

# Installation, Operation, & Maintenance Manual



**IMPORTANT!  
DO NOT DESTROY**

## Adjustable Height Aluminum Gantry Cranes

Customer Order No. / Serial No. \_\_\_\_\_

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# INTRODUCTION

Thank you for choosing a Gantry Crane to solve your material handling needs. The innovative design and heavy-duty construction of the Aluminum Gantry Cranes will provide a superior quality product. All cranes are pre-engineered for powered hoist operation. The hoist weight allowance is 15% of the crane capacity (for example, a crane rated for 1000 pounds, allows for a 1000-pound live load plus 150 pounds for the weight of the hoist). There is also an allowance of 25% of the crane capacity for impact caused by hoist use.

***Dimensions contained in this installation manual are for reference only and may differ for your particular application. Please refer to the enclosed General Arrangement Drawing for actual dimensions.***

**Normal safety precautions:** These include, but are not limited to:

- Checking for obstructions in crane travel
- Checking that all bolts are tight
- Checking for any other unsafe conditions
- For additional safety precautions, see page 8

## WARNING

Read all instructions in this manual before assembling or using this equipment.

## WARNING

Never exceed the rated capacity of the crane.

## WARNING

A load should be moved from one point to another by moving the trolley back and forth along the Gantry I-beam, while the Gantry Crane itself is stationary. Use **EXTREME CAUTION, CENTER THE LOAD ON THE I-BEAM** and **LOWER THE LOAD AS MUCH AS POSSIBLE** when attempting to horizontally move a load by moving the entire Gantry Crane; this is **NOT RECOMMENDED**.

## WARNING

**NEVER** leave a suspended load unattended or walk under a suspended load. The equipment must be operated from a position that will not be hazardous to the operator.

## WARNING

When adjusting the height of the gantry, raise or lower the I-beam prior to attaching a load. **DO NOT** raise or lower the I-beam with a load attached. Ensure that the hitch pins are installed immediately (including the clip-on safety hair pins) after raising or lowering the crane to the desired height.

### **WARNING**

Gantry Crane should be used on a level, flat, smooth surface which is free of defects and obstructions.

### **WARNING**

Gantry Crane should not be moved by pushing or pulling on load. Gantry crane should not be moved by pushing or pulling with a fork truck or other vehicle.

### **WARNING**

Equipment described herein is not designed for, and should not be used for, lifting, supporting or transporting humans. Failure to comply with any one of the limitations noted herein can result in serious bodily injury and/or property damage. Check State and Local regulations for any additional requirements.

### **WARNING**

Crane cannot be utilized as a ground: A separate ground wire is required. For example, systems with 3-phase power require three conductors plus one ground wire.

### **WARNING**

Do not allow the load to swing or roll into support members. Do not allow the loaded gantry to roll into fixed obstructions.

### **WARNING**

Secure trolley and hoist at the center of the beam before adjusting height.

### **WARNING**

The surface the crane is used on must be capable of supporting the concentrated load at each wheel (up to half of the live load plus one fourth of the gantry weight).

## **INSTALLATION**

### **STEP 1 - PRE-ASSEMBLY**

➡ **TIP:** Packing list can be found in plastic pocket attached to the pallet: General Arrangement Drawing can be found inserted in this installation manual.

- 1.1 Check packing list to make sure correct quantity of parts is included.
- 1.2 Tools and materials (by others) typically needed to assemble crane are as follows:
  - Ladders/man lift
  - Lifting device (fork truck, overhead crane, etc.) to lift heavy crane components
  - Clamps or similar to restrain trolley on beam
  - 2 x 3/4" wrenches are required to assemble and disassemble your Aluminum Gantry (not included)

## STEP 2 - CRANE ERECTION

**2.1** Assemble your Gantry Crane in a clear area free of obstructions (refer to enclosed General Arrangement Drawing for overall size and other relevant dimensions).

