Subchapter 7. General Industry Safety Orders

Group 13. Cranes and Other Hoisting Equipment

Article 91. Definitions

CONTENTS

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§4885. Definitions:

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Accessory. A secondary part or assembly of parts which contribute to the over-all function and usefulness of a machine.

Accessory gear. Those items specified by the crane manufacturer as being authorized for use on the load chart such as jibs, blocks, and hooks.

Angle Indicator (Boom). An accessory which measures and indicates the angle of boom to the horizontal.

Anti Two-Block Device. A device which, when activated, disengages all crane functions that can cause two-blocking.

Articulating Boom Crane. A crane articulated by hydraulic cylinders, powered by an internal combustion engine or electric motor.

Automatic Crane. A crane which when activated operates through a preset cycle or cycles.

Auxiliary Hoist. A supplemental hoisting unit of lighter capacity and usually higher speed than provided for the main hoist.

Axis of Rotation. The vertical axis around which the crane superstructure rotates.

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

Boom. A member section of a crane or derrick, the lower end of which is affixed to a mast, base, carriage, or support, and the upper end supports a hook or other end attachment. The length of the boom shall be taken as the straight line distance between the axis of the foot pin and the axis of the end sheave pin.

Boom Angle. 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.

Boom Hoist. 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.

Boomstop. A device used to limit the angle of the boom at the highest position.

Boom-Type Excavator. A power-operated excavating crane-type machine used for digging or moving materials. Some excavators of this type are commonly known as dipper stick shovels, backdiggers, trench hoe shovels, draglines, grab buckets, clamshell or orange peel excavators.

Booming, Luffing or Topping. Raising or lowering the head of a boom.

Brake. A device used for retarding or stopping motion by friction or power means.

Brake (Electric). An electric motor acting as a brake by regenerative, counter-torque, or dynamic means.

Brake (Electrically Operated). A friction brake actuated or controlled by electric means.

Brake, Holding. A brake that automatically prevents motion when all power is cut off from the brake holding mechanism.

Bridge. That part of a crane consisting of girders, trucks, end ties, footwalks and drive mechanism which carries the trolley or trolleys.

Bridge Travel. The crane movement in a direction parallel to the crane runway.

Buffer. A cushioning device at the ends of a trolley, bridge, or other moving part of a crane operating on rails to minimize shock in the event of collision.

Bulk Cargo Spout. A spout, which may or may not be telescopic and may or may not have removable sections, but is suspended over the vessel from some overhead structure by wire rope or other means. Such a spout is often used with a thrower or trimming machine. A grain loading spout is an example of spouts covered by this definition.

Bulk Cargo Sucker. A pneumatic conveyor which utilizes a spoutlike device, which may be adjustable vertically and/or laterally, and which is suspended over a vessel from some overhead structure by wire rope or other means. An example of an installation of this nature is the grain sucker used to discharge grain from barges.

Bumper. A device which stops the moving part at the limit of travel of a trolley, bridge, or crane operating on rails and prevents further motion beyond that point.

Cab. An inclosure for housing the operator and/or the hoisting mechanism, power plant, and equipment controlling a crane.

Cab-Operated Crane. A crane controlled by an operator in a cab located on the bridge or trolley.

Cableway. A power operated system for moving loads in which the loads are conveyed on an overhead cable, track or carriage.

Cage. An open structure for housing the operator and/or the equipment controlling crane or hoist.

Certificating Agency. Certificating agencies are qualified agencies, and/or persons, licensed by the Division to examine, test and certify cranes and derricks in accordance with Sections 344.60 through 344.67 of Title 8 of the California Code of Regulations.

Certified Agent. The manufacturer, or a person who is currently registered as a professional civil, mechanical, or structural engineer by the State of California and is knowledgeable in the structure and use of the equipment.

Chicago Boom Derrick. A boom which is attached to a structure, an outside upright member of the structure serving as the mast, and the boom being stopped in a fixed socket clamped to the upright. The derrick is complete with load, boom, and boom point swing line falls.

Clearance. The distance from any part of the crane to a point of the nearest obstruction.

Controller, Spring Return. A controller which when released will return automatically to a neutral position.

Counterweight. A weight used to supplement the weight of the machine in providing stability for lifting working loads.

Crane. A machine for lifting or lowering a load and moving it horizontally, in which the hoisting mechanism is an integral part of the machine. It may be driven manually or by power and may be a fixed or a mobile machine, but does not include stackers, lift trucks, power shovels, backhoes, or excavators. Some of the common types of cranes are defined as follows:

(A) Boom-Type Mobile Crane. A self-propelled crane equipped with a boom and mounted on a chassis which is supported on either rubber tires, crawler treads or railway wheels running on railroad tracks.

(B) Cantilever Gantry Crane. A crane in which the bridge girders or trusses are extended transversely beyond the crane runway on one or both sides. Its runway may be either on the ground or elevated.

(C) Crawler Crane. A crane consisting of a superstructure with power plant, operating machinery and boom, mounted on a base, equipped with crawler treads for travel.

(D) Floor Operated Crane. A crane which is pendant or nonconductive rope controlled by an operator on the floor or an independent platform.

(E) Gantry Crane. A crane similar to an overhead traveling crane, except that the bridge for carrying the trolley or trolleys is rigidly supported on two or more movable legs running on fixed rails or other runway.

(1) Container Handling Yard Crane. Rubber tired gantry crane.

(F) Hammerhead Crane. A rotating, counterbalanced cantilever, equipped with one or more trolleys and supported by a pivot or turntable on a traveling or fixed tower.

(G) Jib Crane. A fixed crane consisting of a supported vertical member from which extends a horizontal swinging arm carrying a trolley hoist or other hoisting mechanism.

(H) Locomotive Crane. A boom-type mobile crane consisting of a self-propelled car operating on a railroad track, upon which is mounted a rotating body supporting the power-operated mechanism, together with a boom capable of being raised or lowered at its head (outer end) from which is led the wire rope or chain connected to the hoisting mechanism, for raising or lowering a load.

(I) Monorail Crane. A crane whose hoisting mechanism is suspended from, and is an integral part of, one or more trolleys mounted on a single track.

(J) Motor Truck Crane. A boom-type mobile crane mounted on a motor truck frame or rubber-tired chassis. It consists of a rotating superstructure with power plant, operating mechanism and boom.

(K) Overhead Traveling or Bridge Crane. A crane on a pair of parallel elevated runways, adapted to lift and lower a load and carry it horizontally parallel to, or at right angles to, the runways or both; and consisting of one or more trolleys operating on the bridge which in turn consists of one or more girders or trusses mounted on trucks operating on the elevated runways, with its operation limited to the area between the runways.

(L) Pillar Crane. A fixed crane consisting of a vertical member held in position at the base to resist overturning moment with constant-radius revolving boom supported at the outer end by a tension member.

(M) Pillar Jib Crane. A fixed crane consisting of a vertical member held at the base with a horizontal revolving arm carrying a trolley.

(N) Polar Crane. A bridge or gantry type crane which travels on a circular track.

