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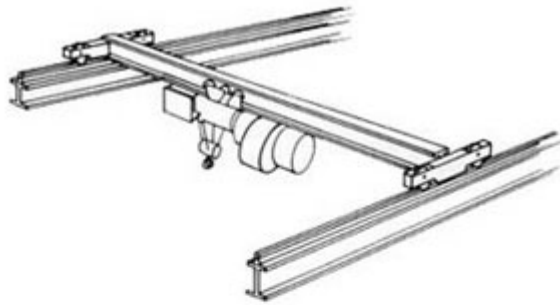
## Useful Crane Information

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### Types of Cranes We Build

#### Top Running Single Girder

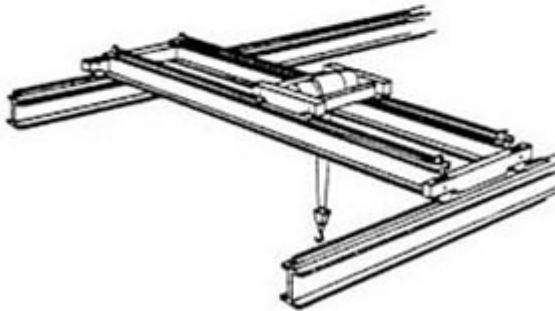
A Top Running Single Girder (T.R.S.G.) overhead bridge crane is the most common type of overhead bridge crane. It may be mounted off building column haunches or a free-standing runway.



Top Running Single Girder Overhead Bridge Crane

#### Top Running Double Girder

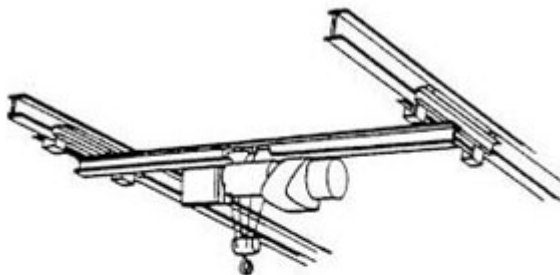
A Top Running Double Girder (T.R.D.G.) overhead bridge crane allows the maximum possible capacity, span, and duty-cycle. Maintenance platforms may also be added to a TRDG crane to aid in crane and/or building service. TRDG cranes also have the advantage of offering the best hook height when compared with other overhead crane types.



Top Running Double Girder Overhead Bridge Crane

#### Under Running Single Girder

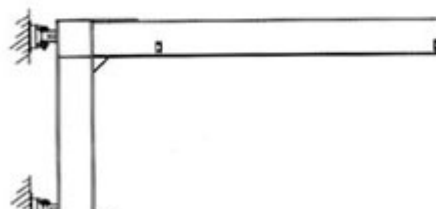
An Under Running Single Girder (U.R.S.G.) overhead bridge Crane is mounted from the building ceiling eliminating the need for columns. This is advantageous for high traffic areas that need overhead material handling and also require a work area free of columns. Then compared with top running cranes, a URSG provides less hook height.

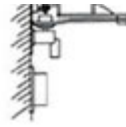


Under Running Single Girder Overhead Bridge Crane

#### Wall Cantilever Type

A wall cantilever jib crane is a very popular choice for manufacturing facilities. It may be bolted to a building column and provides better headroom than a wall bracket type

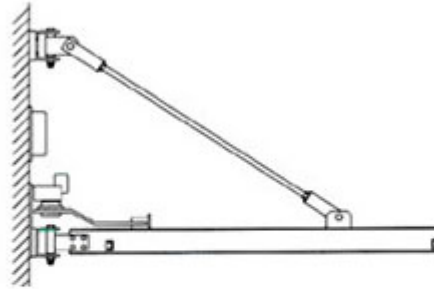




Wall Cantilever Type Jib Crane

### Wall Bracket Type

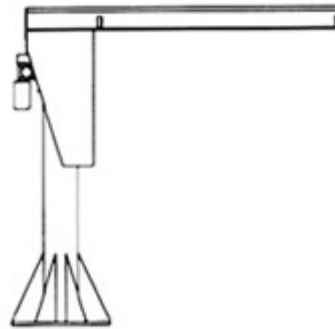
A wall bracket type jib crane is the most economical type of jib crane. It's very similar to a wall cantilever type jib crane except that it uses a tie-rod instead of a cantilevering beam. This reduces cost but increases headroom.