**2.2** Unfold the legs by loosening the (4) bolts in the end plates 1/2 to one turn so there is a small gap between the plate and the nut. Remove the bolt holding the stringers to the end plates and spread the feet while swinging the stringers down (**diagram 2A**). Insert the bolt through the stringers and tighten it and the bolt at the other end of the stringers. Repeat this procedure for the second leg.

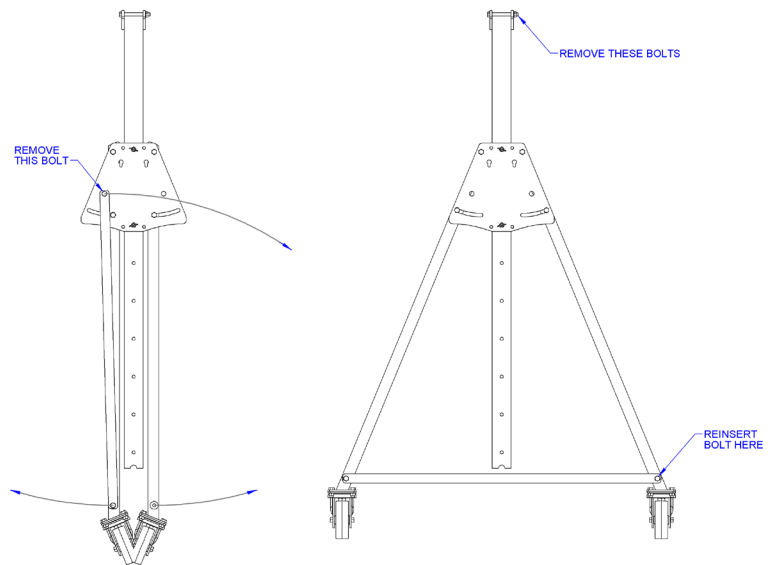


Diagram 2A.

**Note:** The height of the gantry may be adjusted at this point by removing the hitch pins, sliding the leg to the desired position, reinstalling the hitch pins, and tightening the end plate bolts. Depending on your application this may be easier than adjusting the height after the crane has been erected.

**2.3** Constrain the trolley to the middle of the beam with clamps or similar. With the beam on the floor supported by blocks or similar at one end, line up the leg with the beam and install one bolt and nut through the leg gusset plate and pivot tube (**diagram 2B**). Finger tighten nut.

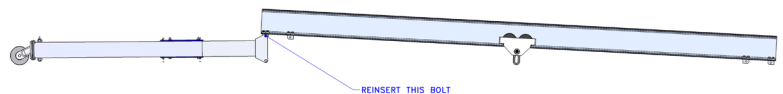
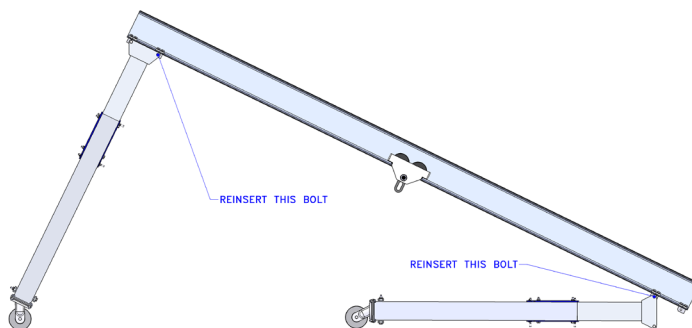


Diagram 2B.

## STEP 2 - CRANE ERECTION (CONTINUED)

**2.4** Using safe and appropriate lifting practices raise the I-beam and install the other nut and bolt through the leg gusset plate and pivot tube (**diagram 2C**). Tighten this nut and one from previous step completely.

**2.5** Position second leg under partially erect gantry (**diagram 2C**) and install one bolt and nut through leg gusset plate and pivot tube. Finger tighten nut.