(O) Portal Crane (Whirley Type). A gantry crane without trolley motion, which has a boom attached to a revolving crane mounted on a gantry, with the boom capable of being raised or lowered at its head (outer end). Portal cranes may be fixed or mobile.

(P) Power Operated Crane. A crane whose mechanism is driven by electric, air, hydraulic or internal combustion means.

(Q) Pulpit-Operated Crane. A crane operated from a fixed operation station not a hazard to the crane.

(R) Remote-Operated Crane. A crane controlled by an operator not in a pulpit or in a cab hooked to the crane, by any method other than pendant or rope control.

(S) Standby Crane. A crane which is not in regular service but which is used occasionally or intermittently as required.

(T) Semi-Gantry or Single Leg Crane. A gantry crane with 1 end of the bridge rigidly supported on one or more movable legs, running on a fixed rail or runway, the other end of the bridge being supported by a truck running on an elevated rail or runway.

(U) Semi-Portal Crane. A portal crane mounted on a semi-gantry frame instead of a gantry frame.

(V) Tower Crane. A crane in which a boom, swinging jib or other structural member is mounted on a vertical mast or tower.

(1) Tower Crane (Climber). A crane erected upon and supported by a building or other structure which may be raised or lowered to different floors or levels of the building or structure.

(2) Tower Crane (Free Standing). A crane with a horizontally swinging, usually non-luffing boom which may be on a fixed base or mounted on rails.

(3) Tower Crane (Mobile). A tower crane which is mounted on a crawler, truck or similar carrier for travel or transit.

(4) Tower Crane (Self-Erector). A mobile tower crane that is truck carrier mounted and capable of self-erection.

(W) Traveling Jib Crane. A jib crane with the vertical member running on a track, its upper end guided by a parallel overhead track.

(X) Wall Crane. A crane having jib with or without a trolley and supported from a side wall or line of columns of a building.

(Y) Wheel Mounted Crane. A crane consisting of a rotating superstructure with power plant, 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.

Crane Runway. The structure upon which a crane runs, and may be:

(A) A structure consisting of columns, longitudinal bracing and elevated beams, girders, or trusses, for supporting traveling or bridge cranes.

(B) Elevated beams, girders, or trusses in a building or on the side of a building, for supporting traveling cranes.

(C) Surface tracks or rails.

(D) Tracks or rails on walls or trestles.

Derrick. An apparatus consisting of a mast or equivalent member held at the top by guys or braces, with or without a boom, for use with a hoisting mechanism and operating rope, for lifting or lowering a load and moving it horizontally.

(A) A-Frame Derrick. A derrick in which the boom is hinged from a cross member between the bottom ends of two upright members spread apart at the lower ends and joined at the top; the boom point secured to the junction of the side members, and the side members are braced or guyed from this junction point.

(B) Breast Derrick. A derrick without a boom. The mast consists of two side members spread farther apart at the base than at the top and tied together at top and bottom by rigid members. The mast is prevented from tipping forward by guys connected to its top. The load is raised and lowered by ropes through a sheave or block secured to the top crosspiece.

(C) Gin Pole Derrick. A derrick without a boom. Its guys are so arranged from its top to permit leaning the mast in any direction. The load is raised and lowered by ropes reeved through sheaves or blocks at the top of the mast.

(D) Guy Derrick. A fixed derrick consisting of a mast capable of being rotated, supported in a vertical position by guys, and a boom whose bottom end is hinged or pivoted to move in a vertical plane with a reeved rope between the head of the mast and the boom point for raising and lowering the boom, and a reeved rope from the boom point for raising and lowering the load.

(E) Stiffleg Derrick. A derrick similar to a guy derrick except that the mast is supported or held in place by two or more stiff members, called stifflegs, which are capable of resisting either tensile or compressive forces. Sills are generally provided to connect the lower ends of the stifflegs to the foot of the mast.

(F) Shearleg Derrick. A derrick without a boom and similar to a breast derrick. The mast, wide at the bottom and narrow at the top, is hinged at the bottom and has its top secured by a multiple reeved guy to permit handling loads at various radii by means of load tackle suspended from the mast top.

Designated Person. A person selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

Drag Brake. A brake which provides retarding force without external control.

Dynamic Brake. A method of controlling crane motor speeds when in the overhauling condition to provide a retarding force.

Dynamic Loading. Loads introduced into the machine or its components by forces in motion.

Emergency Stop Switch. A manually or automatically operated electric switch to cut off electric power independently of the regular operating controls.

Hoist. An apparatus for raising or lowering a load by the application of a pulling force, but does not include a car or platform riding in guides. Some common types of hoists are defined as follows:

(A) Base-Mounted Electric Hoist. A hoist similar to an overhead electric hoist, except that it has a base or feet and may be mounted overhead, on a vertical plane, or in any position for which it is designed.

(B) Clevis Suspension Hoist. A hoist whose upper suspension member is a clevis.

(C) Hook Suspension Hoist. A hoist whose upper suspension member is a hook.

(D) Monorail Hoist. A hoist whose hoisting mechanism is suspended from one or more trolleys mounted on a single track.

(E) Overhead Electric Hoist. A motor-driven hoist having one or more drums or sheave for rope or chain and supported overhead. It may be fixed or traveling.

(F) Simple Drum Hoist. A hoist with one or more drums controlled by manually operated clutches, brakes, or ratchet and pawl on drum, and control levers, which is operated by hand or by power.

NOTE: This type of hoist is known to the trade as a contractor's hoist and is usually a portable unit.

(i) Double-Drum Hoist. A simple drum hoist having two independent hoisting drums.

(ii) Single-Drum Hoist. A simple drum hoist having only one hoisting drum.

(iii) Single Fixed Drum Hoist. A single-drum hoist with the drum geared directly to the power unit instead of by means of friction clutches.

Hoist Chain. The load bearing chain in a hoist.

Hoisting Machine. A power operated machine used for lifting or lowering a load, utilizing a drum and wire rope, excluding elevators. This shall include but not be limited to a crane, derrick and cableway.

Hoist Motion. That motion of a crane which raises and lowers a load.

Jib.

(A) A horizontal arm, for supporting a trolley or fall block, which does not change its inclination with the horizontal.

(B) 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.

Lay. That distance measured along a rope in which one strand makes a complete revolution around the rope axis.

Limit Switch. A device designed to cut off the power automatically at or near the limit of travel of a crane, trolley, hoist, or similar mechanism.

Line Pull, Permissible. A line pull, less than the available pull, restricted by rope strength, clutch or brake ability, or other limitation in machinery or equipment.

Load (Working). The external load in pounds applied on the hoisting line, including the weight of load attaching equipment such as load blocks, shackles, slings, buckets, and magnets.

Load Block (Lower). The assembly of hook or shackle, swivel, sheaves, pins, and frame suspended by the hoisting ropes.

Load Block (Upper). The assembly of sheaves, pins, and frame suspended from the boom.

Load Rating. The lifting capacity established by the certified agent for various angles and positions.

Machine House. An enclosure for housing the hoisting mechanism and power plant.

Magnet. An electromagnetic device carried on a crane hook to pick up loads magnetically.