Wall Bracket Type Jib Crane

### Freestanding Type

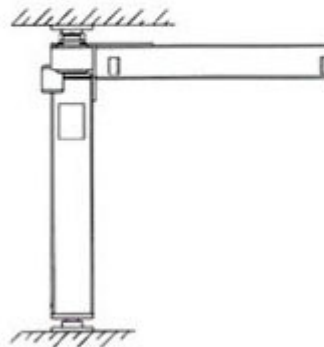
A freestanding type jib crane is the most expensive type of jib crane but provides the most versatility. It may have full 360° rotation and will not impose any loads onto the building structure. However, this means that all of the loading must be resisted by a large concrete footer that must be poured as a mounting base.



Freestanding Type Jib Crane

### Mast Type Jib Crane

A mast type jib crane is very similar to a freestanding jib crane. It too may provide full 360° rotation but it is connected to the building ceiling at the top to minimize the size if the mounting footer needed.



Mast Type Jib Crane

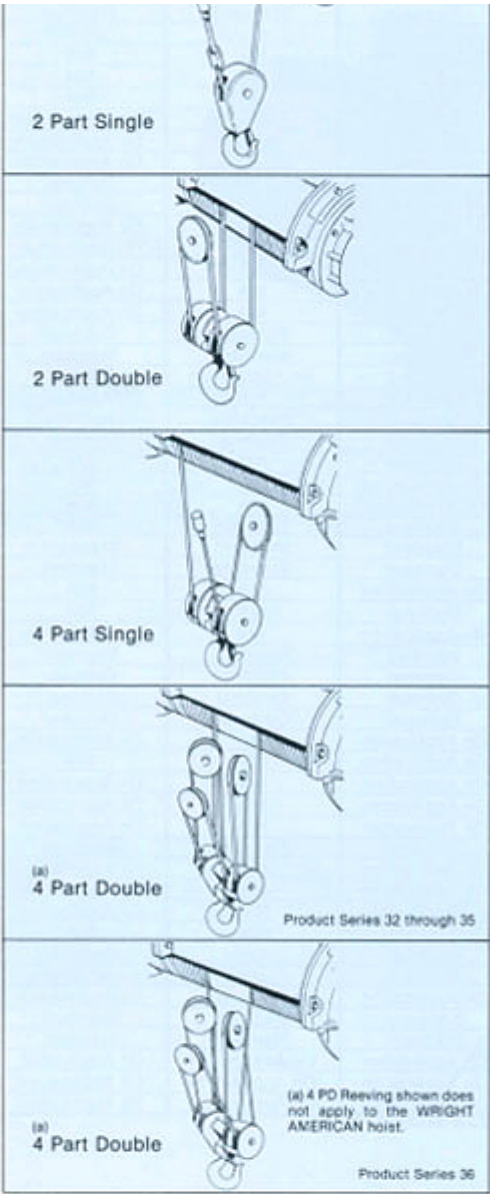
## Crane Reeving Information

### Reeving



#### Common Applications of HOIST Reeving

Reeving refers to the configuration of the wire rope, blocks and drum of the hoist. Reeving effects headroom, lifting speed and capacity by increasing the hoist's mechanical advantage. Reeving also determines if the hoist has interest



advantage. Reeving also determines if the hoist has lateral hook movement or true vertical lift.

The three terms used in reeving are; *single, double* and *part*. Single or double refers to the number of ropes coming from the drum. Part deals with the mechanical advantage gained by multiple reeving. For example, with two part single reeving (2PS) the load is distributed over the two parts, and the mechanical advantage doubles the capacity of one part reeving but reduces by one half the lifting or lowering speed of the hook.

Some applications require that the load not move right or left of the hoist centerline while being lifted. This is called true vertical lift and requires that the hoist be double reeved. Double reeving also requires less headroom than single reeving.

