

# **KRANE I N G**



**Jib and Gantry  
Cranes**

**GANTRY CRANES**

**CARE & USE**

**ASSEMBLY  
INSTRUCTIONS**



## Use of Gantry Cranes

Caldwell Gantry Cranes have been designed for specific tasks and to withstand the particular forces imposed. Guidelines for installation, inspection, maintenance and repair, safe operation and operator training of these cranes follow:

### INSTALLATION

Gantry Cranes should be assembled and installed in accordance with the manufacturer's instructions, unless the manufacturer has approved other specific arrangements in writing. When an electric hoist or trolley is required, user inspection should ensure that the power source coincides with the requirements of the hoist / trolley. Electrical connections should be made as specified in the manufacturer's operating instructions.

Check for correct and properly tightened connections, lubrication of moving parts, filling of reservoirs, all in accordance with manufacturer's instructions.

### OPERATOR TRAINING

Gantry Cranes should be operated in accordance with the manufacturer's operating instructions and by personnel that have received instructions described in the 'Operating Practices' section of these guidelines. Training should also include instruction regarding:

1. Details of the lifting and/or transporting cycles.
2. Application of the crane to the load including adjustments to the crane, if applicable, (in accordance to the manufacturer's instruction), if required to adapt it to various sizes and types of loads.
3. Instruction in any special operations or precautions that may be required.
4. Recognition of proper load configuration. For example, preferred operation requires an orderly pattern of stacking.
5. Before assuming responsibility for using cranes, an operator should demonstrate his understanding of the lifting and transporting procedures to the instructor. The instructor should record, for personal evaluation, notes of the operator's demonstrated ability.

### INSPECTION

The crane should be visually inspected by or under the direction of an appointed person on a daily basis or weekly schedule depending on the nature of the use and the severity of the service.

Details to look for include but are not limited to:

1. Structural deformation.
2. Cracks in the structural frame, welds, and hoist hook attachment point(s), mechanically operating parts, any attached slings, clevises or hooks.
3. Malfunctions during operation.
4. Loose connections, fasteners or stops.
5. Excessive wear or cracking of casters, adjusting pins and any other mechanical parts.
6. Wear of hoist hooking points, load supporting devices, pins, slings, linkages and mechanical parts.
7. Missing safety hairpin cotters, nameplates and markings.

## MAINTENANCE AND REPAIRS

1. A preventative program should be established for each crane by a qualified person based on recommendations made by its manufacturer.
2. A qualified person should have responsibility for repairs. Dated records and details of repairs and parts replacement should be carefully maintained and copies kept in your possession.
3. Replacement parts must be equivalent to the original manufacturer's specifications. Casters in particular must be replaced with exact equals as to size and capacity.
4. Frequent lubrication of the caster bearings is essential for smooth operation of the crane.

## OPERATING PRACTICES

### DO'S

1. The operator should have received, read, and understood the manufacturer's operating instructions.
2. The operator should watch carefully that the crane is performing properly during the lifting and / or transporting procedure.
3. The operator should be familiar with the standard crane directing hand signals.
4. The operator should respond to signals from an appointed person only. However, stop signals from anyone shall be obeyed.
5. The operator should notify a designated person when he considers a load to be unsafe.
6. The operator should observe the crane before use. Any defect observed shall be examined by a qualified person to determine if it is a hazard.
7. Two operators are required when moving the crane, one positioned at each end.

### DONT'S

1. The operator should not operate a malfunctioning crane or one with an "out of service" tag attached.
2. The operator should not use the crane for any purpose(s) other than those designated by the manufacturer's operating instructions.
3. The operator should not use a crane when the capacity, weight, or safety markings are missing or if caster integrity has been compromised.
4. No one should make alterations or modifications to cranes without consulting the manufacturer.
5. No one should obscure or paint over the manufacturer's capacity, weight, or safety markings.
6. Loads should not be lifted or transported higher than necessary or be left suspended unattended.
7. For safe lifting, the crane should not lift a load that is not properly balanced.
8. The crane should never be used on a sloped or uneven surface, or if the area is dirty or littered with debris.
9. The crane **MUST** not be moved with a forklift truck or any other type of powered device.
10. **Never rotate both legs at the same time.** One leg must have the load pin installed in its proper place at all times.
11. The crane must never be moved toward an operator when that operator is positioned between the crane and any obstruction.
12. Never locate the hoist outside of the crane legs: it should never be used in a cantilever operation.