Main Hoist. The hoist mechanism provided for lifting the maximum rated load.

Main Switch. A switch controlling the entire power supply to the crane.

Man Trolley. A trolley having an operator's cage attached thereto and may be used as an integral part of a monorail hoist or a monorail crane.

Master Switch. A switch which dominates the operation of contactors, relays, or other remotely operated devices.

Molten Metal Handling Crane. An overhead crane used for transporting or pouring molten material.

Outdoor Storage Bridge. A gantry type crane of long span usually used for bulk storage of material. The bridge girders or trusses are rigidly or nonrigidly supported on one or more legs. It may have one or more fixed or hinged cantilever ends.

Overhead Loads. For the purpose of Group 13 Regulations, overhead loads are loads either passed or suspended directly over employee-occupied work-spaces or passageways.

Radius (Load). The horizontal distance from the center of rotation of a crane or derrick to the center of the vertical hoist line, hook shank or pin, or tackle with load applied.

Rated Load. The maximum load for which a crane or individual hoist is designed and built by the manufacturer and shown on the equipment nameplate(s) or load capacity chart.

Reeving. A rope system in which the rope travels around drums and sheaves.

Regenerative. A form of dynamic braking in which the electrical energy generated is fed back into the power system.

Rope. Refers to wire rope unless otherwise specified.

Running Sheave. A sheave which rotates as the load block is raised or lowered.

Safety Hook. A hook with a safety latch or arrangement to close the throat of the hook, in such manner as to prevent slings or load attachment from accidentally slipping off the hook.

Side Pull. That portion of the hoist pull acting horizontally when the hoist lines are not operated vertically.

Side Pull or Side Loading. A load applied at any angle to the vertical plane of the boom.

Span. The horizontal distance center to center of runway rails.

Standing Rope (Guy). A supporting rope which maintains a constant distance between the points of attachment to the two components connected by the rope.

Structural Competence. The ability of the machine and its components to withstand the stresses imposed by applied loads.

Swinging or Slewing. The act of moving a boom through a horizontal arc.

Switch. A device for making, breaking, or for changing the connections in an electric circuit.

Track. A structural member that supports the trolley or crane wheels.

Transit. The moving or transporting of a crane from one job site to another.

Travel. The function of a machine moving from one location to another, on a job site. Trolley. A truck or carriage supporting the load mounted on an overhead beam, bridge, cableway or track.

Trolley Travel. The trolley movement at right angles to the crane runway.

Truck (of an overhead, gantry, or locomotive crane). The framework and wheels operating on the runway or rails and supporting the bridge, trolley, or body of the crane.

Two-Block Damage Prevention Feature. A system which will stall when two-blocking occurs without causing damage to hoist rope or crane machinery components.

Two-Block Warning Feature. Warning device to alert the operator of an impending two-blocking condition.

Two-Blocking. A condition in which the lower load block or hook assembly comes into contact with the upper load block or boom point sheave assembly.

Note: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

HISTORY

1. Amendment filed 11-28-75; effective thirtieth day thereafter (Register 75, No. 48).

2. Amendment filed 3-2-76; effective thirtieth day thereafter (Register 76, No. 10).

3. Amendment filed 11-18-76; effective thirtieth day thereafter (Register 76, No. 47).

4. Amendment filed 7-13-78; effective thirtieth day thereafter (Register 78, No. 28).

5. Amendment filed 4-27-79; effective thirtieth day thereafter (Register 79, No. 17).

6. Amendment filed 1-17-80; effective thirtieth day thereafter (Register 80, No. 3).

7. Amendment filed 8-29-86; effective thirtieth day thereafter (Register 86, No. 39).

8. Amendment adding Articulating Boom Crane filed 4-16-93; operative 5-17-93 (Register 93, No. 16).

9. Amendment of "Certificating Agency" and repealer of (1)-(3) filed 12-6-95; operative 1-5-96 (Register 95, No. 49).

10. Amendment filed 6-3-2002; operative 7-3-2002 (Register 2002, No. 23).

11. Amendment of definition of "Man Trolley" filed 8-25-2003; operative 9-24-2003 (Register 2003, No. 35).

12. Editorial correction of definition of "Radius" (Register 2008, No. 16).

13. New definitions of "Anti Two-Block Device," "Two-Block Damage Prevention Feature," "Two-Block Warning Feature" and "Two-Blocking" filed 7-17-2008; operative 8-16-2008 (Register 2008, No. 29).

14. Change without regulatory effect amending definition of "Master Switch" filed 8-17-2010 pursuant to section 100, title 1, California Code of Regulations (Register 2010, No. 34).

15. New definition of “Accessory gear” and amendment of Note filed 10-2-2012; operative 11-1-2012 (Register 2012, No. 40).

16. Amendment of definition of “Radius” filed 1-28-2013; operative 4-1-2013 (Register 2013, No. 5).

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§4885. Plates:

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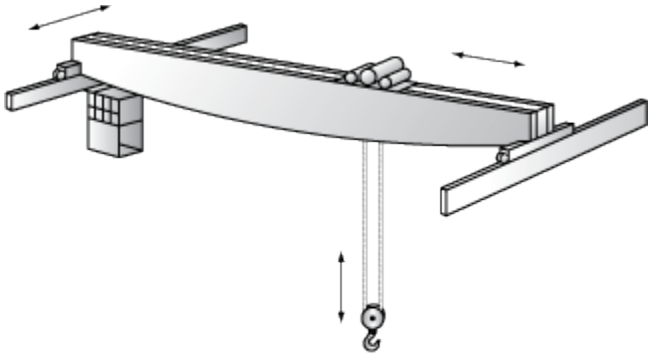
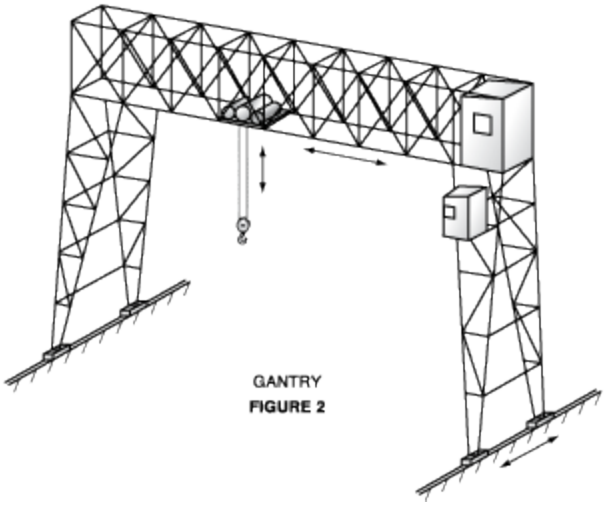
PLATE I.

