



## PS Safety & Risk Management, LLC

*Providing Safety Solutions for Today's Needs*

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### **Crane and Derrick Operations**

When conventional means of access (e.g., scaffolds, ladders) are unsafe, personnel hoisting operations that comply with the provisions of the OSHA standard are allowed. Employee safety -- not practicality or convenience -- must determine an employer's choice of method.

#### **What are the requirements for safe crane operation?**

Because using cranes or derricks to hoist personnel poses a serious risk to the employees being lifted, any cranes and derricks that hoist personnel must conform to the following:

- Be placed on a firm foundation;
- Be uniformly level within 1 percent of level grade;
- Have a minimum safety factor of seven for the load line (wire rope) of the crane or derrick (this means it must be capable of supporting seven times the maximum intended load);
- Move the personnel platform slowly and cautiously without any sudden jerking of the crane, derrick, or platform;
- Have rotation-resistant rope with a minimum safety factor of ten; and
- Have all brakes and locking devices on the crane or derrick set when the occupied personnel platform is in a stationary working position.

In addition, the combined weight of the loaded personnel platform and its rigging must not exceed 50 percent of the rated capacity of the crane or derrick for the radius and configuration of the crane or derrick.

**Note:** *The crane operator must always be at the controls when the crane engine is running and the personnel platform is occupied.* The crane operator also must have full control over the movement of the personnel platform.

#### **Must cranes and derricks have certain instruments and components?**

Yes. Employers must ensure the following:

- Cranes and derricks with variable angle booms must have a boom angle indicator that is visible to the operator.
- Cranes with telescoping booms must be equipped with a device to clearly indicate the boom's extended length, or the load radius to be used during the lift must be accurately determined prior to hoisting personnel.
- Cranes and derricks must be equipped with (1) an anti-two-blocking device that prevents contact between the load block or overhaul ball and the boom tip, or (2) a two-block damage-prevention feature that deactivates the hoisting action before damage occurs.

### **Personnel Platforms**

#### **What are the design specifications for personnel platforms?**

A qualified engineer, or a qualified person competent in structural design, must design platforms used for lifting personnel to do the following:

Support platform weight and at least five times the maximum intended load.  
Minimize tipping caused by personnel movement on platforms by having an appropriate suspension system.  
Keep tools, materials, and equipment from falling on employees below by having a standard guardrail system that is enclosed from the toeboard to the mid-rail.

Platforms also must have the following:

Inside grab rail;  
Permanent marking or plate that clearly indicates the platform's weight and rated load capacity or maximum intended load;  
Access gate, if provided, that does not swing outward during hoisting and is equipped with a restraining device to prevent accidental opening; and  
Adequate headroom for employees.

In addition, the OSHA standard requires the following:

All personnel must wear hard hats and have overhead protection on the platform when exposed to falling objects.  
All rough edges on the platform must be ground smooth to prevent injuries to employees.  
All welding on the personnel platform and its components must be performed by a qualified welder who is familiar with weld grades, types, and materials specified in the platform design.

**What are the load restrictions for personnel platforms?** The loading of personnel platforms must conform to the following requirements:

Personnel platforms must not be loaded in excess of their rated load capacity or maximum intended load as indicated on permanent markings.  
Only personnel instructed in the requirements of the standard and the task to be performed -- along with their tools, equipment, and materials needed for the job -- are allowed on the platform.  
All materials and tools must be secured and evenly distributed to balance the load while the platform is in motion.

**What does the OSHA standard require concerning rigging?**

Rigging for personnel platforms must conform to the following requirements:

Legs of bridles must be connected to a master link or shackle so that the load is evenly positioned among the bridle legs when a wire rope bridle is used to connect the platform to the load line.  
Bridles and associated rigging for attaching the personnel platform to the hoist line must not be used for any other purpose.  
Hooks and other attachment assemblies must be closed and locked to eliminate the hook throat opening (an alloy anchor-type shackle with a bolt, nut, and retaining pin may be used as an alternative).

**Note:** "Mousing" (wrapping wire around a hook to cover the hook opening) is prohibited.

**Are there any requirements for inspections and tests before hoisting personnel?**

Yes. Before hoisting employees, crane or derrick operators must conduct a trial lift of an unoccupied personnel platform immediately prior to placing personnel on the platform by taking the following actions:

Load the platform at least to its anticipated lift weight during the trial lift.  
Start the lift at ground level, or at the location where employees will enter the platform, and proceed to each location where the platform will be hoisted and positioned.  
Check all systems, controls, and safety devices to ensure that they are functioning properly and that there are no interferences.  
Ensure that all boom or hoisting configurations necessary to reach work locations will allow operators to remain under the 50 percent load limit of the hoist's rated capacity.  
Repeat the lift before hoisting personnel if a crane or derrick is moved to a new location or returned to a previous location.