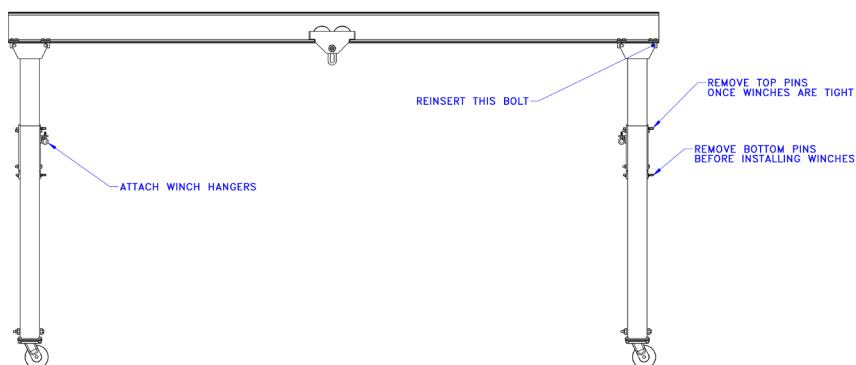
**Diagram 2C.**

**2.6** Using safe and appropriate lifting practices raise the low end of the I-beam until the gantry is fully erect and install the final bolt and nut (**diagram 2D**). Tighten this nut and one from previous step completely.

Bolt Dia.	Torque
1/2"	25-30 ft.-lbs.

**Chart 2A. Torque Chart.**

**Note:** If the crane is already at the desired height tighten the end plate bolts if you haven't done so already and verify the rest of the hardware is tight (the 1/4" hardware through the end plates is designed to be left loose; do not loosen or tighten it). Hang a hoist from the trolley, undo anything holding the trolley in place, and the gantry is ready to use.



**Diagram 2D.**

### STEP 3 - HEIGHT ADJUSTMENT (WITH OPTIONAL WINCHES)

➡ **Note:** Adjusting the height of a gantry in this manner is typically a two-person operation. Although not recommended it is possible for one person to perform a height adjustment by adjusting the legs alternately so one leg is never more than six inches shorter or taller than the other.

#### WARNING

Never adjust height with a load suspended from the gantry. Constrain the trolley in the middle of the beam before adjusting height.

#### WARNING

Ensure there are no obstructions that might hinder the crane from being raised or lowered.

➡ **TIP:** At this point the hoist may be installed on the trolley. Alternately the hoist may be installed once the crane has been adjusted to its desired height.

**3.1** If they aren't loose already, loosen the end plate bolts 1/2 to one turn. Insert winch hanger brackets into keyholes in end plates so the eyebolt is hanging down (**diagram 3A**).

**3.2** Remove the lower hitch pin from each leg. Hang the winch off the eyebolt and release enough chain to clip the other end of the winch over the notch in the leg tube. Tighten the winch until the load is off the upper hitch pin. Repeat this for the other leg.

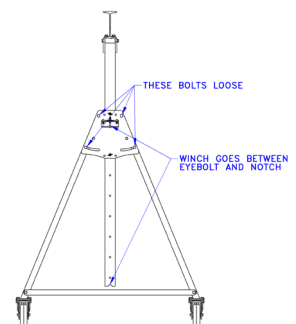


Diagram 3A.

**3.3** With one person at each leg, each person removes the upper hitch pin from their respective leg. Using coordinated motions, ratchet the winches to raise or lower the legs being careful that one leg is never more than six inches higher or lower than the other.

**3.4** As the desired height is approached, slow down so the holes in the leg tubes can be aligned with the slots in the end plates. Once the holes are aligned, reinstall the upper hitch pins, release the tension on the winches, remove them and the hanger brackets, and reinstall the lower hitch pins (**diagram 3B**).

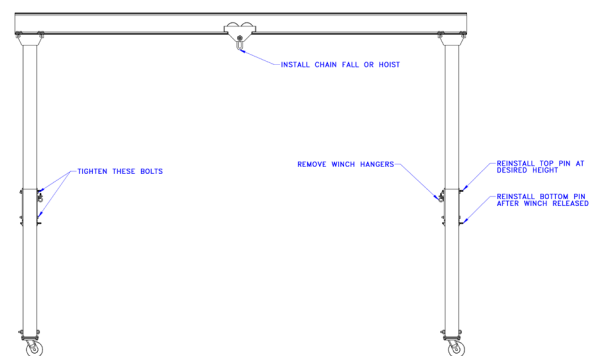


Diagram 3B.

