OPERATING AND
MAINTENANCE MANUAL

# LOW HEADROOM ELECTRIC CHAIN HOIST

CHESTER HOIST

# EL-680

**Before installing hoist, fill in the information below.**

**Model Number** _____

**Serial No.** _____

**Purchase Date** _____

**Voltage** _____

**Rated Load** _____

## RATED LOADS 1 TO 24 TONS

Follow all instructions and warning for inspecting, maintaining and operating this hoist. The use of any hoist presents some risk of personal injury or property damage. That risk is greatly increased if proper instructions and warnings are not followed. Before using this hoist, each operator should become thoroughly familiar with all warnings, instructions and recommendations in this manual. Retain this manual for future reference and use. Forward this manual to operator. Failure to operate equipment as directed in manual may cause injury.



P/N: EL-680 REV AA JULY 2018

## CHESTER HOIST PARTS AND SERVICES ARE AVAILABLE IN THE UNITED STATES AND IN CANADA

As a CHESTER Hoist and Trolley user you are assured of reliable repair and parts services through a network of Master Parts Depots and Service Centers that are strategically located in the United States and Canada. These facilities have been selected on the basis of their demonstrated ability to handle all parts and repair requirements promptly and efficiently. To quickly obtain the name of the Master Parts Depot or Service Center located nearest you, call (800) 888-0985, Fax: (716) 689-5644, visit www.cmworks.com.



P/N: EL-680 REV AA JULY 2018

**⚠ WARNING**

Usage of hoists that do not involve lifting of the load on the lower hook or using hoists in the inverted position without special precaution may cause an accident resulting in injury and/or property damage.

**TO AVOID INJURY:**

Consult Columbus McKinnon for information concerning using hoists in these applications

**⚠ WARNING**

Improper operation of a hoist can create a potentially hazardous situation which, if NOT avoided, could result in death, or serious injury. To avoid such a potentially hazardous situation, the operator shall:

1. NOT operate a damaged, malfunctioning or unusually performing hoist.
2. NOT operate the hoist until you have thoroughly read and understood this Operating, Maintenance and Parts Manual.
3. NOT operate a hoist which has been modified.
4. NOT lift more than rated load for the hoist.
5. NOT use hoist with twisted, kinked, damaged, or worn load chain.
6. NOT use the hoist to lift, support, or transport people.
7. NOT lift loads over people.
8. NOT operate a hoist unless all persons are and remain clear of the supported load.
9. NOT operate unless load is centered under hoist.
10. NOT attempt to lengthen the load chain or repair damaged load chain.
11. Protect the hoist's load chain from weld splatter or other damaging contaminants.
12. NOT operate hoist when it is restricted from forming a straight line from hook to hook in the direction of loading.
13. NOT use load chain as a sling, or wrap load chain around load.
14. NOT apply the load to the tip of the hook or to the hook latch.
15. NOT apply the load unless load chain is properly seated in the chain wheel(s) or sprocket(s).
16. NOT apply load if bearing prevents equal loading on all load supporting chains.
17. NOT operate beyond the limits of the load chain travel.
18. NOT leave load supported by the hoist unattended unless specific precautions have been taken.
19. NOT allow the load chain or hook to be used as an electrical or welding ground.
20. NOT allow the load chain or hook to be touched by a live welding electrode.
21. NOT remove or obscure the warnings on the hoist.
22. NOT operate a hoist on which the safety placards or decals are missing or illegible.
23. NOT operate a hoist unless it has been securely attached to a suitable support.
24. NOT operate a hoist unless load slings or other approved single attachments are properly sized and seated in the hook saddle.
25. Take up slack carefully - make sure load is balanced and load holding action is secure before continuing.
26. Shut down a hoist that malfunctions or performs unusually and report such malfunction.
27. Make sure hoist limit switches function properly.
28. Warn personnel of an approaching load.

