

Before you begin

Review your company's knuckle boom and articulating boom truck policy. If any changes or incidents have occurred, obtain a copy of the incident report to review with employees. An audit of an incident allows for the creation of best practices to prevent future incidents.



Introduction

This article is for knuckle boom and articulating boom trucks used only for material delivery operations. The Occupational Safety and Health Administration (OSHA) now exempts knuckle boom and articulating boom trucks when used for making deliveries to construction sites from the stringent regulations affecting cranes. However, companies using these trucks still must take steps to ensure safe use. Each year crane collapse, struck-by, caught in-between, and contact with electrical current accidents kill and injure workers.

Definitions

A **knuckle boom** is a compact crane that has two booms; the main boom and an outer boom that articulate at the knuckle. Like the human finger, the knuckle boom can maneuver, which allows more options for the loader crane operator.

A **critical lift** means a lift that (1) exceeds 75% of the rated capacity of the crane or derrick, or (2) requires the use of more than one crane or derrick.

Discussion

Familiarize participants with these best practices of boom truck safety:

- The design and hazards of boom trucks.
- The organization's safety requirements.
- Personal protective equipment (PPE).
- How to conduct daily truck and boom inspections.
- How to conduct a delivery site inspection.
- Inspection actions and filing requirements.
- How to maintain stability.
- Recognizing and managing hazards.
- How to read, understand and use load charts.
- Understanding critical lifts.

Hands-on training and supervised practice ensures that drivers can successfully demonstrate the following skills:

- Inspections.
- Use of PPE.
- Layout of jobsite.
- Maintaining stability.
- Operation of boom truck controls.
- Load management.

Practicing the skills

Before sending a driver out to make deliveries, have the newly trained driver practice the skills above for a minimum of eight hours. The driver should practice their skills in an area away from any hazards such as power lines, people, or structures (empty parking lots work well).

Companies with high commitment to safety often develop observation tools that outline the behaviors necessary to show proficiency prior to permitting the first delivery. (For example, what would you see if the driver does the steps safely?) Always send new drivers out with experienced drivers until the new driver shows they are confident and comfortable with the equipment. **Acceptable and unacceptable lift conditions**

Provide drivers with specific criteria outlining acceptable and unacceptable lift conditions. Below are examples of each.

Acceptable lift conditions

- Position the boom truck in a manner that the boom will keep a minimum of 10 feet from power lines rated 50kV or below; or for lines rated above 50kV, 10 feet plus 0.4 inches for every 1kV increase in power intensity.
- Position the boom truck in a way to ensure stability. (For example, both stabilizers can fully extend and lower; the surface is such that the operator can use the stabilizers with or without added padding, etc.)
- Position the boom truck in a manner to avoid striking any object or person.

Unacceptable lift conditions

Empower and authorize the operator to refuse to make any lift they determine they cannot make safely.

- Do not position the boom truck in a manner that the boom cannot maintain the required distance specified by OSHA.
- Do not position the boom truck in a way that the operator cannot ensure stability. (For example, both stabilizers cannot fully extend and lower or the surface is so soft that the operator cannot use the stabilizers even with added padding, etc.)
- Do not position the boom truck in a way the operator cannot avoid striking an object or person.
- The wind is blowing hard enough to prevent a safe lift.
- Any other situation in which the operator does not believe they can run the boom truck safely.

Critical lift conditions

The National Institute for Occupational Safety and Health (NIOSH) and others identified certain types of hoisting operations that require special considerations to ensure worker safety. The operator judges if the wind is blowing hard enough to affect the safety of the lift. In the crane and rigging community, crane operators commonly use the term critical lift to describe these situations. A critical lift generally identifies hoisting operations for which the margin for error is reduced. A critical lift occurs when either one or both of the following conditions exist:

- A lift that exceeds 75 percent of the rated capacity of the crane or derrick.
- Requires the use of more than one crane or derrick.

You must develop and implement instructions for how to manage critical lifts.

Maintaining proficiency

Maintaining proficiency is critical to ensuring safe deliveries with boom trucks. Drivers should complete two hours a week of documented incident free operation of the boom. Operation includes all inspections, setup, load manipulation/placement, and returning the boom to a safe position for transport.

Conclusion

Keep these safety tips in mind to prevent accidental contact with electric lines, crane collapse caused by overloading or improper setup, and struck by or caught in-between accidents. To ensure your safety and the safety of others working around you, it is important to recognize and identify the hazards that you and your coworkers face. Few pieces of equipment are as complex and create more dangers than a boom truck, if operated with unskilled hands.

Group activity

Review and discuss this CDC Face Report: [Delivery Truck Driver Electrocuted After Truck-Mounted Boom Contacts 40,000-Volt Overhead Power Line.](#)

Resources

OSHA 1926.600(a)(6)(i) and 1926.600(a)(6)(ii)

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.600>

[NIOSH Alert: Preventing worker injuries and deaths from mobile crane tip-over, boom collapse, and uncontrolled hoisted loads](#)