

WAC 296-56-60083 Cranes and derricks. (1) Scope.

(a) This section through WAC 296-56-60103 applies to every kind of crane and derrick and to any other type of equipment performing the functions of a crane or derrick except as noted in (b) of this subsection.

(b) This section does not apply to small industrial truck-type cranes, container handling toploaders and sideloaders, chain hoists, and mobile straddle-type cranes incapable of straddling two or more intermodal containers (sixteen feet (4.88 m) in width).

(2) You must meet the following requirements for ratings:

(a) Except for bridge cranes covered by subsection (7) of this section, cranes and derricks having ratings that vary with boom length, radius (outreach) or other variables must have a durable rating chart visible to the operator, covering the complete range of the manufacturer's (or design) capacity ratings. The rating chart must include all operating radii (outreach) for all permissible boom lengths and jib lengths as applicable, with and without outriggers, and alternate ratings for optional equipment affecting such ratings. Precautions or warnings specified by the owner or manufacturer must be included.

(b) The manufacturer's (or design) rated loads for the conditions of use must not be exceeded.

(c) Designated working loads must not be increased beyond the manufacturer's ratings or original design limitations unless such increase receives the manufacturer's approval. When the manufacturer's services are not available or where the equipment is of foreign manufacture, engineering design analysis must be performed or approved by a person accredited for certifying the equipment under WAC 296-56-60093. Cranes must conform with the manufacturer's specifications or any current ANSI standards that apply. Engineering design analysis must be performed by a registered professional engineer competent in the field of cranes and derricks. Any structural changes necessitated by the change in rating must be carried out.

(3) You must make sure when the rated load varies with the boom radius, the crane or derrick is fitted with a boom angle or radius indicator visible to the operator.

(4) You must prohibit the following usage:

(a) Equipment must not be used in a manner that exerts sideloading stresses upon the crane or derrick boom.

(b) No crane or derrick having a visible or known defect that affects safe operation must be used.

(5) You must meet the following requirements for protective devices:

(a) When exposed moving parts such as gears, chains and chain sprockets present a hazard to employees during crane and derrick operations, those parts must be securely guarded.

(b) Crane hooks must be latched or otherwise secured to prevent accidental load disengagement.

(c) When hoisting personnel in an approved man basket, the hook must have a positive safety latch to prevent rollouts.

(6) You must meet the following general requirements:

(a) Operating controls:

(i) Crane and derrick operating controls must be clearly marked, or a chart indicating their function must be posted at the operator's position.

(ii) All crane controls must operate in a uniform manner within a given port.

(iii) Overhead bridge and container gantry crane operating control levers must be self-centering so that they will automatically move to the "off" position when the operator releases the control.

(b) Cranes with elevatable booms and without operable automatic limiting devices must be provided with boom stops if boom elevation can exceed maximum design angles from the horizontal.

(c) Foot pedals must have a nonskid surface.

(d) Ladders, stairways, stanchions, grab irons, foot steps or equivalent means must be provided as necessary to ensure safe access to footwalks, cab platforms, the cab and any portion of the superstructure which employees must reach.

(i) Footwalks must be of rigid construction and capable of supporting a load of one hundred pounds (4.79 kPa) per square foot.

(ii) If more than twenty feet (6.1 m) in height, vertical ladders must comply with WAC 296-56-60209 (4), (5)(a), (5)(b)(iii) and (5)(b)(iv).

(iii) Stairways on cranes must be equipped with rigid handrails meeting the requirements of WAC 296-56-60123 (5)(a).

(iv) If the top of a ladder or stairway or any position thereof is located where a moving part of a crane, such as a revolving house, could strike an employee ascending or descending the ladder or stairway, a prominent warning sign must be posted at the foot of the ladder or stairway. A system of communication (such as a buzzer or bell) must be established and maintained between the foot of the ladder or stairway and the operator's cab.

(e) The cab, controls, and mechanism of the equipment must be so arranged that the operator has a clear view of the load or signal person, when one is used. Cab glass, when used, must be safety plate glass or equivalent and good visibility must be maintained through the glass. Clothing, tools and equipment must be stored so as not to interfere with access, operation, or the operator's view.

(f) A seat (lap) belt, meeting the requirements of 49 C.F.R. 571.208-210 for a Type 1 seat belt assembly, must be installed on the operator's seat of high speed container gantry cranes where the seat trolleys.

(g) Cranes must be operated only with the specified type and amount of ballast or counterweights. Ballast or counterweight must be located and secured only as provided in the manufacturer's or design specifications, which must be available.