**⚠ CAUTION**

Improper operation of a hoist can create a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. To avoid such a potentially hazardous situation, the operator shall:

1. Maintain a firm footing or be otherwise secured when operating the hoist.
2. Check brake function by tensioning the hoist prior to each lift operation.
3. Use hook latches. Latches are to retain slings, chains, etc. under slack conditions only.
4. Make sure the hook latches are closed and not supporting any parts of the load.
5. Make sure the load is free to move and will clear all obstructions.
6. Avoid swinging the load or hook.
7. Make sure hook travel is in the same direction as shown on the controls.
8. Inspect the hoist regularly, replace damaged or worn parts, and keep appropriate records of maintenance.
9. Use the hoist manufacturer's recommended parts when repairing the unit.
10. Lubricate load chain per hoist manufacturer's recommendations.
11. NOT use the hoist load limiting or warning device to measure load.
12. NOT use limit switches as routine operating stops unless allowed by manufacturer. They are emergency devices only.
13. NOT allow your attention to be diverted from operating the hoist.
14. NOT allow the hoist to be subjected to sharp contact with other hoists, structures, or objects through misuse.
15. NOT adjust or repair the hoist unless qualified to perform such adjustments or repairs.

**SAFETY PRECAUTIONS**

Each Chester Electric Hoist is built in accordance with the specifications contained herein and at the time of manufacture complied with our interpretation of applicable sections of the *American Society of Mechanical Engineers Code B30.16 "Overhead Hoists," the National Electrical Code (ANSI/NFPA 70) and the Occupational Safety and Health Act. Since OSHA states the National Electrical Code applies to all electric hoists, installers are required to provide current overload protection and grounding [on the branch circuit section] in keeping with the code. Check each installation for compliance with the application, operation and maintenance sections of these articles.

The safety laws for elevators, lifting of people and for dumbwaiters specify construction details that are not incorporated into the hoists. For such applications, refer to the requirements of applicable state and local codes, and the American National Safety Code for elevators, dumbwaiters, escalators and moving walks (ASME A17.1). Columbus McKinnon Corporation cannot be responsible for applications other than those for which CM equipment is intended. *Copies of this standard can be obtained from ASME Order Department, 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300, U.S.A.

⚠ THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH IF NOT FOLLOWED COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL AND ANY PROVIDED WITH THE EQUIPMENT BEFORE ATTEMPTING TO OPERATE YOUR CHESTER HOIST.

## Forward

This manual contains important information to help you properly install, operate and maintain your hoist for maximum performance, economy and safety.

Please study its contents thoroughly before putting your hoist into operation. By practicing correct operating procedures and by carrying out the recommended preventive maintenance suggestions, you will experience long, dependable and safe service. After you have completely familiarized yourself with the contents of this manual, we recommend that you carefully file it for future reference.

The information herein is directed to the proper use, care and maintenance of the hoist and does not comprise a handbook on the broad subject of rigging.

Rigging can be defined as the process of lifting and moving heavy loads using hoists and other mechanical equipment. Skill acquired through specialized experience and study is essential to safe rigging operations. For rigging information, we recommend consulting a standard textbook on the subject.

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# SAFETY PRECAUTIONS

This hoist is designed for safe operation within the limits of its rated capacity. There are safety features built into the hoist to protect the operator and others from injury due to failure of the hoist itself. However, listed below, are safety pointers which must be followed in order to protect personnel and property.

1. Avoid side pull or end pull at all times.
2. Unit switches are emergency devices. Do not use limit switches to stop the hoist in normal operation. Do not leave load block in contact with limit switch at and of operation.
3. Do not operate hoist with twisted, kinked or damaged chain.
4. Do not operate hoist with a chain that is not property seated in all pockets.
5. Do not operate a damaged or malfunctioning hoist until necessary adjustments or repairs have been made.
6. Do not use hoist to lift, support or otherwise transport people or to carry loads over people.
7. Make sure all supporting structures are strong enough to hold your intended load.
8. Do not lift more than the rated capacity of the hoist.
9. Do not use the chain as a substitute for slings.
10. Allow only qualified personnel to operate the hoist.
11. Do not leave a load suspended in the air unattended.
12. Avoid jogging controls or quick reversals of load.
13. Always disconnect hoist from power supply before making electrical connections or repairs. The main disconnect to the hoist should be locked out during repairs.
14. Do not use pushbutton cable to move either hoist or load along rail.
15. When replacement parts are required, use only parts supplied by the manufacturer.
16. Do not remove or obscure warning labels or capacity labels or tags.
17. Use only alloy chain and attachments for overhead lifting.
18. Do not use to lift, support or transport molten metal.