## HANDLING THE LOAD

1. The crane should not be loaded in excess of its rated load.
2. The combined weight of the hoist, trolley, any below the hook device and load should not exceed the rated load of the crane.
3. The crane should be applied to the load in accordance with the manufacturer's recommended operating procedure.
4. Lifter or hoist ropes and chains should not be kinked, and multiple part lines shall not be twisted about each other.
5. The crane should not touch obstructions during load movement.
6. The crane should not be loaded with loose material that might fall during movement.
7. The operator or other personnel should not place themselves or any part of their bodies beneath suspended loads.
8. The crane should only be used on a hard, LEVEL floor or other smooth surface.
9. The crane should not be used for loads for which it is not designed.
10. If suspended loads are moved manually, they should be pushed, not pulled.
11. A preliminary lift of a few inches should be made to establish that the load is stable.
12. All loads should be accelerated and decelerated smoothly, in both the horizontal and vertical plane.
13. Gantry crane movement is potentially dangerous; pathways must be cleared prior to moving the crane. Overhead obstruction should also be measured to make sure the crane will clear them.
14. Care must be taken not to roll the crane into anything, i.e. feet, debris, equipment, etc.

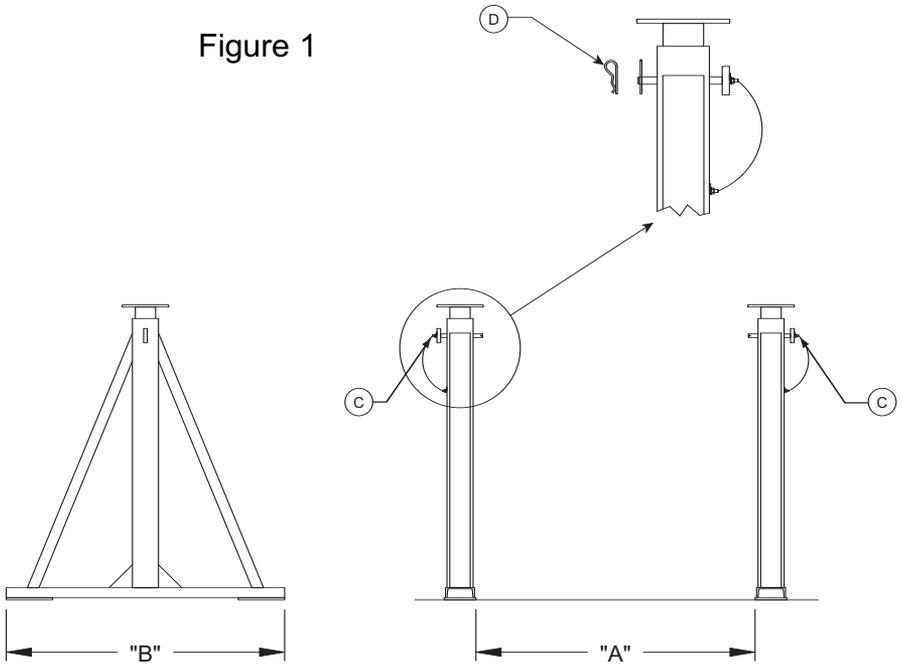
### **MODIFICATIONS:**

**Any plans for modification of a Caldwell Gantry Crane should be submitted to Caldwell for prior approval, which determines if the modification is proper and to ensure conformity with your Caldwell warranty.**

# GANTRY CRANE ASSEMBLY INSTRUCTIONS

1. Select an assembly area that is clean, level and accessible by an overhead crane or forklift truck.
2. Reference Figure 1 - Stand the two legs up so that the legs bottom channels are parallel to each other and are at the desired spacing. Note: The spacing between the legs, Dimension "A", should NOT be less than the length of the bottom channel, Dimension "B". Also, the legs must not extend beyond the I-Beam. The legs top plates must fully engage the I-Beam.
3. If the Gantry Crane being assembled is an adjustable height unit, it MUST be assembled in its lowest position with the load pins (C) in place, making sure that the split hairpin cotter pins (D) are also properly installed.