TYPES OF CRANES

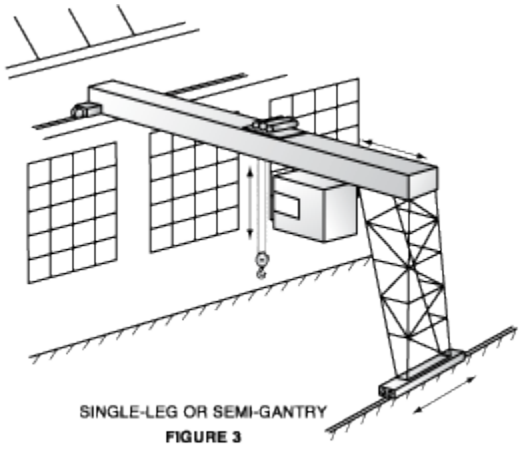


OVERHEAD TRAVELING
FIGURE 1

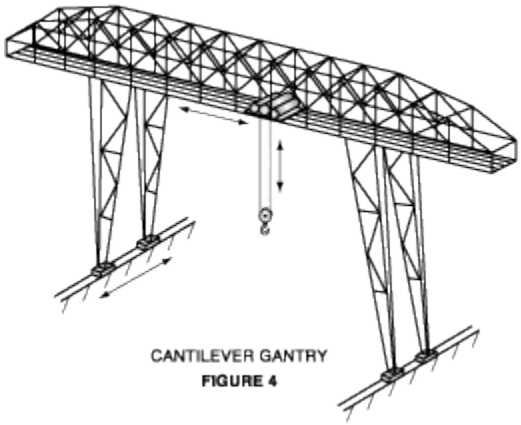


GANTRY
FIGURE 2

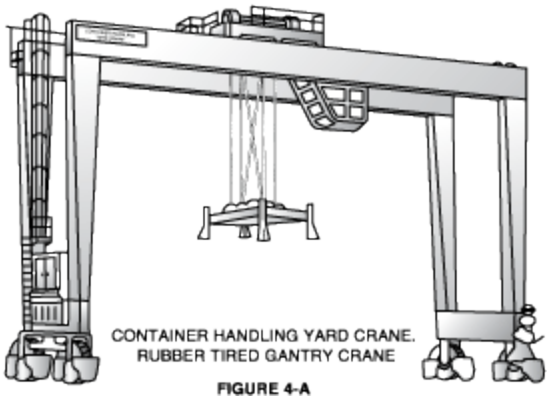
Image 1 (8.5" X 5") Not available for Offline Print to STP or FAX



SINGLE-LEG OR SEMI-GANTRY
FIGURE 3



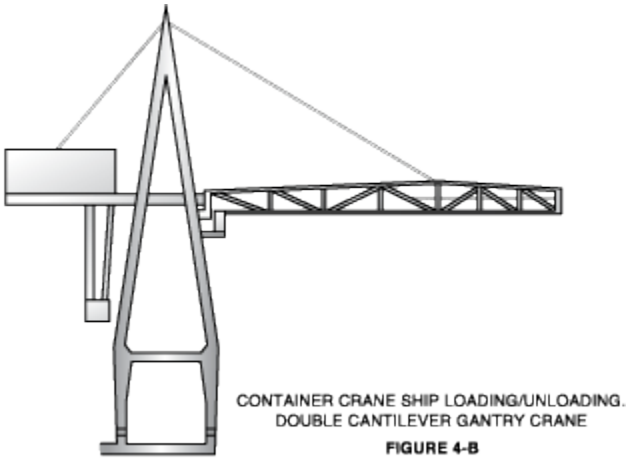
CANTILEVER GANTRY
FIGURE 4



CONTAINER HANDLING YARD CRANE.
RUBBER TIRED GANTRY CRANE

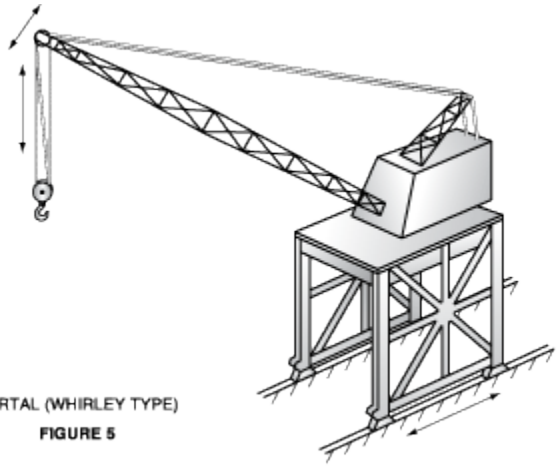
FIGURE 4-A

Image 2 (8.5" X 3.5") Not available for Offline Print to STP or FAX



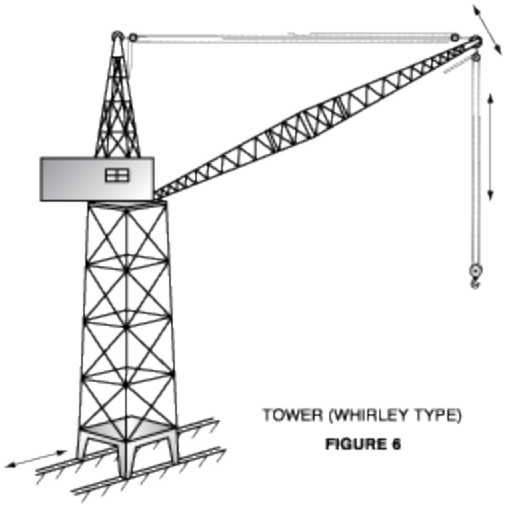
CONTAINER CRANE SHIP LOADING/UNLOADING.
DOUBLE CANTILEVER GANTRY CRANE

FIGURE 4-B



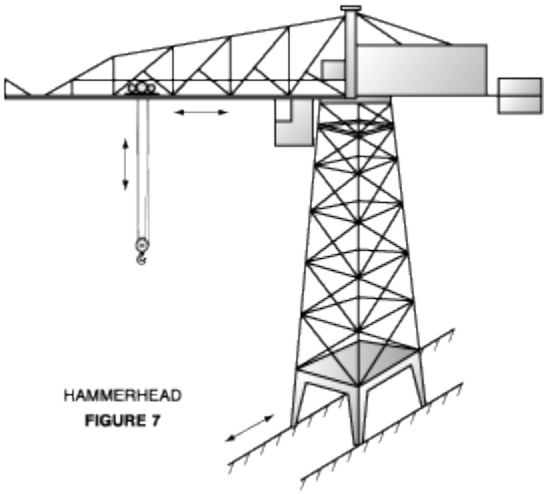
PORTAL (WHIRLEY TYPE)

