

**Subchapter 7. General Industry Safety Orders**  
**Group 13. Cranes and Other Hoisting Equipment**  
**Article 96. Tower Cranes**



**§4965. General.**

(a) The requirements of this Article shall apply to cranes of the general type such as those having a revolving boom with counterweight on a single vertical mast, and mobile tower cranes.

(b) Each crane shall be provided with a descriptive booklet, written in English, containing a comprehensive summary of design characteristics, erection procedures, operation techniques, repair recommendations, and safety precautions. This booklet shall be available on every job site where such cranes are in use.

(c) A durable, clearly legible load rating chart shall be provided with each crane and securely affixed in the cab or operator's station easily visible to the operator while at the controls. The chart shall include load ratings and restrictions as specified by the certified agent for specific lengths of components, counterweights, swing, and radii. Where load ratings for cranes are governed by structural competence, the limitation on loading shall be such that no structural member is overstressed, and load rating charts shall be subject to this limitation.

(d) Each crane shall be equipped with a device which will effectively prevent overloading beyond the certified agent's recommendations at any load, boom radius, and counterweight position.

(e) Each crane shall contain a means which will cause the boom swing to be started and stopped gradually to prevent damaging effects of torsion in the mast section.

(f) Each crane shall be equipped with a brake system, or equivalent, which will prevent any movement when the power is lost, or at any time desired by the operator.

(g) Parts of the crane requiring adjustment or maintenance shall be provided with access walkways, handholds, footholds, safety lines, or other safeguards as necessary to eliminate the hazard of falling from the crane.

Exception: Mobile tower crane adjustment or maintenance that can be achieved from the ground.

(h) Cranes mounted on rail tracks shall be equipped with limit switches limiting the travel of the crane on the track, and stops or buffers at each end of the tracks.

(i) Cranes shall be tested, maintained, inspected, and operated as specified by the certified agent and these Orders. Luffing boom tower cranes used in the construction industry shall comply with the requirements of ASME B30.3-1990, Hammerhead Tower Cranes, herein incorporated by reference.

(j)(1) If a tower crane remains on a project over twelve months, tests required by subsection (i) of this section shall be performed following dismantling and prior to its next use.

(2) Records of the most recent nondestructive tests and the test procedures shall be maintained by the owner of the crane and provided to the Division upon request.

#### **§4966. Erection, Dismantling and Operation.**

(a) Erection and Dismantling.

(1) The erection, climbing (up and down) and dismantling of a fixed tower crane shall comply with the requirements of Title 8, Section 341.1(b)(2).

(A) Employees engaged in the erection and/or dismantling of tower cranes and the inspection, maintenance or repair related to such erection and/or dismantling, when working at elevations 15 feet or greater over ground or other surfaces shall be required to use fall protection as specified in Article 24 of the Construction Safety Orders.

(2) Guys, braces and other supports shall be employed as necessary to prevent damage or collapse of the equipment during the erection and dismantling procedures.

(b) The unbraced, free standing portion of the mast between the boom and the top support position shall be limited in height to the distance recommended by the certified agent.

(c) When the certified agent requires the mast to be secured in the shaftway of a structure, the structural members to which it is secured shall be adequate to safely sustain all anticipated loads including vibration.

(d) Where the vertical load of the crane assembly is supported by the edges of floor openings of a structure, measures shall be taken to prevent structural damage of such support.

(e) When the mast sections are raised to a new position, measures shall be taken to prevent damage or collapse of the crane assembly including vertical slippage of the mast unit.

(f) Load Limit Device.

(1) The load limit device shall be in effective operation and shall not be readjusted to handle loads greater than those specified by the certified agent.

(2) In addition to the requirements of Section 5000, whenever a load limit device is unsealed, repaired, or readjusted, a qualified person shall perform any testing necessary to ensure the continuing effective operation of the device. A test load or device capable of measuring 110 percent of the certified agent's load capacity shall be available at the job site.

(g) The load line shall be directly over the load to be lifted.

(h) The operator shall be stationed in a safe position where good visibility and control can be maintained.

#### **§4967. Unattended Booms.**

When necessary to lash crane booms, they shall be lashed only in accordance with the certified agent's recommendations.

## **§4968. Safety Devices.**

All tower cranes shall have the following safety devices:

(a) Visual warning devices:

(1) A warning light which shall be activated at a percentage of the rated load, not to exceed 95 percent of the rated load, or

(2) Electronic instrumentation provided by the certified agent that gives a continuous direct reading of the load weight and the trolley radius.

(b) An audible signal that operates at a percentage of the rated load, not to exceed 100 percent of the rated load.

(c) The visual warning light, and audible signal required by subsections (a)(1) and (b) shall be set to avoid simultaneous activation, and operate with a difference of at least 5 percent of the rated load to ensure independent warnings.

(d) An automatic stop that operates at a percentage of the rated load, not to exceed 105 percent of the rated load.

(e) When the crane manufacturer specifies lower activation points for safety devices than required by subsections (a)(1), (b) and (d), the manufacturer's specifications shall be followed.

(f) Limit devices to:

(1) Provide deceleration before the top position of the hook is reached.

(2) Limit the trolley traveling both in and out.

(g) Constant pressure control devices which automatically return to neutral or the "off" position when released by the operator.

## **§4969. Electrical Grounding.**

All electrically-operated cranes shall be effectively grounded.

