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Final rule basics

* Provide a safer environment for the use of hoisting equipment.
* Prevent the most common hazards in the assembly, disassembly and operation of cranes and derricks.

Power line safety

* De-energize power lines.
* Take encroachment precautions to prevent contact with power lines.
* Determine appropriate clearance distance.

OSHA Cranes and Derricks in Construction – Power Line Safety

OSHA’s [final rule on cranes and derricks](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=21692) was issued in 2010. The rule was designed to provide a safer environment for the use of hoisting equipment.

Operating cranes and derricks poses significant safety issues, both for the operators and for the individuals who work in proximity to them.

This Compliance Overview provides a summary of the requirements regarding power line safety.

**Links And Resources**

OSHA [final rule](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=21692) for cranes and derricks in construction

OSHA [webpage](https://www.osha.gov/cranes-derricks/) for cranes and derricks in construction

# POWER LINE SAFETY STANDARDS

Before beginning equipment operations, the employer must identify the work zone. This can be done by either:

* Setting boundaries (such as with flags) and prohibiting the operator from operating outside those boundaries; or
* Defining the work zone as the area 360 degrees around the equipment, up to its maximum working radius.

## Clearance Distance

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| **Table A – MINIMUM CLEARANCE DISTANCES** | |
| Voltage range  (nominal, kV, alternating current) | Minimum clearance distance  (feet) |
| Up to 50 | 10 |
| 50 - 200 | 15 |
| 200 - 350 | 20 |
| 350 - 500 | 25 |
| 500 - 750 | 35 |
| 750 - 1,000 | 45 |
| Over 1,000 | Must be established by the utility owner or operator or a qualified, registered professional engineer. |

The clearance distance is the required minimum space between power lines and cranes, derricks or their loads and load lines. Generally, the clearance distance is 20 feet. The employer must determine if any part of the equipment, load or load line could get closer than 20 feet to a power line.

Operating, assembling and disassembling cranes and derricks below power lines is prohibited, unless the employer has confirmed that the power lines have been de-energized or are visibly grounded.

If cranes and derricks could get closer than 20 feet to a power line, the employer has three options:

1. De-energize and ground the power line;
2. Take encroachment precautions to prevent contact with the power lines; or
3. Consult Table A of the standards (above) to determine the appropriate clearance distance.

The clearance distance can be adjusted depending on the power line’s voltage. For power lines between 350 and 1,000 kilovolt (kV), the applicable distance is 50 feet. For power lines over 1,000 kV, the minimum clearance distance must be established by an individual qualified in the science of electrical power transmission and distribution, usually the power line’s owner or operator or a registered professional engineer.

## Exceptions

Operating equipment closer than the minimum clearance distance to an energized power line is prohibited, unless:

* The work cannot be completed otherwise;
* De-energizing and grounding or relocating the power line is impracticable;
* The power line owner or operator or a qualified registered professional engineer has determined the minimum clearance distance that must be maintained to prevent contact;
* A planning meeting has been held to determine the procedures that must be followed to prevent contact with the power line and electrocution (the procedures must meet minimum standards, be documented and be made available on-site immediately);
* The procedures mentioned above are reviewed and implemented (the person directing the implementation must have the authority to stop work at any time to ensure safety); and
* Operators and crew members are properly trained, and any safety devices are used in accordance with the manufacturer’s conditions.

If the procedures mentioned above prove to be inadequate, the employer must cease all work around the power line until it can develop new procedures, relocate the power line, or de-energize and visibly ground the power line.

In addition, at least one electrocution hazard warning must be conspicuously posted in the cab so that the operator can see it (except for overhead gantry and tower cranes). At least two warnings must be posted on the outside of the equipment.

## Training

Employers must train each operator and crew member assigned to work with the equipment on:

* What procedures to follow in the event of contact with a power line;
* Assuming that power lines are energized, unless their owner or operator confirms that the power lines have been, and continues to be, de-energized and visibly grounded at the worksite;
* Assuming that power lines are *not* insulated, unless their owner or operator or a qualified, registered engineer confirms that the power lines are insulated;
* The limitations of an insulating link or device, the proximity alarm and the range control devise (if used); and
* How to properly ground equipment and the limitations of grounding to prevent electrocution.

Employees working as dedicated spotters must receive sufficient training to enable them to effectively perform their responsibilities and must include the instructions mentioned above.

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| **Table T – MINIMUM CLEARANCE DISTANCES WHILE TRAVELING WITH NO LOAD** | |
| Voltage range  (nominal, kV, alternating current) | Minimum clearance while traveling  (feet) |
| Up to 0.75 | 4 |
| 0.75 - 50 | 6 |
| 50 - 345 | 10 |
| 345 - 750 | 16 |
| 750 - 1,000 | 20 |
| Over 1,000 | Must be established by the utility owner or operator or registered professional engineer |

## Traveling Under or Near Power Lines

OSHA standards also address power line safety while traveling under or near power lines with no load on a construction site. These standards include:

* Lowering booms and masts;
* Taking into consideration the effects of speed and terrain on equipment movement;
* Using spotters if the equipment will get closer than 20 feet to the power line;
* Illuminating or identifying power lines if traveling at night or in poor visibility; and
* Determining and using a safe travel path.