**3.5** Tighten the end plate bolts and verify that the rest of the hardware is tight (do not tighten or loosen 1/4" hardware through end plates). Install the hoist if it hasn't been already, undo anything holding the trolley in place, and the gantry is ready to use.

**Note:** The height can also be adjusted using an overhead crane, fork truck, or similar lifting device. Follow the same steps listed above except where it says to use the winches, use the lifting device.

## STEP 4 - NOTES ON USAGE

### WARNING

On each leg both hitch pins must be installed through the leg tube. Never use the crane with only one pin installed.

## OPTIONS

1. Pneumatic wheels may be ordered as options for use on rough terrain. They will ship in a separate box on the pallet with your gantry and need to be installed. There will be an instruction page included with the wheels detailing the installation procedure for the specific wheel configuration.

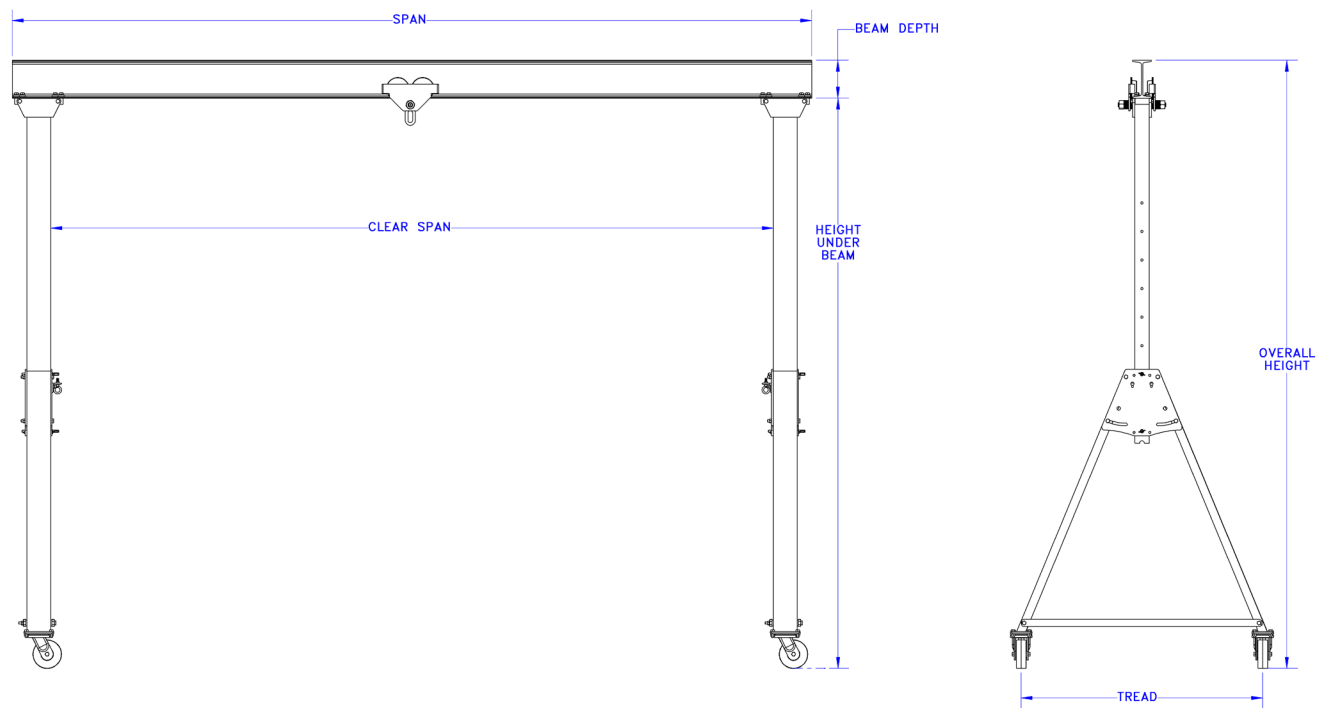
## STEP 5 - FINAL STEPS

➡ TIP: Do not throw away this manual: the maintenance schedule is on the last page.