(h) Outriggers must be used according to the manufacturer's specifications or design data, which must be available. Floats, when used, must be securely attached to the outriggers. Wood blocks or other support must be of sufficient size to support the outrigger, free of defects that may affect safety and of sufficient width and length to prevent the crane from shifting or toppling under load.

(i) Engine exhaust gases must be discharged away from the normal position of crane operating personnel.

(j) Electrical equipment must be so located or enclosed that live parts will not be exposed to accidental contact. Designated persons may work on energized equipment only if necessary during inspection, maintenance, or repair.

(k) Fire extinguisher:

(i) At least one portable fire extinguisher of at least 5-BC rating or equivalent must be accessible in the cab of the crane or derrick.

(ii) No portable fire extinguisher using carbon tetrachloride or chlorobromomethane extinguishing agents must be used.

Note: For additional requirements relating to portable fire extinguishers see WAC 296-800-300.

(l) At least three full turns of rope must remain on ungrooved drums, and two turns on grooved drums, under all operating conditions. Wire rope must be secured to drums by clamps, U-bolts, shackles, or equivalent means. Fiber rope fastenings are prohibited.

(m) Mobile crane booms being assembled or disassembled on the ground with or without the support of the boom harness must be blocked to prevent dropping of the boom or boom sections.

(n) Brakes:

(i) Each independent hoisting unit of a crane must be equipped with at least one holding brake, applied directly to the motor shaft or gear train.

(ii) Each independent hoisting unit of a crane, except worm geared hoists, the angle of whose worm is such as to prevent the load from accelerating in the lowering direction, must, in addition to a holding brake, be equipped with a controlled braking means to control lowering speeds.

(iii) Holding brakes for hoist units must have not less than the following percentage of the rated load hoisting torque at the point where the brake is applied:

(A) One hundred twenty-five percent when used with a controlled braking means.

(B) One hundred percent when used with a mechanically controlled braking means.

(C) One hundred percent when two holding brakes are provided.

(iv) All power control braking means must be capable of maintaining safe lowering speeds of rated loads.

(o) Each crane or derrick must be equipped with sufficient lights to maintain five foot candles in the working area around the load hook. All crane ladders and machinery houses must be illuminated at a minimum of two candle power.

(p) Light fixtures connected to the boom, gantry legs, or machinery house must be provided with safety devices which will prevent the light fixture from falling in case of bracket failure.

(q) Electronic devices may be installed to prevent collision subject to approval of the accredited certification agency.

(r) On all rail gantry cranes, truck guards must extend on the ends of the trucks, close to the top of the rail to prevent worker's feet from being caught between the rail and wheel. This subsection does not apply if rail sweeps are present.

(s) All hydraulic cylinders used to control crane booms or to provide crane stability (outriggers) must be equipped with a pilot operated check valve or a device which will prevent the boom or outrigger from retracting in case of failure of a component of the hydraulic system.

(t) Gantry cranes must be provided with automatic rail clamps or other devices to prevent the crane from moving when not being used or when power is off.

(7) You must meet the following requirements for rail-mounted cranes (excluding locomotive types):

(a) For the purposes of this section, rail-mounted cranes include bridge cranes and portal cranes.

(b) The rated loads of bridge cranes must be plainly marked on each side of the crane and in the cab. If there is more than one hoisting unit, each hoist must have its rated load marked on it or on its load block. Marking must be legible from the ground level.

(c) Wind-indicating devices:

(i) Each rail-mounted bridge and portal crane located outside of an enclosed structure must be fitted with an operable wind-indicating device.

(ii) The wind indicating device must provide a visible or audible warning to alert the operator of high wind conditions. That warning must be transmitted whenever the following circumstances are present:

(A) When wind velocity reaches the warning speed, not exceeding the crane manufacturer's recommendations; and

(B) When wind velocity reaches the shutdown speed, not exceeding the crane manufacturer's recommendations, at which work is to be stopped and the crane secured.

(iii) You must post operating instructions for high wind conditions in the operator's cab of each crane. Operators must be directed to comply with these instructions. The instructions must include procedures for responding to high wind alerts and for any coordination necessary with other cranes.

(d) Securing of cranes in high winds.

(i) When the wind reaches the crane's warning speed:

(A) Gantry travel must be stopped; and

(B) The crane must be readied for shutdown.

(ii) When the wind reaches the crane's shutdown speed:

(A) Any portion of the crane spanning or partially spanning a vessel must be moved clear of the vessel if safe to do so; and

(B) The crane must be secured against travel, using all available means of securing.