Figure 1



**Warning: The legs are unstable at this time so extra care and supervision should be exercised during this stage of assembly.**

## Gantry Crane Assembly Instructions *continued*

4. Reference Figure 2 - Using a forklift truck or other lifting device, pick-up the I-Beam at the center, move it into position over the legs and carefully lower it onto the top of the leg assemblies.
5. While still supporting the I-Beam with the lifting device, attach the I-Beam to the leg assemblies using the hardware provided. Reference Figure 2A - The bolt heads, Item ①, must point down. The clamping bars, Item ②, are installed first, then the bevel washers, Item ③, which need to be positioned so that the lock washer, Item ④, and nut, Item ⑤, engage the bevel washer evenly.
6. Tighten all connections properly, however, care needs to be taken not to over tighten because over tightening could result in breaking the bevel washers, Item 3 . ○
7. At this point the crane is stable and can be moved.

Figure 2

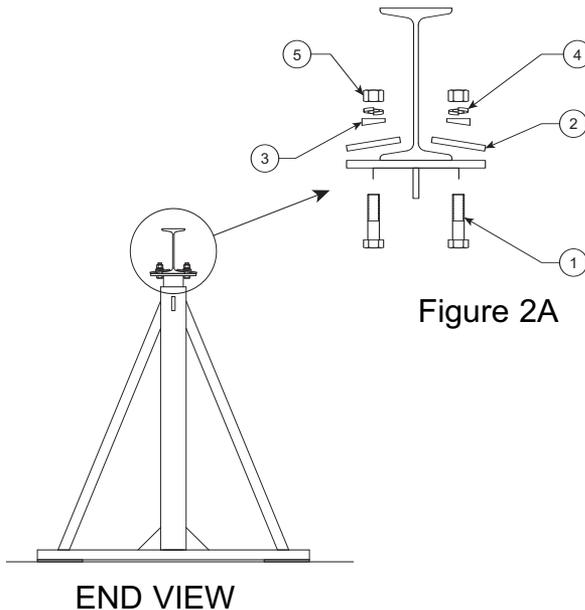
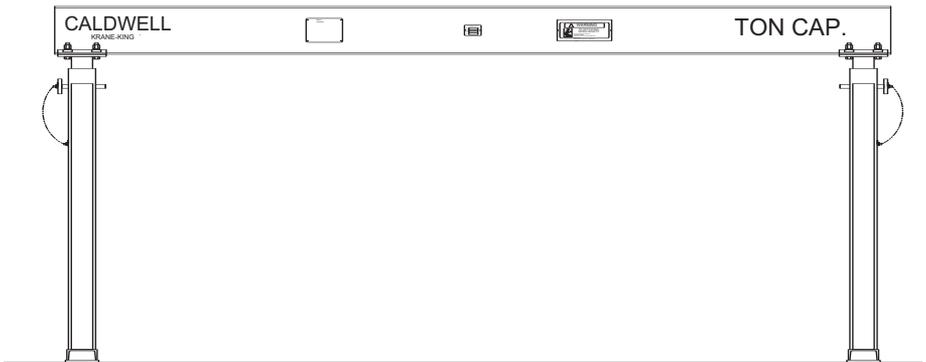
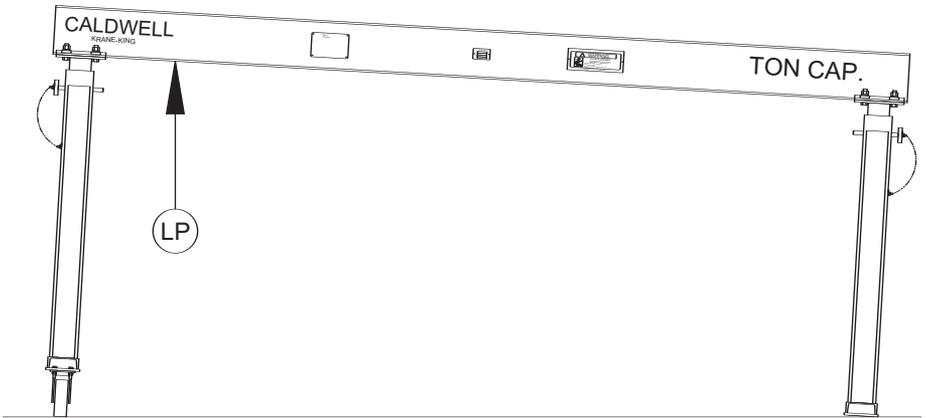


Figure 2A

8. Reference Figure 3 - To install the casters, pick-up the crane at one end (LP) and raise it just enough to allow the casters to fit between the crane and the floor, which is approximately 10" to 12" and install two (2) casters. Repeat this process at the other end while exercising caution during this step because the unit can roll easily.