- 5.1 Check to make sure all bolts are tight and lockwashers are compressed.
- 5.2 Keep Packing List, Installation Manual, General Arrangement Drawing, and any other inserts filed together in a safe place.



# GENERAL LAYOUT DRAWING



# CRANE OPERATOR INSTRUCTIONS

Overhead cranes and jib cranes generally handle materials over working areas where there are personnel. Therefore, it is important for the Crane Operator to be instructed in the use of the crane and to understand the severe consequences of careless operation. It is not intended that these suggestions take precedence over existing plant safety rules and regulations or OSHA regulations. However, a thorough study of the following information should provide a better understanding of safe operation and afford a greater margin of safety for people and machinery on the plant floor. It must be recognized that these are suggestions for the Crane Operator's use. It is the responsibility of the owner to make personnel aware of all federal, state and local rules and codes, and to make certain operators are properly trained.

## Qualifications

Crane operation, to be safe and efficient, requires skill: the exercise of extreme care and good judgment, alertness and concentration, and rigid adherence to proven safety rules and practices as outlined in applicable and current ANSI and OSHA safety standards. In general, no person should be permitted to operate a crane:

- Who cannot speak the appropriate language or read and understand the printed instructions.
- Who is not of legal age to operate this type of equipment.
- Whose hearing or eyesight is impaired (unless suitably corrected with good depth perception).
- Who may be suffering from heart or other ailments which might interfere with the operator's safe performance.
- Unless the operator has carefully read and studied this operation manual.
- Unless the operator has been properly instructed.
- Unless the operator has demonstrated his instructions through practical operation.
- Unless the operator is familiar with hitching equipment and safe hitching equipment practices.

## Handling the Trolley Motion

Before a load is handled, the hoist should be positioned directly over the load that is to be handled. When the slack is taken out of the slings, if the hoist is not directly over the load, bring it directly over the load before hoisting is continued. Failure to center the hoist over the load may cause the load to swing upon lifting. Always start the trolley motion slowly and reduce the trolley speed gradually.

## Handling the Hoist Motion

Refer to the lifting (hoist) equipment's operating instructions.

# GENERAL SUGGESTIONS

## Know Your Crane

Crane operators should be familiar with the principal parts of a crane and have a thorough knowledge of crane control functions and movements. The crane operator should be required to know the location and proper operation of the main conductor disconnecting means for all power to the attachments on the crane.

## Responsibility

Each crane operator should be held directly responsible for the safe operation of the crane. Whenever there is any doubt as to SAFETY, the crane operator should stop the crane and refuse to handle loads until: (1) safety has been assured or (2) the operator has been ordered to proceed by the supervisor, who then assumes all responsibility for the SAFETY of the lift.

Do not permit **ANYONE** to ride on the hook or a load

## Inspection

Test the crane movement and any attachments on the crane at the beginning of each shift. Whenever the operator finds anything wrong or apparently wrong, the problem should be reported immediately to the proper supervisor and appropriate corrective action taken.

## Operating Suggestions

One measure of a good crane operator is the smoothness of the crane operation. The good crane operator should know and follow these proven suggestions for safe, efficient crane handling.

