

Regulations (Standards - 29 CFR)
Crawler locomotive and truck cranes. - 1910.180

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- **Part Number:** 1910
 - **Part Title:** Occupational Safety and Health Standards
 - **Subpart:** N
 - **Subpart Title:** Materials Handling and Storage
 - **Standard Number:** [1910.180](#)
 - **Title:** Crawler locomotive and truck cranes.
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1910.180(a)

"Definitions applicable to this section."

1910.180(a)(1)

A "crawler crane" consists of a rotating superstructure with powerplant, operating machinery, and boom, mounted on a base or car equipped with crawler tracks for travel. Its function is to hoist and swing loads at various radii.

1910.180(a)(2)

A "locomotive crane" consists of a rotating superstructure with power-plant, operating machinery and boom, mounted on a base or car equipped for travel on railroad track. It may be self-propelled or propelled by an outside source. Its function is to hoist and swing loads at various radii.

1910.180(a)(3)

A "truck crane" consists of a rotating superstructure with powerplant, operating machinery and boom, mounted on an automotive truck equipped with a powerplant for travel. Its function is to hoist and swing loads at various radii.

..1910.180(a)(4)

1910.180(a)(4)

A "wheel mounted crane" (wagon crane) consists of a rotating superstructure with powerplant, operating machinery and boom, mounted on a base or platform equipped with axles and rubber-tired wheels for travel. The base is usually propelled by the engine in the superstructure, but it may be equipped with a separate engine controlled from the superstructure. Its function is to hoist and swing loads at various radii.

1910.180(a)(5)

An "accessory" is a secondary part or assembly of parts which contributes to the overall function and usefulness of a machine.

1910.180(a)(6)

"Appointed" means assigned specific responsibilities by the employer or the employer's representative.

1910.180(a)(7)

"ANSI" means the American National Standards Institute.

1910.180(a)(8)

An "angle indicator" [boom] is an accessory which measures the angle of the boom to the horizontal.

1910.180(a)(9)

The "axle" is the shaft on which the wheels of the crane structure rotate.

1910.180(a)(10)

"Axle" means the shaft on which or about which a wheel rotates. On truck- and wheel-mounted cranes it refers to an automotive type of axle assembly including housings, gearing, differential, bearings, and mounting appurtenances.

1910.180(a)(11)

"Axle" [bogie] means two or more automotive-type axles mounted in tandem in a frame so as to divide the load between the axles and permit vertical oscillation of the wheels.

1910.180(a)(12)

1910.180(a)(12)

The "base" (mounting) is the traveling base or carrier on which the rotating superstructure is mounted such as a car, truck, crawlers, or wheel platform.

1910.180(a)(13)

The "boom" [crane] is a member hinged to the front of the rotating superstructure with the outer end supported by ropes leading to a gantry or A-frame and used for supporting the hoisting tackle.

1910.180(a)(14)

The "boom angle" is the angle between the longitudinal centerline of the boom and the

horizontal. The boom longitudinal centerline is a straight line between the boom foot pin (heel pin) centerline and boom point sheave pin centerline.

1910.180(a)(15)

The "boom hoist" is a hoist drum and rope reeving system used to raise and lower the boom. The rope system may be all live reeving or a combination of live reeving and pendants.

1910.180(a)(16)

The "boom stop" is a device used to limit the angle of the boom at the highest position.

1910.180(a)(17)

A "brake" is a device used for retarding or stopping motion by friction or power means.

1910.180(a)(18)

A "cab" is a housing which covers the rotating structure machinery and/or operator's station. On truck-crane trucks a separate cab covers the operator's station.

1910.180(a)(19)

1910.180(a)(20)

The "clutch" is a device, hydraulic, pneumatic, or positive mechanical device for engaging and disengagement of power.

1910.180(a)(21)

The "counterweight" is a weight used to supplement the weight of the machine in providing stability for lifting working loads.

1910.180(a)(22)

"Designated" means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

1910.180(a)(23)

The "drum" is the cylindrical members around which ropes are wound for raising and lowering the load or boom.

1910.180(a)(24)

"Dynamic" (loading) means loads introduced into the machine or its components by forces in motion.

1910.180(a)(24)

The "gantry" (A-frame) is a structural frame, extending above the superstructure, to which the boom support ropes are reeved.

1910.180(a)(25)

A "jib" is an extension attached to the boom point to provide added boom length for lifting specified loads. The jib may be in line with the boom or offset to various angles.

1910.180(a)(26)

"Load" (working) means the external load, in pounds, applied to the crane, including the weight of load-attaching equipment such as load blocks, shackles, and slings.

1910.180(a)(27)

1910.180(a)(27)

"Load block" means the assembly of hook or shackle, swivel, sheaves, pins, and frame suspended by the hoisting ropes.

1910.180(a)(28)

"Load block" means the assembly of hook or shackle, swivel, sheaves, pins, and frame suspended by the hoisting ropes.