Come of the hoists and trolleys manufactured by Chester Hoist can be adjusted to fit various sizes of runway beams. Other Chester Hoists and trolleys are built to fit a runway specified by our customers. Regardless, it is the customer’s responsibility to apply such engineering calculations or tests, as may be necessary, to satisfy that the runway beam flanges are capable of carrying the loads expected to be handled.

# GENERAL INSTRUCTIONS

a. The power supply should be within plus or minus 10% of the voltage specified on the hoist nameplate.
b. Supporting structure, Including trolleys, monorail, etc. should have a load rating at least equal to the hoist plus weight of hoist.
c. Check lubrication level in the gear case and trolley gear case (If supplied with the hoist).
d. Check chain for damage and Improper seating in load or Idler sheaves.

**LOAD HOOK DIRECTION (PHASING)**

**CAUTION:** Failure to follow these instructions may causa immediate and severe damage to this hoist

When installing your hoist, make only temporary connections at the power source. Push the "UP" button and observe the direction of the load block. If the load block raises, the phasing is correct and permanent connection may be made at the power source. If the load block lowers, release the button immediately. To correct load block direction, reverse any two wires (except the green ground wire) at the power source only. DO NOT CHANGE CONNECTIONS AT ANY OTHER LOCATION.

**LIMIT SWITCH OPERATION (PADDLE)**

Before placing the hoist in operation, check for proper upper limit switch operation. Push the "UP" button and, while the hoist is moving upward, raise the limit switch lever. The hook should stop immediately.DO NOT OPERATE THE HOIST IF THE LIMIT SWITCH(ES) ARE NOT OPERATING PROPERLY.

**BRAKE OPERATION**

NOTE: Run in hoist with a light load a few times before lifting the rated load. After lifting a light load a few times, test the hoist per paragraph VI. Check for load block drift with the maximum rated capacity load on the hook. If hook does not stop within one to two inches when push button is released, it may be necessary to adjust the brake. See Maintenance – Adjustments and Repairs.

**INSTALLATION ON BEAM**

See Installation section.

**CHAIN CONTAINER INSTALLATION**

See Installation section.

### POST INSTALLATION INSPECTION

After installation, but prior to placing this hoist into service, a post installation inspection should be performed using the checklist in the Maintenance and operating Procedures Section.

## OPERATION

### OPERATING PERSONNEL

It is recommended that hoist operation be limited to the following personnel:

a. Appointed operators who have passed a practical operating examination.
b. Maintenance and test personnel when it is necessary in the performance of their duties.
c. Inspectors.

### GOOD OPERATING PRACTICES

a. The operator should not engage in any practice which will divert his attention while engaged in operating the hoist.
b. When an “out-of-order” sign is on the starting controls, the operator should not power the unit or start operations until the sign has been removed by a designated person.
c. Before starting the hoist, the operator should be certain that all personnel are clear.
d. The operator should familiarize himself with the equipment and its proper care. If adjustments or repairs are necessary or any damage known, or suspected, he should report the same promptly to the appointed person and should also notify the next operator of the damage upon changing shifts.
e. All controls, such as push button stations, brakes and limit switches should be tested by the operator before beginning a shift. If any controls do not operate properly, they should be adjusted or repaired before operations are started.

### HANDLING THE LOAD

a. Size of Load
   Do not load the hoist beyond the rated load, except for properly authorized tests.
b. Attaching the Load
   1) The hoist chain should not be wrapped around the load.
   2) The load should be attached to the hook by means of slings or other approved devices.
   3) The slings or other approved devices shall be seated properly in the saddle of the hook before operation.
c. Moving the Load
   1) The load should not be moved or lifted more than a few Inches until it is well-balanced on a sling or lifting device.
   2) Care should be taken In hoisting to be certain that:
      (a) Holst chain is not kinked or twisted.
      (b) Load does not contact any obstructions.
      (c) Multiple part chains are not twisted about each other.
   3) No hoist should be operated until the hoist unit is centered over the load.
   4) The operator should test the brake each time a load approaching the rated load is handled by raising the load just enough to clear the floor or supports, and check for brake action. The lift should be continued after the operator is assured the brake is operating property.
   5) The operator should Inch the hoist into engagement with a load, and avoid unnecessary stops and starts.

## INSPECTION

Inspection procedures are divided into three general classifications based upon the Intervals at which inspection should be performed. Deficiencies should be carefully examined and corrected. The Intervals between Inspections will vary due to operating conditions and amount of use. The following Inspection intervals are based on intermittent use under normal environmental conditions. If the hoist is used more than intermittently or under adverse environmental conditions. It should be inspected more frequently.