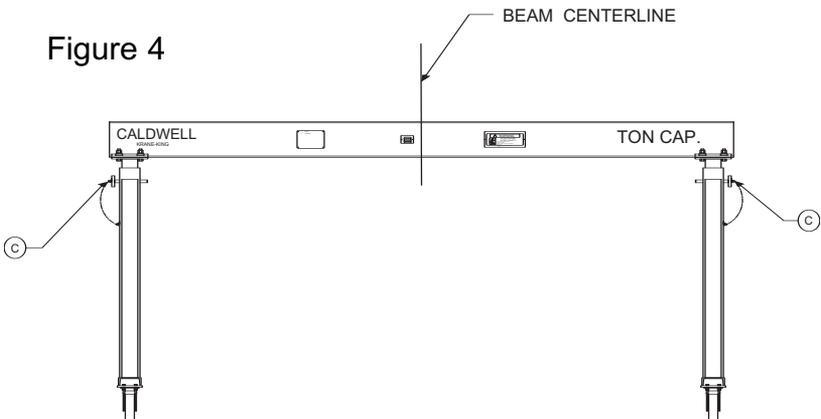
**Warning: Do Not attempt to install all four (4) casters at the same time by lifting up the entire crane.**

Figure 3



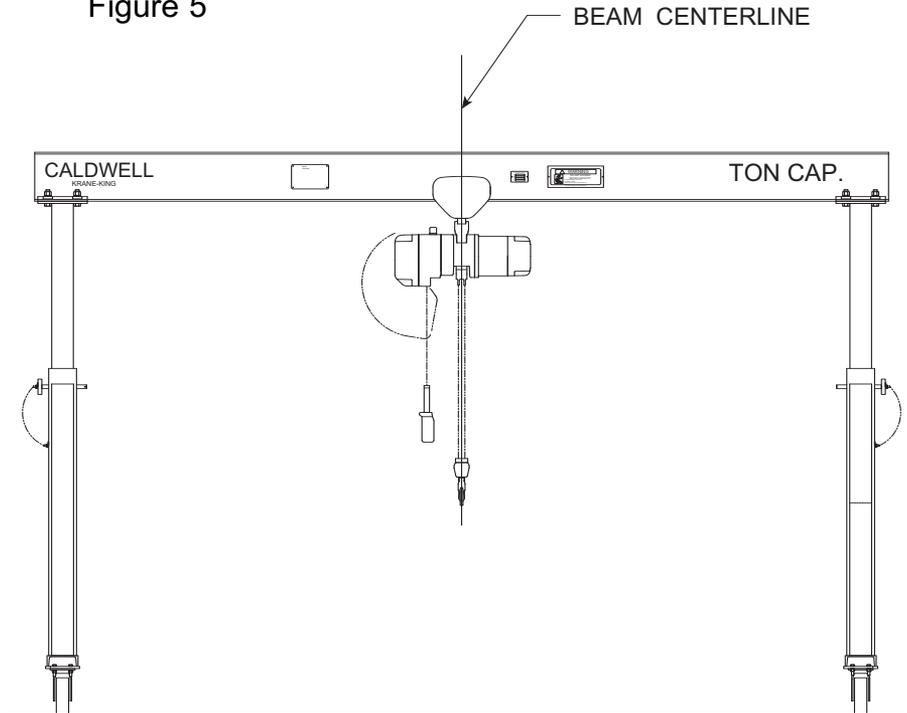
9. Reference Figure 4 - On adjustable height units, raise the I-Beam to the desired position, prior to installing the hoist and trolley. To adjust the I-Beam height, use a lifting devise to slightly raise up the crane, attaching it at the centerline. Raise the Crane just enough to allow for the removal of the load pins (C). Now carefully adjust the height to the desired position and then reinstall the load pins (C), making sure to reinstall the split hairpin cotter pins (D) as shown in Figure 1.