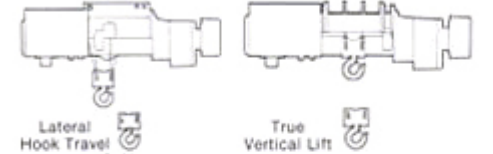
REQUEST MASTER CATALOG SECTION NO. 302 FOR DETAILED INFORMATION

Reeving changes hoist arrangement to the beam or track, minimum headroom distance, and lateral hook travel.

	Standard Headroom Parallel Mounted	Close Headroom Parallel Mounted	Close Headroom Cross Mounted
Reeving:	2 PS or 4 PS	2 PD	2 PD or 4 PD
Minimum Headroom:	Fair	Good	Best
Lateral Hook Travel:	Hook travels	None	None
Cost:	Lower	Low	High

**HEADROOM:** Some applications require that the distance from the bottom of beam to saddle of the hook be held to a minimum. This dimension will determine whether a standard or close headroom is required.

**LATERAL HOOK TRAVEL:**



Some applications require that the load, when being lifted, not move right or left from hoist centerline. If this requirement is known, a true vertical lift hoist must be used. These are described as two part double (2PD) or four part double (4PD) and are available in both parallel or cross mounted hoists.



**Common Types of WINCH Reeving**

*Work-rated* winches can be reeved in various ways to gain designed mechanical advantages. The illustrations on this page demonstrate some of those advantages.

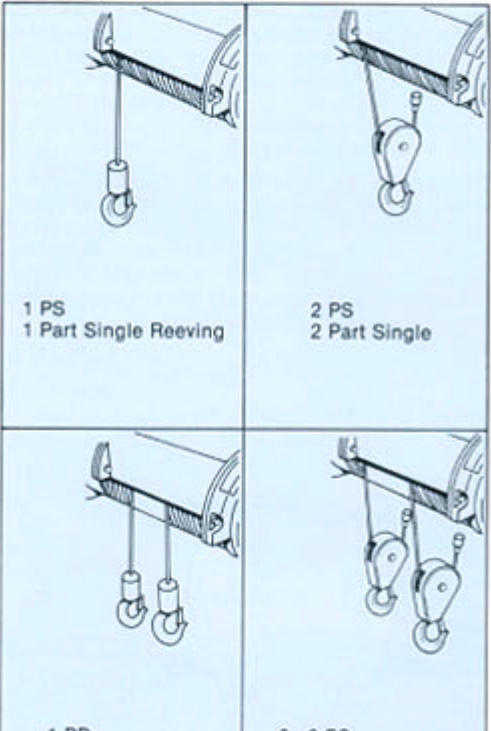
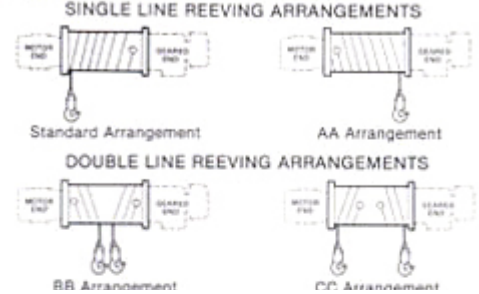
Winch reeving effects capacity, lifting distance, lifting speed and cable size. Winches are available in single and double line arrangements.