1910.180(a)(29)

A "load hoist" is a hoist drum and rope reeving system used for hoisting and lowering loads.

1910.180(a)(30)

"Load ratings" are crane ratings in pounds established by the manufacturer in accordance with paragraph (c) of this section.

1910.180(a)(31)

"Outriggers" are extendable or fixed metal arms, attached to the mounting base, which rest on supports at the outer ends.

1910.180(a)(32)

"Rail clamp" means a tong-like metal device, mounted on a locomotive crane car, which can be connected to the track.

1910.180(a)(33)

"Reeving" means a rope system in which the rope travels around drums and sheaves.

1910.180(a)(34)

"Rope" refers to a wire rope unless otherwise specified.

1910.180(a)(35)

"Side loading" means a load applied at an angle to the vertical plane of the boom.

..1910.180(a)(36)

1910.180(a)(36)

A "standby crane" is a crane which is not in regular service but which is used occasionally or intermittently as required.

1910.180(a)(37)

A "standing (guy) rope" is a supporting rope which maintains a constant distance between the points of attachment to the structure and the crane by the rope.

1910.180(a)(38)

"Structural components" are the parts of the machine and its components to withstand the stresses imposed by applied loads.

1910.180(a)(39)

"Superstructure" means the rotating upper frame structure of the machine and the operating machinery mounted thereon.

1910.180(a)(40)

"Swing" means the rotation of the superstructure for movement of loads in a horizontal direction about the axis of rotation.

1910.180(a)(41)

"Swing mechanism" means the machinery involved in providing rotation of the superstructure.

1910.180(a)(42)

"Tackle" is an assembly of ropes and sheaves arranged for hoisting and pulling.

1910.180(a)(43)

"Transit" means the moving or transporting of a crane from one jobsite to another.

..1910.180(a)(44)

1910.180(a)(44)

"Travel" means the function of the machine moving from one location to another, on a jobsite.

1910.180(a)(45)

The "travel mechanism" is the machinery involved in providing travel.

1910.180(a)(46)

"Wheelbase" means the distance between centers of front and rear axles. For a multiple axle assembly the axle center for wheelbase measurement is taken as the midpoint of the assembly.

1910.180(a)(47)

The "whipline" (auxiliary hoist) is a separate hoist system of higher load capacity and higher speed provided by the crane.

1910.180(a)(48)

A "winch head" is a device for handling of loads by means of friction between fiber or wire rope and a drum.

..1910.180(b)

1910.180(b)

"General requirements" -

1910.180(b)(1)

"Application." This section applies to crawler cranes, locomotive cranes, wheel mounted cranes of both truck and self-propelled wheel type, and any variations thereof which retain the same fundamental characteristics. This section includes only cranes of the above types, which are basically powered by internal combustion engines or electric motors and which utilize drums and ropes. Cranes designed for railway and automobile wreck clearances are excepted. The requirements of this section are applicable only to machines when used as lifting cranes.

1910.180(b)(2)

"New and existing equipment." All new crawler, locomotive, and truck cranes constructed

and utilized on or after August 31, 1971, shall meet the design specifications of the American National Standard Safety Code for Crawler, Locomotive, and Truck Cranes, ANSI B30.5-1968, which is incorporated by reference as specified in Sec. 1910.6. Crawler, locomotive, and truck cranes constructed prior to August 31, 1971, should be modified to conform to those design specifications by February 15, 1972, unless it can be shown that the crane cannot feasibly or economically be altered and that the crane substantially complies with the requirements of this section.

1910.180(b)(3)

"Designated personnel." Only designated personnel shall be permitted to operate a crane covered by this section.

..1910.180(c)

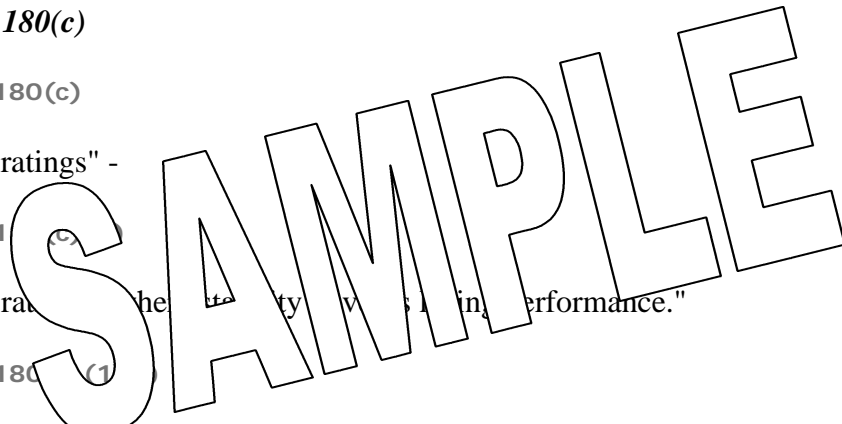
1910.180(c)

"Load ratings" -

1910.180(c)(1)

"Load ratings shall be determined by the following performance."