### DAILY INSPECTION

Inspect the following items daily before operating hoist:

a. Check all controls and operating mechanisms for proper operation.
b. Check limit switches and brake for proper operation.
c. Check hooks for deformations, chemical damage or cracks. Replace any hook showing any of these signs.

NOTE: Any hook that is twisted or has throat opening in excess of normal, Indicates abuse or overloading of the hoist. When a hook is found to be in this condition, other load bearing components of the hoist should be inspected for damage.

d. Check chain for wear, twist or distortion.
e. Check for damaged or improperly working safety latch.

**QUARTERLY INSPECTION**

Inspect the following Items at 90-day Intervals:

a. Check all items under daily inspection.
b. Check for loose bolts, screws and nuts.
c. Inspect load chain wheels for cracks and excessive wear.
d. Inspect for worn, corroded, cracked or distorted parts.
e. Check for proper operation of brake. See BRAKE OPERATION.
f. Inspect for excessive wear of chain. See paragraph CHAIN MAINTENANCE.
g. Check electrical parts for signs of pitting or any deterioration of controls, limit switches and push button station.
h. Check chain container (See Chain container installation notes.)

**ANNUAL INSPECTION**

Inspect the following Items annually:

a. Check all items under dally and 90-day Interval Inspection.
b. Check hooks for cracks by means of a magnetic particle teat or other suitable crack detecting teat.

c. Inspect supporting structure and trolleys (if used) for continued ability to support the imposed loads.
d. Check brake for worn linings and discs. See ADJUSTMENTS AND REPAIRS.

NOTE: A hoist which has been idle for a period of one month or more, but less than six months, should be given an inspection of those Items listed under DAILY INSPECTION. A hoist which has been idle for a period of six months or more, should be given a complete inspection.

**FIGURE 1: BRAKE ADJUSTMENT**

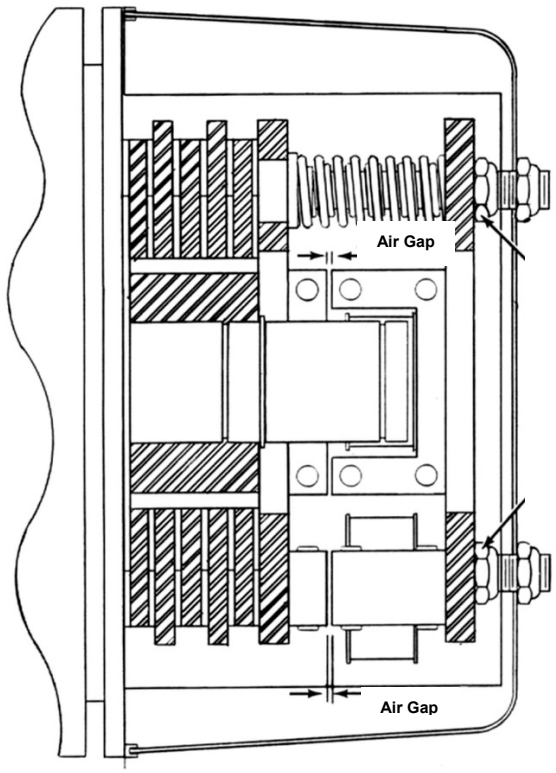
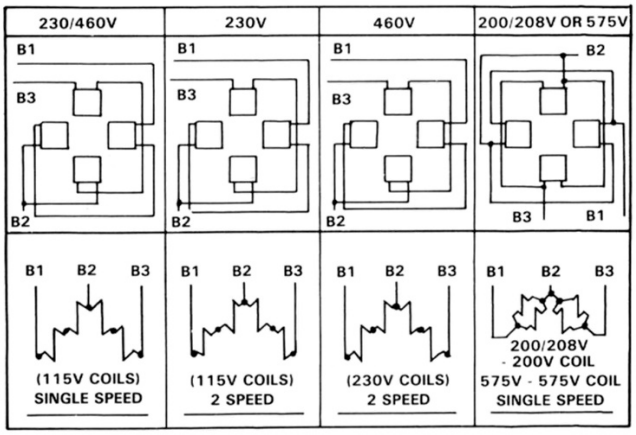



**FIGURE 1A: BRAKE COIL CONNECTIONS**




NOTE: These instructions are for the Chester Hoist brake only. For other brakes, see manufacturer's information provided in the parts manual.