## **What actions are required after the trial lift?**

After the trial lift, employers must ensure that the personnel platform is hoisted a few inches and inspected to ensure that it is secure and properly balanced. Before workers are hoisted, employers must ensure that a check is performed to ensure the following:

- Hoist ropes are free of kinks.
- Multiple part lines are not twisted around each other.
- Primary attachment is centered over the platform.
- No slack is in the wire rope.
- All ropes are properly seated on drums and in sheaves.

Immediately after the trial lift, an employer designated competent person must conduct a thorough visual inspection of the crane or derrick, the personnel platform, and the crane or derrick base support or ground to determine if the lift test exposed any defects or produced any adverse effects on any component or structure. The competent person must correct any defects found during inspections before personnel are hoisted. A competent person is one who can identify existing and predictable hazards in the workplace and is authorized to correct them (see 29 *CFR* 1926.32(f)).

Employers must ensure that the platform and rigging are proof tested to 125 percent of the platform's rated capacity in the following circumstances:

- When initially brought to a job site;
- After any repair or modification; and
- Prior to hoisting personnel.

Proof testing is achieved by holding the loaded platform, with the load evenly distributed, in a suspended position for 5 minutes. Then a competent person must inspect the platform and rigging for defects. If the competent person detects any problems, they must be corrected and another proof test conducted. Operators must not hoist personnel until proof testing requirements are met.

## **Must employers meet with workers before hoisting operations begin?**

Yes. Before any hoisting operations are performed, employers must meet with all workers involved in personnel hoisting operations -- crane or derrick operators, signal persons, employees to be lifted, and the person responsible for the hoisting operation -- to review all of the OSHA requirements in 29 *CFR* Part 1926.550(g) and the procedures everyone must follow. Employers must hold this meeting before the trial lift at each new worksite and repeat it for all employees newly assigned to the operation.

## **Safe Work Practices**

### **How can workers make hoisting operations safer?**

Workers can contribute to safe personnel hoisting operations and help reduce the number of associated accidents and injuries. Employees must follow the following safe work practices:

- Use tag lines unless their use creates an unsafe condition.
- Keep all body parts inside the platform during raising, lowering, and positioning.
- Make sure a platform is secured to the structure where work is to be performed before entering or exiting it, unless such securing would create an unsafe condition.
- Wear a personal fall arrest system. The lanyard must be attached to the lower load block or overhaul ball or to a structural member within the personnel platform. If the hoisting operation is performed over water, the requirements in 29 *CFR* Part 1920.106 apply.
- Stay in view of, or in direct communication with, the operator or signal person.

### **How can crane and derrick operators make lift operations safer?**

To make lift operations safer, crane and derrick operators must adhere to the following safe work practices:

- Do not leave crane or derrick controls when the engine is running or when the platform is occupied.
- Stop all hoisting operations if there are any indications of danger, including weather conditions.

Do not make any lifts on another load line of a crane or derrick that is being used to hoist personnel.

### **What rules apply to cranes traveling while hoisting personnel?**

Personnel hoisting is prohibited while cranes are traveling except when employers demonstrate that this is the least hazardous way to accomplish the task or when portal, tower, or locomotive cranes are used. When cranes are moving while hoisting personnel, operators must observe the following rules:

Restrict travel to affixed track or runway.

Limit travel to the radius of the boom during the lift.

Ensure that booth is parallel to the direction of travel.

Conduct trial runs before employees occupy platforms.

Check air pressure of the tires and apply chart capacity for lifts to remain under the 50 percent limit of the hoist's rated capacity *if the crane has rubber tires*. Outriggers may be partially retracted as necessary for travel.

### **What OSHA standards govern suspended personnel platforms?**

The following standards cover the use of suspended personnel platforms:

Title 29 of the *Code of Federal Regulations (CFR)* Part 1926.550 limits the use of personnel hoisting in the construction industry and prescribes safety measures for these operations.

Title 29 *CFR* Part 1926.550(g) covers personnel platforms that are suspended from the load line and used in construction.

Title 29 *CFR* Part 1910.180(h)(3)(v) covers the use of suspended personnel platforms in general industry and generally prohibits hoisting, lowering, swinging, or traveling while anyone is on the load or hook. When the use of a conventional means of access to any elevated worksite would be impossible or more hazardous, however, a violation of 1910.180(h)(3)(v) will be treated as *de minimis* -- in effect, disregarded -- if the employer has complied with the provisions in 29 *CFR* Part 1926.550(g)(3-8).

Title 29 *CFR* Part 1926.550(g)(2) prohibits hoisting personnel on a platform suspended by a crane or derrick except when no safe alternative is possible. Steel erection is unique because conventional means of access are not feasible. Consequently, 29 *CFR* Part 1926.753(c)(4) unconditionally allows the use of crane-suspended or derrick-suspended personnel platforms during steel erection. In all cases, compliance with the provisions of 29 *CFR* Part 1926.550(g)(3-8) will best protect personnel being hoisted by these platforms when such hoisting is necessary.

The information in this Safety Meeting Topic was provided by OSHA.

For more information or training needs, contact **PS Safety & Risk Management, LLC** at (225) 716-0029 or visit us at [www.pssafety.net](http://www.pssafety.net)