1910.180(c)(1)



The margin of stability for determination of load ratings, with booms of stipulated lengths at stipulated working radii for the various types of crane mountings, is established by taking a percentage of the loads which will produce a condition of tipping or balance with the boom in the least stable direction, relative to the mounting. The load ratings shall not exceed the following percentages for cranes, with the indicated types of mounting under conditions stipulated in paragraphs (c)(1)(ii) and (iii) of this section.

Type of crane mounting	Maximum load ratings (percent of tipping loads)
Locomotive, without outriggers:	
Booms 60 feet or less	(1) 85
Booms over 60 feet	(1) 85
Locomotive, using outriggers fully extended...	80
Crawler, without outriggers.....	75
Crawler, using outriggers fully extended.....	85
Truck and wheel mounted without outriggers or using outriggers fully extended.....	85

Footnote(1) Unless this results in less than 30,000 pound-feet net stabilizing moment about the rail, which shall be minimum with such booms.

1910.180(c)(1)(ii)

The following stipulations shall govern the application of the values in paragraph (c)(1)(i) of this section for locomotive cranes:

1910.180(c)(1)(ii)(a)

Tipping with or without the use of outriggers occurs when half of the wheels farthest from the load leave the rail.

1910.180(c)(1)(ii)(b)

The crane shall be standing on track which even with 1 percent grade

1910.180(c)(1)(ii)(c)

Radius of the load hoist or derrick from a vertical axis of rotation to the rail support surface to the vertical hoist line or tackle with load applied.

1910.180(c)(1)(ii)(d)

Tipping loads from which ratings are determined shall be applied under static conditions only, i.e., without dynamic effect of hoisting, lowering, or swinging.

1910.180(c)(1)(ii)(e)

The weight of all auxiliary handling devices such as hoist blocks, hooks, and slings shall be considered a part of the load rating.

..1910.180(c)(1)(iii)

1910.180(c)(1)(iii)

Stipulations governing the application of the values in paragraph (c)(1)(i) of this section for crawler, truck, and wheel-mounted cranes shall be in accordance with Crane Load-Stability Test Code, Society of Automotive Engineers (SAE) J765, which is incorporated by reference as specified in Sec. 1910.6.

1910.180(c)(1)(iv)

The effectiveness of these preceding stability factors will be influenced by such additional factors as freely suspended loads, track, wind, or ground conditions, condition and inflation

of rubber tires, boom lengths, proper operating speeds for existing conditions, and, in general, careful and competent operation. All of these shall be taken into account by the user.

1910.180(c)(2)

"Load rating chart." A substantial and durable rating chart with clearly legible letters and figures shall be provided with each crane and securely fixed to the crane cab in a location easily visible to the operator while seated at his control station.

1910.180(d)

"Inspection classification" -

1910.180(d)(1)

"Initial inspection." Prior to initial use all new and altered cranes shall be inspected to insure compliance with provisions of this section.

1910.180(d)(2)

1910.180(d)(2)

"Regular inspection." Inspection shall be performed in regular sequence. Regular inspection shall be divided into two general classifications based upon intervals which inspections shall be performed. The intervals shall be determined by the manufacturer of the crane components of the crane and the degree of wear or damage to the crane, or malfunction. The two general classifications shall be designated "frequent" and "periodic", with respective intervals between inspections as defined below:

1910.180(d)(2)(i)

Frequent inspection: Daily to monthly intervals.

1910.180(d)(2)(ii)

Periodic inspection: 1- to 12- month intervals, or as specifically recommended by the manufacturer.

1910.180(d)(3)

"Frequent inspection." Items such as the following shall be inspected for defects at intervals as defined in paragraph (d)(2)(i) of this section or as specifically indicated including observation during operation for any defects which might appear between regular inspections. Any deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:

1910.180(d)(3)(i)

All control mechanisms for maladjustment interfering with proper operation: Daily.

1910.180(d)(3)(ii)

All control mechanisms for excessive wear of components and contamination by lubricants or other foreign matter.

1910.180(d)(3)(iii)

All safety devices for malfunction.

1910.180(d)(3)(iv)

Deterioration or leakage in air or hydraulic systems: Daily.

..1910.180(d)(3)(v)

1910.180(d)(3)(v)

Crane hooks with deformation for crane. For hook in contact with more than 15 percent in excess of normal tolerance. A hook with a degree of deformation of the unbent hook.

1910.180(d)(3)(vi)

Rope reeving for no. shall be with manufacturer's recommendations.

1910.180(d)(3)(vii)

Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, and moisture accumulation.

1910.180(d)(4)

"Periodic inspection." Complete inspections of the crane shall be performed at intervals as generally defined in paragraph (d)(2)(ii) of this section depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of paragraph (d)(3) of this section and in addition, items such as the following. Any deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:

1910.180(d)(4)(i)

Deformed, cracked, or corroded members in the crane structure and boom.

1910.180(d)(4)(ii)

Loose bolts or rivets.