FIGURE 5

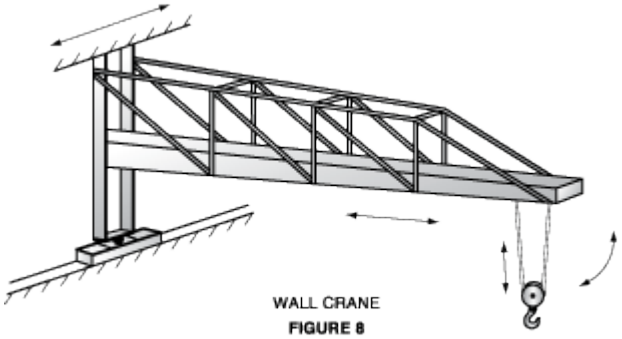


TOWER (WHIRLEY TYPE)
FIGURE 6

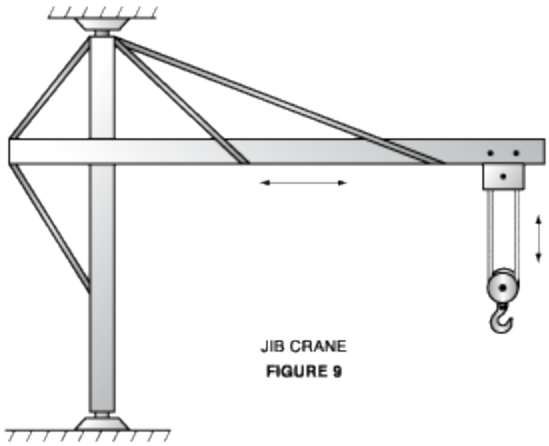
Image 3 (8.5" X 4") Not available for Offline Print to STP or FAX



HAMMERHEAD
FIGURE 7



WALL CRANE
FIGURE 8



JIB CRANE
FIGURE 9

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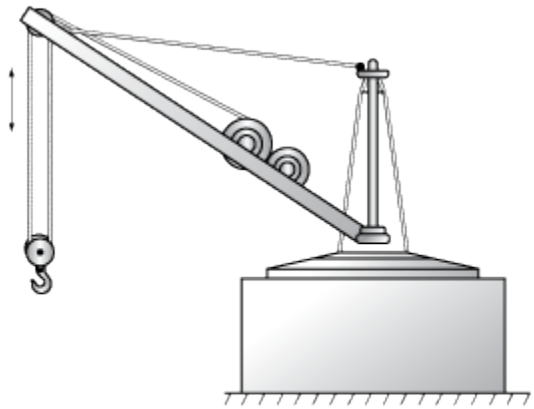
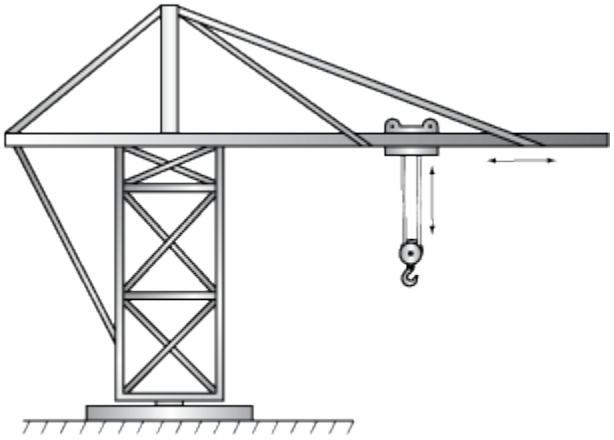
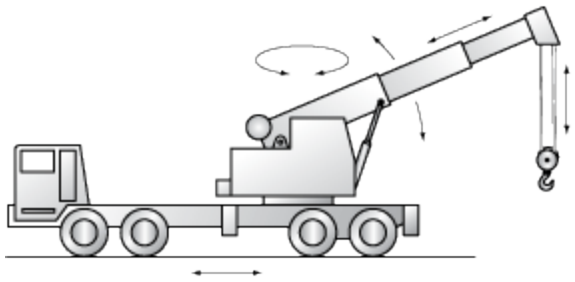


PILLAR CRANE
FIGURE 10



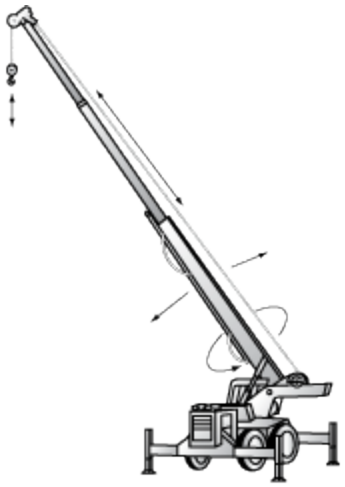
PILLAR JIB CRANE
FIGURE 11



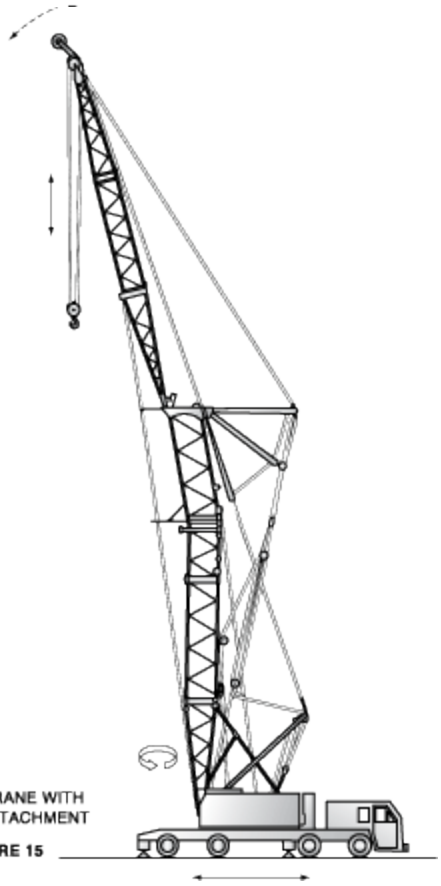
TRUCK CRANE TELESCOPING BOOM

FIGURE 13

Image 5 (8.5" X 4") Not available for Offline Print to STP or FAX

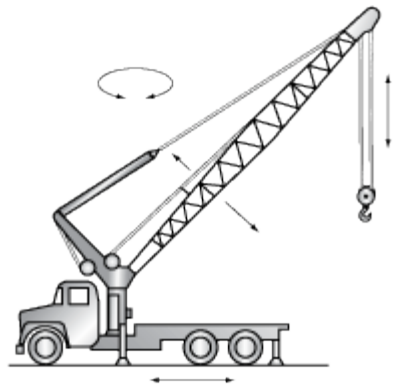


HYDRAULIC CRANE
FIGURE 14



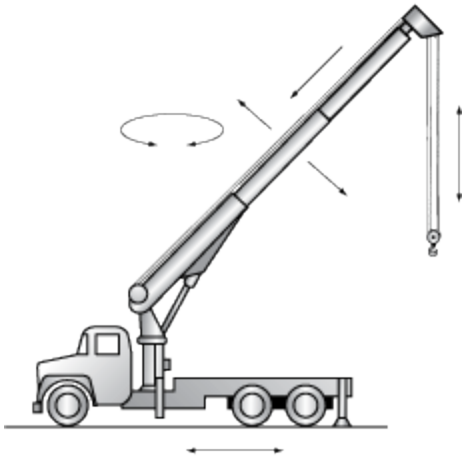
MOBILE CRANE WITH
TOWER ATTACHMENT
FIGURE 15