Figure 4



10. Reference Figure 5 - Install the hoist and trolley in accordance with the manufacturer's instructions.
11. In the event that the Cranes height needs adjustment, it is not necessary to remove the hoist and trolley. However, it is extremely important that extra care is taken during this procedure. The hoist /trolley MUST be centered on the I-Beam and it MUST be blocked in place to prevent the trolley from rolling in either direction. See Step 9.

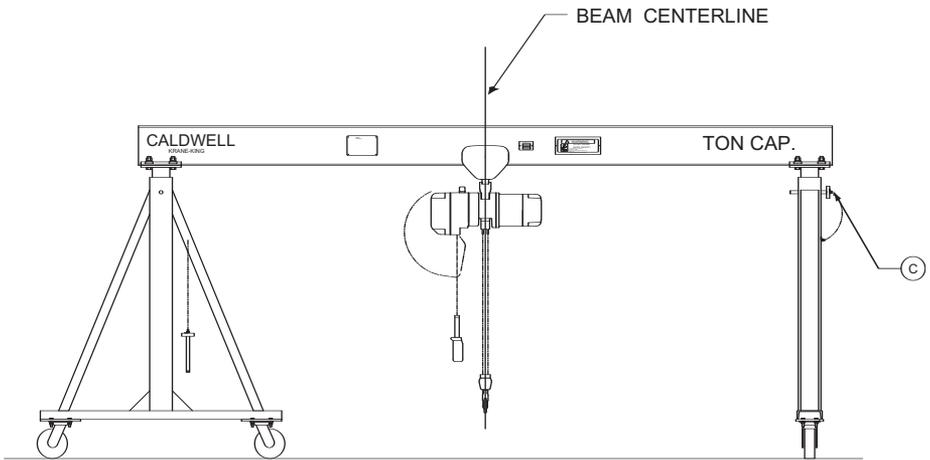
Figure 5



**Warning: The height must only be adjusted in an unloaded condition.**

12. Reference Figure 6 - Adjustable height units also have the capability of Leg Rotation. To use this feature, the Gantry Crane must be at it **LOWEST POSITION** and the hoist trolley should be at the center of the Crane. Use the same procedure as in Step 9 except leave load pin (C) out of the leg which is being rotated.

Figure 6



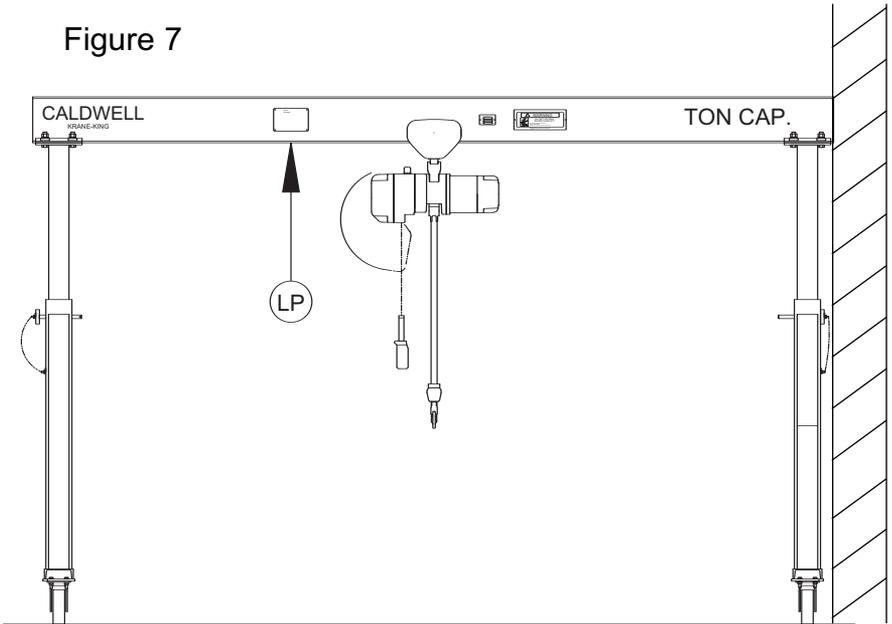
**Warning:** Only ONE leg at a time can be rotated and the non-rotating leg **MUST** have the load pin (C) with split hairpin cotter pin installed in its proper place.

13. Reference Figure 7 - Most gantry cranes have the capability to adjust in Span, which is the distance between leg centers. To adjust span, bring the gantry to a place where it can rest against a building column and move the hoist toward this building column. Raise up the crane slightly at point (LP), loosen the clamping bolts, loosen- do not remove, and then slide the leg assembly to the selected position. Next fully retighten the bolts. Repeat the process at the opposite side. Refer to Step 2 for Leg spacing limits.