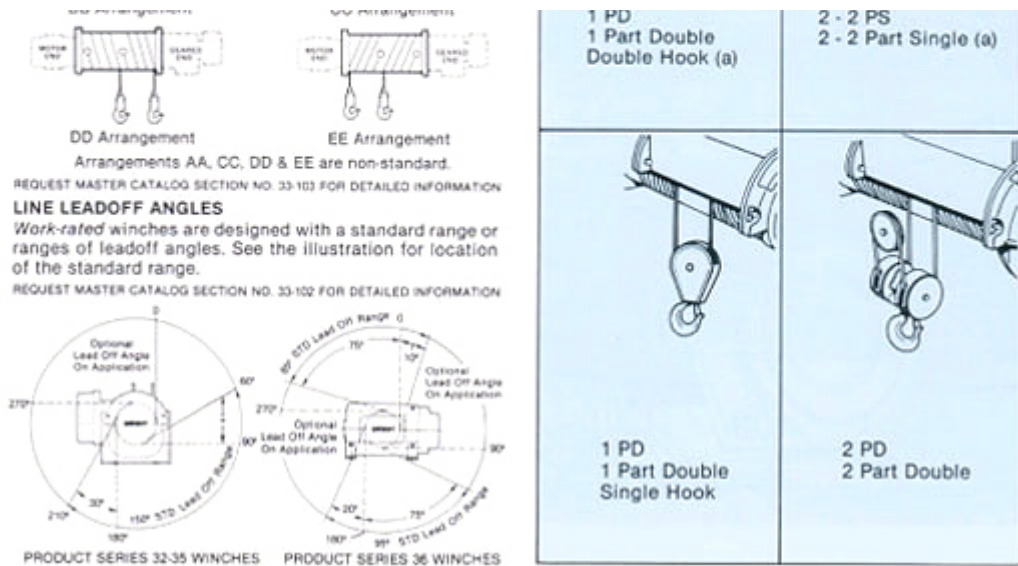
The lead off angle is a critical specification in winch applications. Standard lead off angles are shown below. For the optional lead off angles indicated by the shaded areas, the exact degree of the angle or range of angles is required when ordering.

Standard *Work-rated* winches are supplied without wire rope. When wire rope is supplied, it is 6 x 37 preformed, except on applications that require non rotating, 18 x 7 construction cable.

The swaged on drum end fittings of the wire rope are provided. A variety of "dead-end" fittings, such as swivel hooks and load blocks, and idler sheaves, are available to meet your specific application.

**WINCH DRUM REEving ARRANGEMENTS**





## Crane Definitions

The following is a short list of some crane and hoist terminology. We hope this will help you in reading specifications or comparing equipment.

**AUXILIARY HOIST:** A supplemental hoisting unit, usually designed to handle lighter loads at a higher speed than the main hoist.

**AUXILIARY GIRDER (OUTRIGGER):** A girder arranged parallel to the main girder for supporting the platform motor base, operator's cab control panels, etc., to reduce the torsional forces such load would otherwise impose on the main girder.

**BEARING LIFE EXPECTANCY:** The L-10 life of an antifriction bearing is the minimum expected life, in hours, of 90% of a group of bearings which are operating at a given speed and loading. The average expected life of the bearings is approximately five times the L-10 life.

**BOX GIRDER/SECTION:** The rectangular cross section of girders, trucks or other members enclosed on four sides.

**BRAKE:** A device for retarding or stopping motion by friction or power means.

**BRIDGE:** That part of an overhead crane consisting of girder(s), trucks, walkway, and drive mechanism which carries the trolley and travels in a direction parallel to the runway.

**BRIDGE CONDUCTORS:** The electrical conductors located along the bridge structure of a crane to provide power to the trolley.

**BUMPERS (BUFFER):** An energy absorbing device for reducing impact when a moving crane or trolley reaches the end of its permitted travel; or when two moving cranes or trolleys come into contact.



**CAB-OPERATED CRANE:** A crane controlled by an operator in a cab located on the bridge or trolley.

**CAMBER:** The slight upward vertical curve given to girders to compensate partially for deflection due to hook load and weight of the crane.

**CAPACITY:** The maximum rated load (in tons) which a crane is designed to carry.

**CLEARANCE:** Minimum distance from the extremity of a crane to the nearest obstruction.

**CMAA:** Crane Manufacturers Association of America.

**COLLECTORS:** Contacting devices for collecting current from the runway or bridge conductors. The mainline collectors are mounted on the bridge to transmit current from the runway conductors, and the trolley collectors are mounted on the trolley to transmit current from the bridge conductors.

**CONTACTOR, MAGNETIC:** An electro-magnetic device for repeatedly establishing and interrupting an electric power circuit.

**CONTROLLER:** A device for regulating in a pre-determined way the power delivered to a motor or other equipment.

**COVER PLATE:** The top and bottom plate of a box girder.

**CROSS SHAFT:** The shaft extending across the bridge, used to transmit torque from motor to bridge drive wheels.

**DEAD LOADS:** The loads on a structure which remain in a fixed position relative to the structure. On a crane bridge such loads include the girders, footwalk, cross shaft, drive units, panels, etc.