Image 6 (8.5" X 3.25") Not available for Offline Print to STP or FAX



COMMERCIAL TRUCK-MOUNTED CRANE
NON-TELESCOPING BOOM

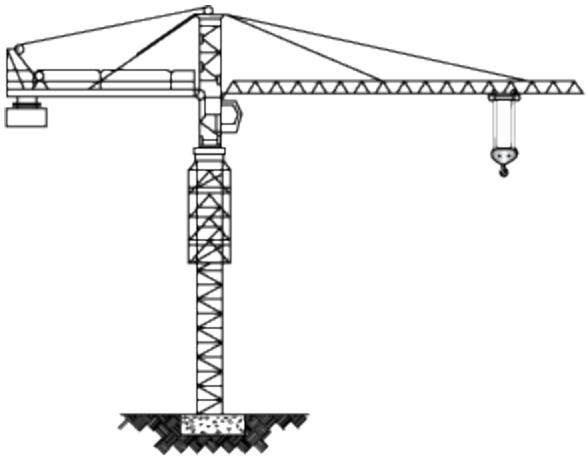
FIGURE 15-A



COMMERCIAL TRUCK-MOUNTED CRANE
TELESCOPING BOOM

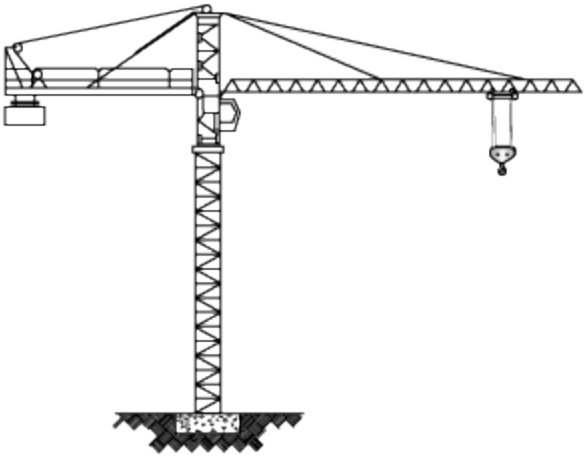
FIGURE 15-B

Image 7 (8.5" X 3.75") Not available for Offline Print to STP or FAX



TOWER CLIMBER

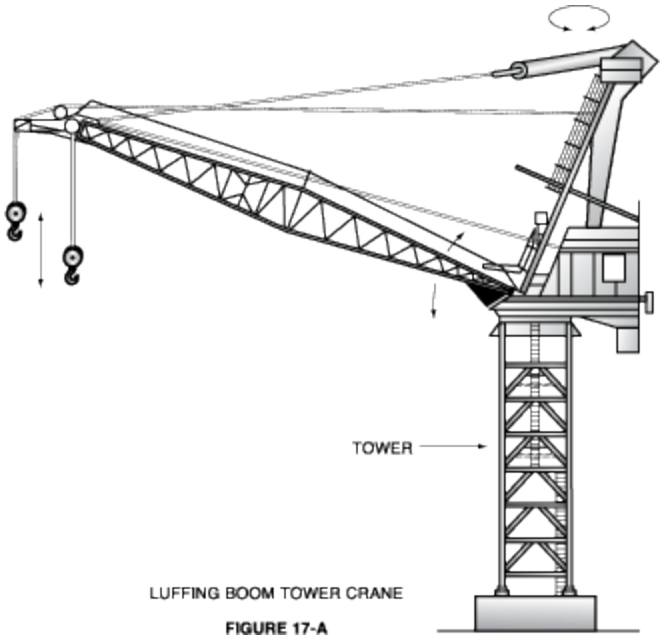
FIGURE 16



TOWER FREE STANDING

FIGURE 17

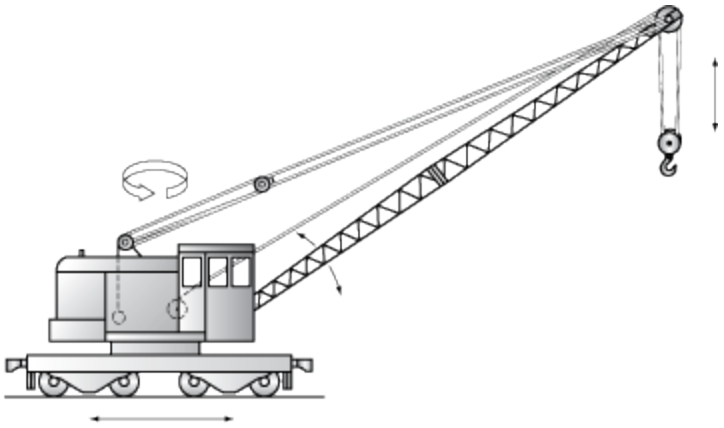
Image 8 (8.5" X 4.5") Not available for Offline Print to STP or FAX