**Warning: Under no circumstances should the hoist be mounted outside of the crane legs.**

14. The recommended position for lifting and/ or transporting loads is at the center of the crane and as close to the floor as practical. This is the safest and most stable position; however, all units are designed to lift and transport rated capacity at any point between the legs and at any elevation. Exercise good judgment whenever using a Gantry Crane to solve your material handling problems.

Figure 7



# OPTIONAL ACCESSORIES

## Tag Line Kit

Attach angle brackets per Figure 9, to the I-Beam. Attach the eyebolts, Item (7), as shown but tighten just enough to start the nuts, Item (9). Note: Nuts, Item (9) and washers, Item (10), go on either side of the angle bracket. Next attach the aircraft cable, Item (6), using the wire rope clamps, Item (8), provided, making sure to put on the S-hooks, Item (11), at this time. The aircraft cable, Item (6), should be installed as tight as possible. Now tighten the eyebolts, Items (7), as needed to straighten the aircraft cable, Item (6). Thread the hoists power cord through to S- hooks, Item (11), making sure to space them evenly over the length of the power cord and then crimp it firmly onto the cord.

## Ratchet Lever Hoist Kits

Attach each lever hoist to the leg assemblies per Figure 10. Note: This is a two person operation requiring that both ends be moved simultaneously. It is also required that the hoist be centered when doing this procedure. To raise or lower the crane, raise up the I-Beam slightly to allow for the removal of the load pins (C). Using the Lever Hoists, move the I-Beam to the desired elevation and the reinstall the load pins (C) and the split hairpin cotter pins (D) – See Figure 1A.

**Warning: Under no circumstances are the hoist ratchet lever kits to be used to adjust the height in a loaded condition. Units height must only be adjusted when it is in a no load condition.**

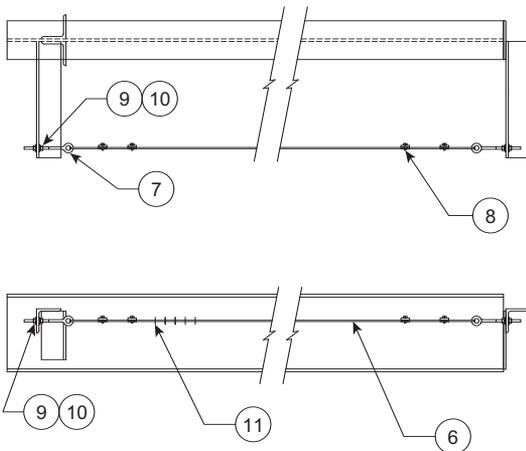


Figure 9

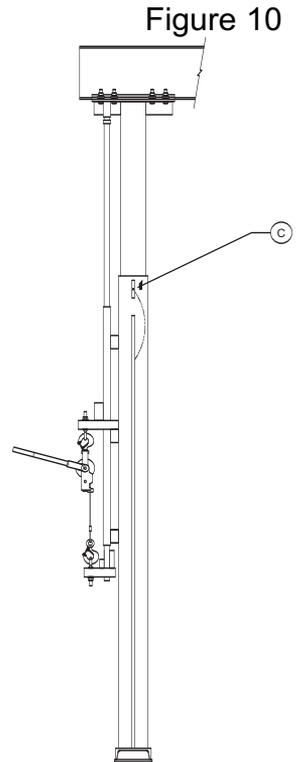


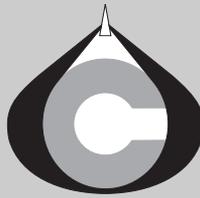
Figure 10

**The procedures set forth are not a substitute for the exercise of care and judgment in each use of a crane or lifting device.**

It is absolutely necessary that the crane operator exercise intelligence, care, common sense and experience to anticipate motions that may occur as the load is lifted or transported. It is also essential that the crane operator be alert and competent, and be trained in the safe operation of the crane.

Gantry cranes are specifically designed for lifting and transporting tasks and the forces imposed during these tasks. Use of a crane in a manner different than that intended by the design is hazardous.

Please read and understand the directions and warnings of the manufacturer for all gantry cranes you are expected to operate.



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