1. The crane should be moved smoothly and gradually to avoid abrupt, jerky movements of the load. Slack must be removed from the sling and hoisting ropes before the load is lifted.
2. Center the crane over the load before starting the hoist to avoid swinging the load as the lift is started. Loads should not be swung by the crane to reach areas not under the crane.
3. Crane-hoisting ropes should be kept vertical. Cranes shall not be used for side pulls.
4. Be sure everyone in the immediate area is clear of the load and aware that a load is being moved.
5. Do not make lifts beyond the rated load capacity of the crane, sling chains, rope slings, etc.
6. Make certain that before moving the load, load slings, load chains, or other lifting devices are fully seated in the saddle of the hook with hook latch closed (if equipped with hook latch).
7. Check to be sure that the load and/or bottom block is lifted high enough to clear all obstructions when moving boom or trolley.
8. At no time should a load be left suspended from the crane unless the operator has the push button with the power on, and under this condition keep the load as close as possible to the floor to minimize the possibility of an injury if the load should drop. When the crane is holding a load, the crane operator should remain at the push button.
9. Do not lift loads with sling hooks hanging loose. If all sling hooks are not needed, they should be properly stored, or use a different sling.
10. All slings or cables should be removed from the crane hooks when not in use (dangling cables or hooks hung in sling rings can inadvertently snag other objects when the crane is moving).
11. Operators shall not carry loads and/or empty bottom blocks over personnel. Particular additional caution should be practiced when using magnet or vacuum devices. Loads, or parts of loads, held magnetically could drop. Failure of power to magnets or vacuum devices can result in dropping the load. Extra precaution should be exercised when handling molten metal in the proximity of personnel.
12. Whenever the operator leaves the crane the following procedure should be followed:
  - Raise all hooks to an intermediate position.
  - Spot the crane at an approved designated location.
  - Place all controls in the "off" position.
  - Open the main switch to the "off" position.
  - Make visual check before leaving the crane.
13. In case of emergency or during inspection, repairing, cleaning or lubrication, a warning sign or signal should be displayed and the main switch should be locked in the "off" position. This should be done whether the work is being done by the crane operator or by others.
14. Contact with rotation stops or trolley end stops shall be made with extreme caution. The operator should do so with particular care for the safety of persons below the crane, and only after making certain that any persons on the other cranes are aware of what is being done.
15. ANY SAFETY FEATURES AND MECHANISMS BUILT-IN OR OTHERWISE PROVIDED WITH THE CRANE BY GORBEL ARE REQUIRED FOR THE SAFE OPERATION OF THE CRANE. DO NOT, UNDER ANY CIRCUMSTANCES, REMOVE OR OTHERWISE IMPAIR OR DISABLE THE PROPER FUNCTIONING OF ANY CRANE SAFETY MECHANISMS OR FEATURES BUILT-IN OR OTHERWISE PROVIDED BY GORBEL FOR SAFE OPERATION OF THE CRANE. ANY REMOVAL, IMPAIRMENT OR DISABLING OF ANY SUCH SAFETY MECHANISMS OR FEATURES OR OTHER USE OR OPERATION OF THE CRANE WITHOUT THE COMPLETE AND PROPER FUNCTIONING OF ANY SUCH SAFETY MECHANISMS OR FEATURES AUTOMATICALLY AND IMMEDIATELY VOIDS ANY AND ALL EXPRESS AND IMPLIED WARRANTIES OF ANY KIND OR NATURE.

# INSPECTION AND MAINTENANCE

GANTRY CRANE INSPECTION AND MAINTENANCE SCHEDULE			
ITEM	COMPONENT	MAINTENANCE	FREQUENCY*
1	Pivot Block Hardware	Check for full compression of lockwasher. Bolts should be tightened to torque specifications ( <b>chart 2A</b> , page 4).	Every time unit is erected or 6 months
2	Caster Hardware	Bolts should be tightened to torque specifications ( <b>chart 2A</b> , page 4).	Every 1,000 hours or 6 months
3	Leg Hardware	Bolts should be tightened to torque specifications ( <b>chart 2A</b> , page 4).	Every time unit is erected or 6 months
4	Casters	Check for cracks, pits, grooves or excessive wear: all of these hinder the crane's mobility. If any of these conditions exist, wheels should be replaced. Also add an adequate amount of grease through the zirk fittings. Each caster will have one or two grease fittings (one on the fork weldment and one on the wheel itself).	Every 1,000 hours or 6 months

**\*Federal, state and local codes may require inspection and maintenance checks more often. Please check the federal, state and local code manuals in your area.**

## WARNING

Any changes in rolling effort or unusual noises must be immediately identified and corrected.