LUFFING BOOM TOWER CRANE

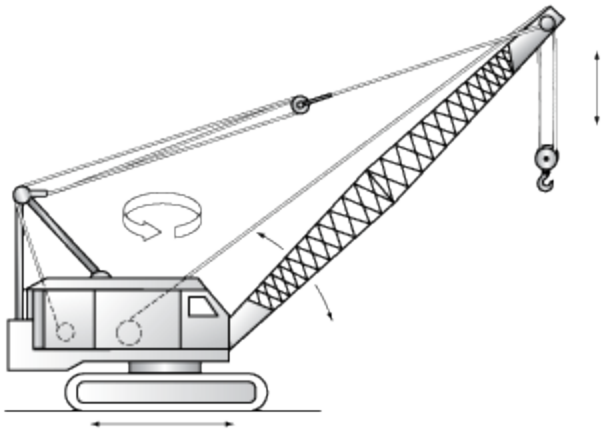
FIGURE 17-A

Image 9 (6.75" X 7") Not available for Offline Print to STP or FAX



LOCOMOTIVE CRANE

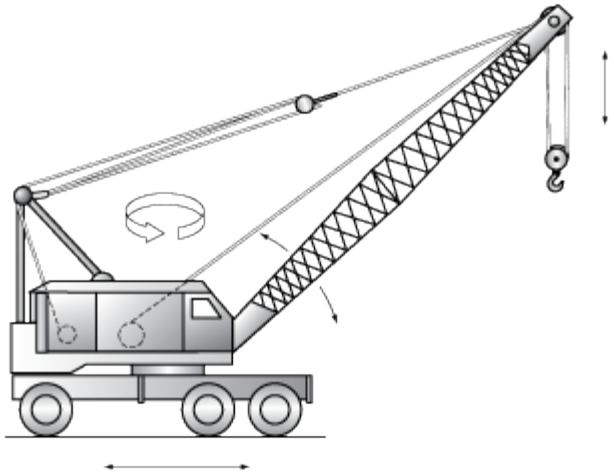
FIGURE 18



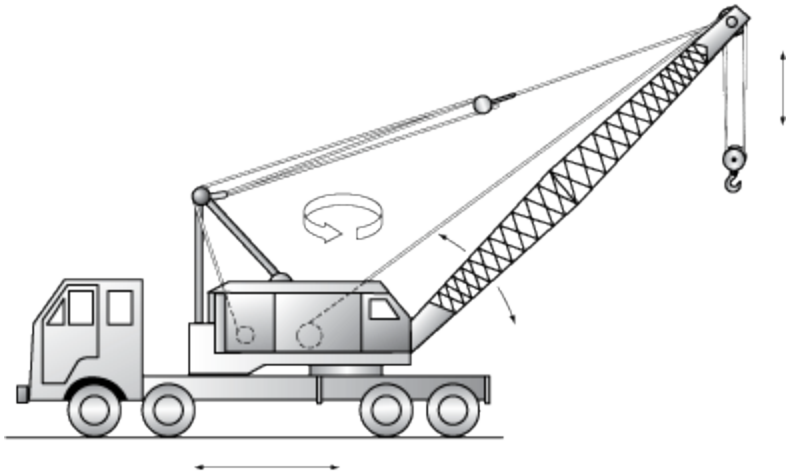
CRAWLER CRANE

FIGURE 19

Image 10 (8.5" X 5.25") Not available for Offline Print to STP or FAX



WHEEL MOUNTED CRANE
FIGURE 20

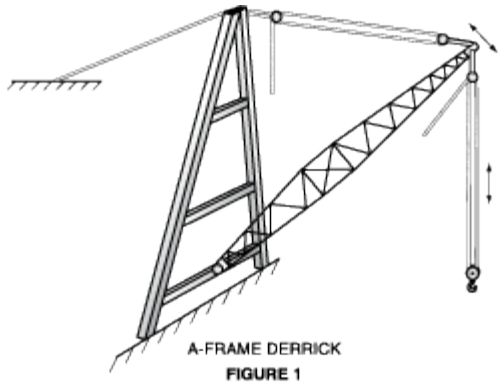


TRUCK CRANE
FIGURE 21

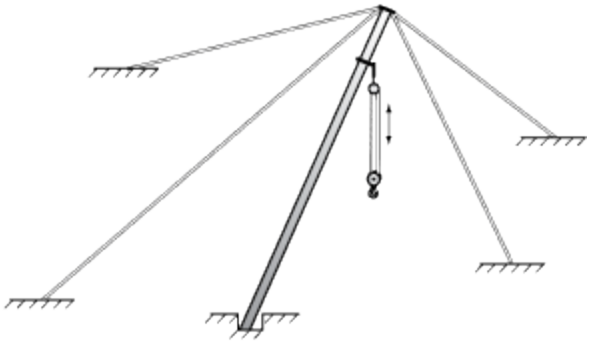
Image 11 (8.5" X 5.25") Not available for Offline Print to STP or FAX

PLATE II.

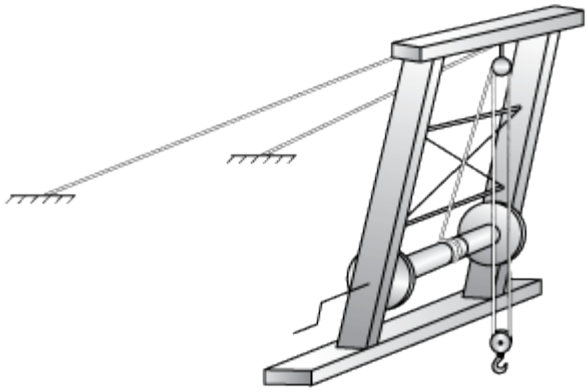
TYPES OF DERRICKS.



A-FRAME DERRICK
FIGURE 1

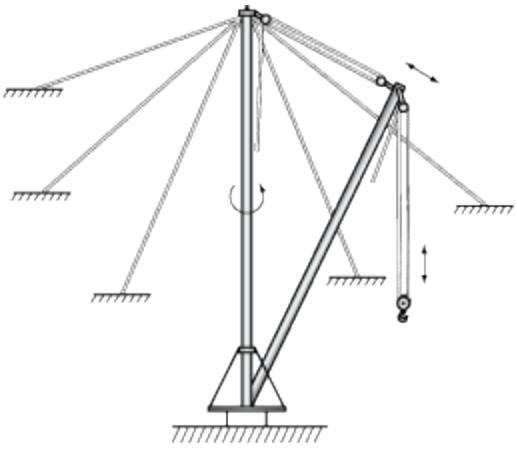


GIN-POLE DERRICK
FIGURE 2

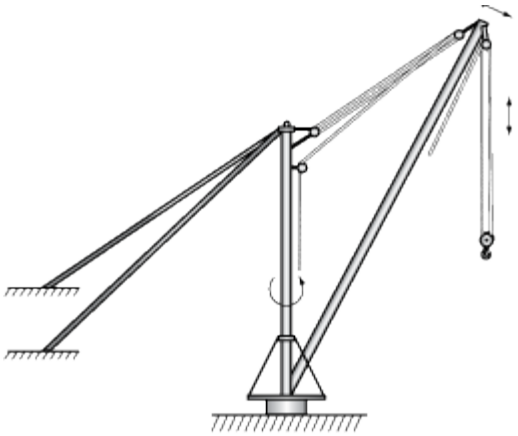


BREAST DERRICK
FIGURE 3

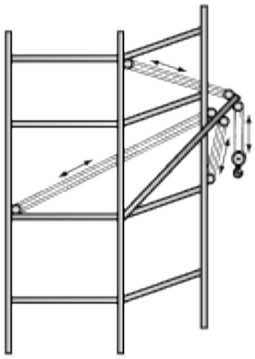
Image 12 (8.5" X 4") Not available for Offline Print to STP or FAX



GUY DERRICK
FIGURE 4



STIFF LEG DERRICK
FIGURE 5

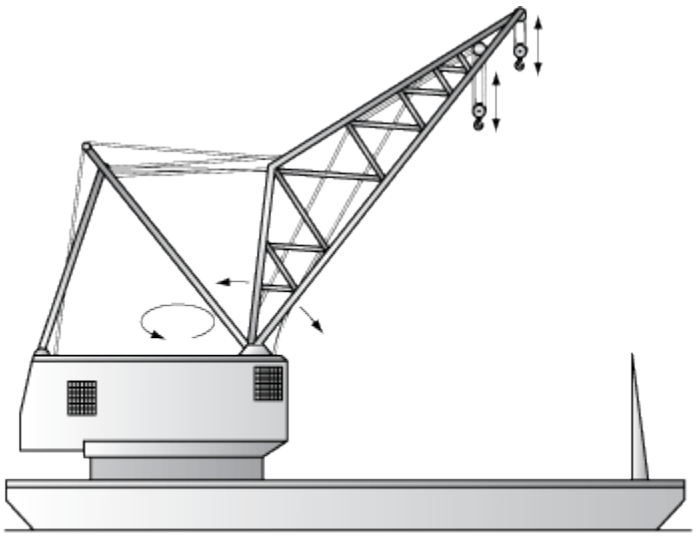


CHICAGO BOOM
FIGURE 6

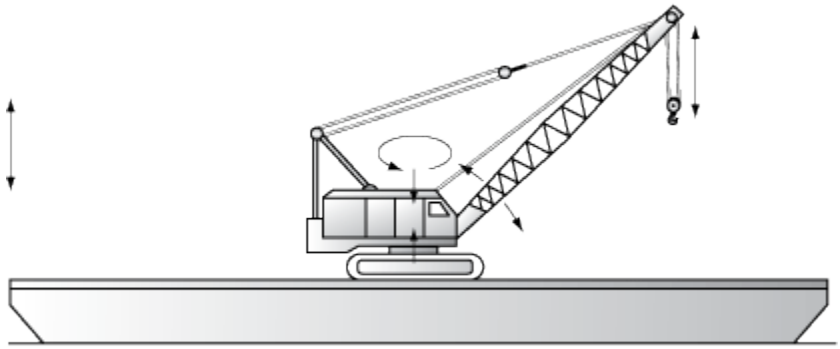
Image 13 (8.5" X 3.25") Not available for Offline Print to STP or FAX

PLATE III.