(e) You must monitor local weather conditions by subscribing to a weather service or using equally effective means.

(f) The following applies for stops and bumpers:

(i) The ends of all tracks must be equipped with stops or bumpers. If a stop engages the tread of the wheel, it must be of a height not less than the radius of the wheel.

(ii) When more than one crane operates on the same runway or more than one trolley on the same bridge, each crane or trolley must be equipped with bumpers or equivalent devices at adjacent ends subject to impact.

(g) Employee exposure to crane movement. When employees may be in the vicinity of the tracks, crane trucks must be equipped with personnel-deflecting guards.

(h) If the track area is used for employee passage or for work, a minimum clearance of three feet (0.91 m) must be provided between trucks or the structures of rail-mounted cranes and any other structure or obstruction. When the required clearance is not available on at least one side of the crane's trucks, the area must not be used and must be marked and identified.

(i) Rail-mounted cranes must be equipped with an effective audible and visible travel warning device which must be used to warn employees who may be in the path of the moving crane.

(j) The following are requirements for communications:

(i) Means of communication must be provided between the operator's cab and the base of the gantry of all rail-mounted cranes. This requirement may be met by telephone, radio, sound-signaling system or other effective methods, but not solely by hand-signaling.

(ii) All rail-mounted cranes thirty ton and above capacity must be equipped with a voice hailing device (PA system) from the operator to the ground, audible within one hundred feet.

(k) Limit switch bypass systems must be secured during all cargo operations. Such bypass systems must not be used except in an emergen-

cy or during noncargo handling operations such as stowing cranes or derricks or performing repairs. When a situation requiring the use of a bypass system or the readjustment of a limit switch arises, it must be done only under the direction of a crane mechanic.

(1) Cranes and crane operations—Scope and application. The sections of this chapter, WAC 296-56-60083 through 296-56-60099, apply to cranes, derricks, and crane operations.

(m) A signal person must be required when a crane operator's visibility is obstructed. When a signal person is required to transmit hand signals, they must be in such a position that the operator can plainly see the signals.

(n) All operators and signal persons must use standard signals as illustrated for longshore crane operations. (See Appendices C and D, at the end of this chapter.)

(o) Where power units, such as cranes and winches are utilized and signaling is required, the operator must be instructed as to who is authorized to give signals. The operator must take signals only from such authorized person. In case of emergency, any worker must be authorized to give a stop signal.

(i) No draft must be hoisted unless the winch or crane operator can clearly see the draft itself or see the signals of any signal person associated with the operation.

(ii) Loads requiring continuous manual guidance while in motion must be provided with tag lines.

(p) Persons assisting in landing a load must face the load and use caution to prevent themselves from getting in a position where they may be caught between the load and a fixed object.

(8) You may hoist loads by locomotive cranes only if outriggers are in place, unless means are taken to prevent the load being carried by the truck springs of the crane.

(9) You must meet the following requirements for operations:

(a) When two or more cranes hoist a load in unison, a designated person must direct the operation and instruct personnel in positioning, rigging of the load and movements to be made.

(b) Accessible areas within the swing radius of the body of a revolving crane must be physically guarded during operations to prevent an employee from being caught between the body of the crane and any fixed structure or between parts of the crane.

(c) The crane's superstructure and boom must be secured against rotation and carried in line with the direction of travel except when negotiating turns with an operator in the cab or when the boom is supported on a dolly. The empty hook or other attachment must be secured.

(d) The following steps must be taken before leaving a crane unattended between work periods:

(i) Suspended loads, such as those hoisted by lifting magnets or clamshell buckets, must be landed unless the storage position or maximum hoisting of the suspended device will provide equivalent safety;

(ii) Clutches must be disengaged;

(iii) The power supply must be shut off;

(iv) The crane must be secured against accidental travel; and

(v) The boom must be lowered or secured against movement.

(e) Operating near electric power lines:

(i) Unless electrical distribution and transmission lines are deenergized and visibly grounded at point of work, or unless insulating barriers not a part of or an attachment to the crane have been

erected to prevent physical contact with lines, cranes may be operated near power lines only in accordance with the following:

(A) For lines rated 50 kV or below, minimum clearance between the lines and any part of the crane or load must be ten feet (3.05 m);

(B) For lines rated over 50 kV, minimum clearance between the lines and any part of the crane or load must be either 10 feet (3.05 m) plus 0.4 inch (10.16 mm) for each 1 kV over 50 kV, or twice the length of the line insulator, but never less than ten feet; and

(C) In transit with no load and boom lowered, the clearance must be a minimum of four feet (1.22 m).