**DEFLECTION:** Displacement due to bending or twisting in a vertical or lateral plane, caused by the imposed live and dead loads.

**DIAPHRAGM:** A plate or partition between opposite parts of a member, serving a definite purpose in the structural design of a member.

**DUMMY CAB:** An operator's compartment or platform on a pendant or radio controlled crane, having no permanently mounted electrical controls, in which an operator may ride while controlling the crane, from a pendant or remote control station.

**ELECTRIC OVERHEAD TRAVELING (E.O.T.) CRANE:** An electrically operated machine for lifting, lowering and transporting loads, consisting of a movable bridge carrying a fixed or movable hoisting mechanism and traveling on an overhead runway structure.

**ELECTRICAL BRAKING SYSTEM:** A method of controlling crane motor speed without the use of friction braking.

**ENCLOSED CONDUCTOR(S):** A conductor or group of conductors substantially enclosed to prevent accidental contact.

**ENCLOSURE:** A housing to contain electrical components, usually specified by a NEMA classification number.

**END APPROACH:** The minimum horizontal distance, parallel to the runway, between the outermost extremities of the crane and the centerline of the hook..

**END TRUCK:** The unit consisting of truck frame, wheels, bearings, axles, etc., which supports the bridge girder.

**FIELD WIRING:** The wiring required after the erection of the crane.

**FIXED AXLE:** An axle which is fixed in the truck and on which the wheel revolves.

**FLOOR OPERATED CRANE:** A crane which is pendant controlled by an operator on the floor or on an independent platform.

**FOOTWALK:** The walkway with handrail and toeboards, attached to the bridge for access purposes.

**GIRDER:** The principle horizontal beam of the crane bridge which supports the trolley and is supported by the end trucks.

**HOIST:** A machinery unit that is used for lifting and lowering a load.

**HOLDING BRAKE:** A brake that automatically prevents motion when power is off. The minimum horizontal distance between the center of the runway rail and the hook.

**HOOK APPROACH:** The minimum horizontal distance between the center of the runway rail and the hook

**IMPACT ALLOWANCE:** Additional hook load assumed to result from the dynamic effect of the live load.

**INTERLOCKING CRANE:** A crane equipped with a device to hold alignment between the crane girder and a spur or another crane girder.

**INVERTER (VARIABLE FREQUENCY DRIVE):** A method of control by which the fixed line voltage and frequency is changed to a three-phase system with infinitely variable voltage and frequency.

**KSI:** Kips per square inch - a measurement of stress intensity.

**KIP:** A unit of force equivalent to 1,000 pounds.

**KNEE BRACE:** The diagonal structural member joining the building column and roof truss.

**LIFT:** Maximum safe vertical distance through which the hook, magnet or bucket can move.

**LIFTING DEVICES:** Buckets, magnets, grabs, and other supplemental devices, the weight of which is to be considered part of the rated load, used for ease in handling certain types of loads.

**LIMIT SWITCH:** A device designed to cut off the power automatically at or near the limit of travel for the crane motion.

**LINE CONTACTOR:** A contactor to disconnect power from the supply lines.

**LIVE LOAD:** A load which moves relative to the structure under consideration.

**LOAD CARRYING PART:** Any part of the crane in which the induced stress is influenced by the load on the hook.

**MAGNETIC CONTROL:** A device or system of devices having all basic functions operated by electromagnets.

**MAIN LINE CONTACTOR:** A magnetic contractor used in the incoming power circuit from the mainline collectors.

**MAIN LINE DISCONNECT:** A manual switch which breaks the power lines leading from the main line collectors.

**MASTER SWITCH:** A manually operated device which serves to govern the operation of contactors and auxiliary devices of an electric control.

**MATCH MARKING:** Identification of non-interchangeable parts for reassembly after shipment.

**OPERATORS CAB:** The operator's compartment from which movements of the crane are controlled.

**OVERLOAD PROTECTION (OVERCURRENT):** A device operative on excessive current to cause and maintain the interruption or reduction of current flow to the equipment governed.

**PATENTED TRACK:** A generic term referring to crane and monorail equipment built in accordance with the MMA specification utilizing a composite track section incorporating a proprietary bottom flange shape.