FLOATING CRANES AND FLOATING DERRICKS

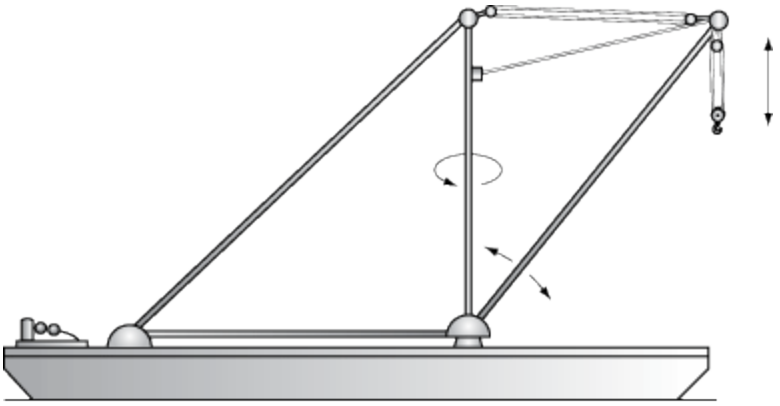


FLOATING CRANE
FIGURE 1

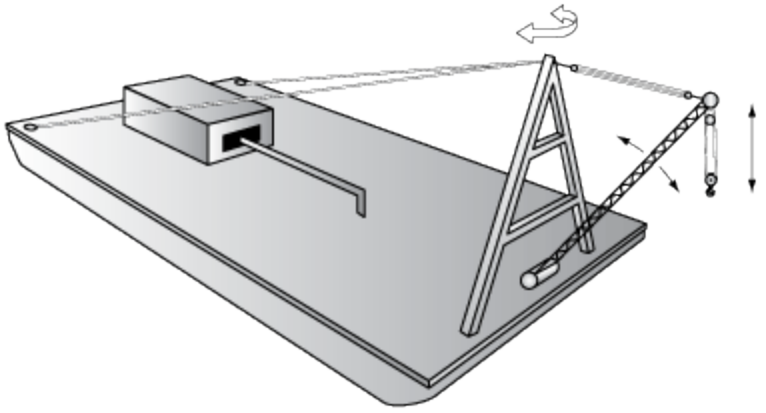


BARGE MOUNTED LAND CRANE
FIGURE 2

Image 14 (8.5" X 6.25") Not available for Offline Print to STP or FAX



FLOATING STIFFLEG DERRICK
FIGURE 3



FLOATING A-FRAME DERRICK
FIGURE 4

Image 14 (8.5" X 6.25") Not available for Offline Print to STP or FAX

PLATE V

STATE OF CALIFORNIA

DEPARTMENT OF INDUSTRIAL RELATIONS

DIVISION OF OCCUPATIONAL SAFETY AND HEALTH (DOSH)

CERTIFICATE OF UNIT TEST AND/OR EXAMINATION OF CRANES AND DERRICKS USED FOR LIFTING SERVICE

The examination shall be carried out in conjunction with each unit proof load test. The qualified person, or his authorized representative, shall make a determination as to requirements for the correction of deficiencies found. The examination shall cover the following points as applicable:

1. All functional operating mechanisms for improper function, maladjustment, and excessive component wear, with particular attention to sheaves, pins, and drums. This shall include operation with partial load, in which all functions and movements, including, where applicable, maximum possible rotation in both directions, are performed.

2. All safety devices for malfunction.

3. Deterioration or leakage in lines, tanks, valves, drains, pumps, and other parts of air or hydraulic systems.

4. Loose gear components (i.e., hooks, etc.), including wire rope and wire rope terminals and connections, with particular attention to sections of wire rope exposed to abnormal wear and sections not normally exposed for examination. Cracked or deformed hooks shall be discarded.

5. Rope reeving for compliance with certifying agent's recommendations.

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

7. Loose bolts, rivets, or other connections.

8. Worn, cracked, or distorted parts affecting safe operation.

9. Excessive wear on and free operation of brake and clutch system parts, linings, pawls, and ratchets.

10. Load, boom angle, or other indicators shall be checked for any significant inaccuracy.

11. It shall be ascertained that there is a durable rating chart visible to the operator, covering the complete range of the certified agent's capacity ratings at all operating radii, for all permissible boom lengths and jib lengths, with alternate ratings for optional equipment affecting such ratings. Necessary precautions or warnings shall be included and operating controls marked or an explanation of controls shall be posted at the operator's position to indicate function.

12. Careful examination of the junction areas of removable boom sections, particularly for proper seating, cracks, deformities, or other defects in securing bolts and in the vicinity of such bolts.

13. It shall be ascertained that no counterweights in excess of the certified agent's specifications are fitted.

14. Such other examinations deemed necessary under the circumstances.

Note: Authority and reference cited: Section 142.3, Labor Code.

HISTORY

1. Amendment filed 2-13-75; effective thirtieth day thereafter (Register 75, No. 7).

2. Amendment filed 7-17-75; effective thirtieth day thereafter (Register 75, No. 29).

3. Amendment filed 1-2-76; effective thirtieth day thereafter (Register 76, No. 1).

4. Amendment filed 7-6-79; effective thirtieth day thereafter (Register 79, No. 27).

5. Repealer of Plate IV and Plate C-11-b filed 1-17-80; effective thirtieth day thereafter (Register 80, No. 3).

6. Amendment of Plate V filed 7-2-80 as procedural and organizational; effective upon filing (Register 80, No. 27).

7. Amendment of Plates I, II and V filed 8-29-86; effective thirtieth day thereafter (Register 86, No. 39).

8. Change without regulatory effect amending section filed 10-26-90 pursuant to section 100, title 1, California Code of Regulations (Register 91, No. 9).

9. New Figure 17-a filed 4-16-93; operative 5-17-93 (Register 93, No. 16).

10. Amendment of caption for Figure 15 filed 1-3-2002; operative 2-2-2002 (Register 2002, No. 1).

11. Change without regulatory effect providing more legible illustrations for Plate I (Figures 1-21), Plate II (Figures 1-6) and Plate III (figures 1-4) filed 3-2-2009 pursuant to section 100, title 1, California Code ofRegulations (Register 2009, No. 10).

8 CCR PLATES, 8 CA ADC PLATES
1CAC