(ii) Cage-type boom guards, insulating links or proximity warning devices may be used on cranes, but they must not be used in place of the clearances required by subsection (9)(e)(i) of this section.

(iii) Any overhead line must be presumed to be energized until the owner of the line indicates that it is not energized.

(10) You must meet the following requirements for protection for employees being hoisted:

(a) You must make sure no employee is hoisted by the load hoisting apparatus of a crane or derrick except:

(i) On intermodal container spreaders, equipped in accordance with this subsection; or

(ii) In a boatswain's chair or other device rigged to prevent it from accidental disengagement from the hook or supporting member; or

(iii) On a platform meeting the following requirements:

(A) Enclosed by a railing or other means providing protection equivalent to that described in WAC 296-56-60123(3). If equipped with open railings, the platform must be fitted with toe boards;

(B) Having a safety factor of four based on ultimate strength;

(C) Bearing a plate or permanent marking indicating maximum load rating, which must not be exceeded, and the weight of the platform itself;

(D) Equipped with a device to prevent access doors, when used, from opening accidentally;

(E) Equipped with overhead protection for employees on the platform if they are exposed to falling objects or overhead hazards;

(F) Secured to the load line by means other than wedge and socket attachments, unless the free (bitter) end of the line is secured back to itself by a clamp placed as close above the wedge as possible.

(b) Except in an emergency, the hoisting mechanism of all overhead and container gantry cranes used to hoist personnel must operate in power up and power down, with automatic brake application when not hoisting or lowering.

(c) Variable radius booms of a crane or derrick used to hoist personnel must be so constructed or secured as to prevent accidental boom movement.

(d) Platforms or devices used to hoist employees must be inspected for defects before each day's use and must be removed from service if defective.

(e) Employees being hoisted must remain in continuous sight of and communication with the operator or signal person.

(f) Operators must remain at the controls when employees are hoisted.

(g) Cranes must not travel while employees are hoisted, except in emergency or in normal tier to tier transfer of employees during container operations.

(h) When intermodal container spreaders are used to transfer employees to or from the tops of containers, the spreaders must be

equipped with a personnel platform equipped with fixed railings, provided that the railings have one or more openings for access. The openings must be fitted with a means of closure, such as chains with hooks. Existing railings must be at least thirty-six inches (0.91 m) in height. New railings installed after October 3, 1983, must be forty-two inches (1.07 m), plus or minus three inches (7.62 cm), in height. The provisions of (a)(iii)(C), (D), and (F) of this subsection also apply to personnel platforms when container spreaders are used.

(i) Positive safety latch-type hooks or moused hooks must be used.

(j) Employees must not be hoisted on intermodal container spreaders while a load is engaged. Additional requirements are located in WAC 296-24-23533.

(11) You must meet the following requirements for routine inspections:

(a) Designated persons must visually inspect each crane and derrick on each day of use for defects in functional operating components and must report any defect found to the employer. You must inform the operator of the findings.

(b) A designated person must thoroughly inspect all functional components and accessible structural features of each crane or device at monthly intervals.

(c) Any defects found during such inspections which may create a safety hazard must be corrected before further use. Repairs must be performed only by designated persons.

(d) A record of monthly inspections must be maintained for six months in or on the crane or derrick or at the terminal.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 15-24-102, § 296-56-60083, filed 12/1/15, effective 1/5/16. Statutory Authority: RCW 49.17.010, [49.17].040, and [49.17].050. WSR 01-17-033, § 296-56-60083, filed 8/8/01, effective 9/1/01; WSR 00-21-103, § 296-56-60083, filed 10/18/00, effective 2/1/01. Statutory Authority: RCW 49.17.040. WSR 99-02-024, § 296-56-60083, filed 12/30/98, effective 3/30/99. Statutory Authority: Chapter 49.17 RCW. WSR 95-04-007, § 296-56-60083, filed 1/18/95, effective 3/1/95. Statutory Authority: Chapter 49.17 RCW and RCW 49.17.040, [49.17].050 and [49.17].060. WSR 92-22-067 (Order 92-06), § 296-56-60083, filed 10/30/92, effective 12/8/92. Statutory Authority: RCW 49.17.040 and 49.17.050. WSR 86-03-064 (Order 86-02), § 296-56-60083, filed 1/17/86; WSR 85-10-004 (Order 85-09), § 296-56-60083, filed 4/19/85; WSR 85-01-022 (Order 84-24), § 296-56-60083, filed 12/11/84.]