**PENDANT PUSHBUTTON STATION:** Means suspended from the crane for operating the controllers from the floor or other level beneath the crane.

**PLAIN REVERSING CONTROL:** A reversing control which has identical characteristics for both directions of motor rotation.

**PROTECTIVE PANEL:** An assembly containing overload and undervoltage protection for all crane motions.

**RATED LOAD:** The maximum load which the crane is designed to handle safely.

**RESISTOR RATING:** Rating established by NEMA which classifies resistor according to percent of full load current on first point and duty cycles.

**ROTATING AXLE:** An axle which rotates with the wheel.

**RUNWAY:** The rails, beams, brackets and framework on which the crane operates.

**RUNWAY CONDUCTORS:** The main conductors mounted on or parallel to the runway which supply current to the crane.

**RUNWAY RAIL:** The rail supported by the runway beams on which the bridge travels.

**"S" SECTION (S-BEAM/I-BEAM):** A standard beam shape as defined by the American Institute of Steel Construction.



**SAFETY LUG:** A mechanical device fixed securely to the end truck or trolley yoke which will limit the fall of the crane or carrier in case of wheel or axle failure.

**SINGLE GIRDER CRANE:** An electric overhead traveling crane having one main girder which supports a fixed hoist mounted on an under-running trolley. An auxiliary girder may be provided to reduce the torsional stresses on the main girder.

**SPAN:** The horizontal distance center-to-center of runway rails or beams.

**STATIC CONTROL:** A method of switching electrical circuits without the use of contacts.

**STEPPED:** A type of control system with three or more speed points.

**STOP:** A device to limit travel of a trolley or crane bridge. This device normally is attached to a fixed structure and typically does not have energy absorbing ability.

**STRENGTH, AVERAGE ULTIMATE:** The average tensile force per unit of cross sectional area required to rupture the material as determined by test.

**STRESS:** Load or force per unit area tending to deform the material usually expressed in pound per square inch.

**SWEEP:** Maximum lateral deviation from straightness of structural member, measured at right angles to the Y-Y axis.

**TOP RUNNING CRANE:** An electric overhead traveling crane having the end trucks supported on rails attached to the top of the crane runway.

**TORQUE, FULL LOAD(MOTOR):** The torque produced by a motor at its rated horsepower and speed.

**UNDER RUNNING CRANE:** An electric overhead traveling crane having the end trucks supported on track attached to the bottom flanges of the beams; or supported on bottom flanges of beams. These beams make up the crane runway.

**UNDER VOLTAGE PROTECTION:** A device operative on the reduction or failure of voltage to cause and maintain the interruption of power in the main circuit.

**VARIABLE FREQUENCY DRIVE:** A method of control by which the motor supply voltage and frequency can be adjusted.

**VOLTAGE DROP:** The loss of voltage in an electric conductor between supply tap and load tap.

**W SECTION (W-BEAM):** A wide flange beam shape as defined by the American Institute of Steel Construction.

**WEB PLATE:** The vertical plate connection the upper and lower flanges or cover plates of a girder.

**WHEEL BASE:** Distance from center to center of outermost wheels.

**WHEEL LOAD:** The load without impact on any wheel with the trolley and lifted load (rated capacity) positioned on the bridge to give maximum loading.

Here are some links to useful groups and organizations.

Cranebuzz.com (<http://cranebuzz.com/>): Get unbiased information that can help you make quality buying decisions on your overhead crane purchases

#### Crane Downloads:

Overview Brochure (PDF/old brochures and line cards/[WAZ-3216-2013-CRANE-Brochure-WEB.pdf](#))

Engineered Overhead Bridge Cranes (PDF/old brochures and line cards/[Wazee-Crane-New\\_Equipement-WEB.pdf](#))

Pre-Engineered Crane Products (PDF/old brochures and line cards/[Wazee-Crane\\_Line\\_Cards-Pre\\_Engineered\\_Crane\\_Products-WEB.pdf](#))

Crane Service (PDF/old brochures and line cards/[Wazee-Crane\\_Line\\_Cards-Crane\\_Services-WEB.pdf](#))

Crane Modernizations (PDF/old brochures and line cards/[WCO-crane\\_modernization\\_brochure.pdf](#))



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