Ensure the loading slings, chains or wire ropes are in good working condition and have the required lifting capacity

Place the machine in the proper working position and assure that you work within the crane's capabilities at all times

Avoid utilizing the crane's maximum rated lifting capacity

Use slow and progressive joystick movements when operating under load conditions

Allow plenty of time and space for stopping the movement of a load

Do not side-load the machine while lifting

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 (as outlined in the manufacturer's instruction manual) is reached

Swing the crane with load as close as possible to the machine (at shortest possible boom length)

Keep a safe distance to basements, ditches, slopes and embankments

### **Shut-Down Procedure**

Park the crane on firm and level ground and keep a safe distance to basements, ditches, slopes and other embankments

Lower the suspended load completely to the ground; never leave a load suspended from the boom or jib over an extended period of time or while the crane is parked

Lower and/or retract the crane boom as outlined in the manufacturer's instruction manual

Apply the parking brake on the truck chassis

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 truck crane using a three-point stance

If the truck crane must be parked on a slope due to a breakdown, use chokes or wooden blocks under the wheels in addition to applying the parking brake to keep the crane from rolling down hill.

Remove the battery disconnect switch (if so equipped)

### **Maintenance Procedure**

Always follow the manufacturer's daily, scheduled and preventive maintenance and inspection procedures and instructions

Prior to any maintenance and/or repair service follow the proper lock-out/tag-out procedures

Use only safe and approved man-lifts, ladders, scaffolds or the platforms or catwalks installed on the crane to perform any assembly, maintenance or repair procedures. Never climb or walk on the boom or jib structure

Always use fall-protection when working at heights in excess of 8 feet above ground

Always use the appropriate tool to service the equipment and always wear the personnel protective equipment (PPE) as required by OSHA and local jobsite regulations

Only properly trained and qualified mechanics/technicians should attempt to reconfigure the crane's attachment and/or perform required repairs

When servicing the crane or attachments, never use hands and/or fingers to align bolts or pins

Periodically (as part of the scheduled machine inspections) check all wire ropes for wear and tear, such as corroded or broken and unwound wire strands

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

Post safety signs that inform of all jobsite hazards

Inform 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 truck 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 crane operation

Ensure that trip and fall hazards are kept away out of drive and walkways

Always follow good housekeeping procedures

No one is permitted to stay underneath the crane or its attachment when being serviced