# MAINTENANCE

A preventive maintenance program based on the following should be established for the hoist. It is recommended that detailed record be kept and made available to appointed personnel.

NOTE: Only parts obtained from Chester Hoist should be used in maintenance of the hoist.

**MAINTENANCE PROCEDURE**

Before adjustments and repairs are started on the hoist the following precautions should be taken:

a. The main or emergency switch on the line feeding the hoist should be locked in the open position or the power disconnected.
b. Warning or "out-of-order" signs should be placed on the hoist. These signs should be placed and removed only by designated personnel.

**ADJUSTMENTS AND REPAIRS**

Any unsafe conditions disclosed by inspection should be corrected before operation of the hoist is resumed. Adjustments and repairs should be accomplished only by qualified personnel.

a. Adjustments
Adjustments should be made to assure correct functioning of components after replacements or when malfunctions are detected.

1. Geared Limit Switch
Adjust geared limit switch according to instructions contained in the maintenance and parts sheets included in the illustrated parts breakdown.

NOTE: The lower limit switch should be set so that a small loop of loose chain remains when the geared limit switch prevents further travel. The peddle limit switch only acts If this switch falls.

2. Brake Adjustment (See Figure 1).

(a) Remove nuts (1), and cover (2).

(b) Adjust air gap adjusting nuts (4) until the air gap at all four coils 0.020 Inch for single disc brakes or 0.035 Inch for double disc brakes and 0.050 inch for triple disc brakes.

(c) Replace cover (2) and nuts (1).

(d) For brakes not of Chester Hoist manufacture, see attached parts sheets.

b. Repairs or Replacements
Repairs or replacements should be provided promptly as needed for correct operation. The following are examples:

1. Replace all critical parte which are cracked, broken, bent or excessively worn.

2. Replace pitted or burned electrical contacts in sets only.

3. Keep push button control stations clean and function labels legible.

4. Replace hooks showing defects described in paragraph DAILY INSPECTION.

5. Replace chain showing detects described in CHAIN MAINTENANCE.

6. Replace missing or illegible warning labels.

7. Replace brake linings when worn excessively.

**LUBRICATION**

Lubricate the hoist according to Table 2.

**CHAIN MAINTENANCE**

a. Load chain must be kept well lubricated and free of foreign matter to insure proper service.
b. See Table 2 for specific lubricants.
c. Load chain shall not be used as a ground for welding.

**CHAIN INSPECTION**

a. Daily the chain should be checked for wear, twists, broken or damaged links.
b. Chain should be clean and free of foreign material or rust.
c. Chain should be properly lubricated.

**CHAIN REPLACEMENT**

a. When replacing load chain, the two chains must be exactly the same length.
b. The starting chain link on each chain must be simultaneously fed into two lifting load sheaves.
c. The starting links must be placed over the top of the load sheave in a horizontal position to permit end attachment without twisting the chain.
d. The second link of chain will be a standing link of chain; this link should have the weld furthest away from the center of the load sheave.
e. See Figure 2 for chain reeving.
f. Use only chain supplied by Chester Hoist.
g. See Chain Container Installation Notes for instructions for loading chain into a chain container.
a. Refer to Figure 3.
b. To enable the two independent chains to lift the bottom block evenly, the large gears and load sheaves must first be timed as Illustrated. Then both gears must be timed simultaneously with the shaft pinions. This timing procedure is only necessary when the gears have been disengaged during disassembly, Figure.3.

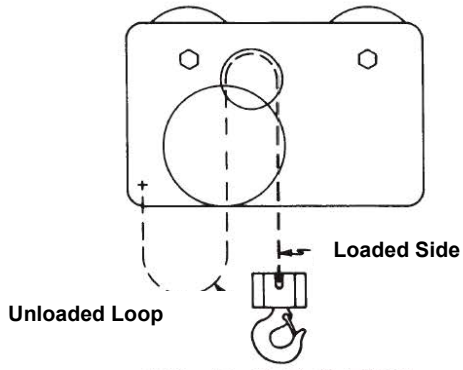
## FUNCTION TESTING

After load sustaining parts have been altered, replaced or repaired, the hoist should be load tested. The hoist should be tested using 100 percent of rated load.

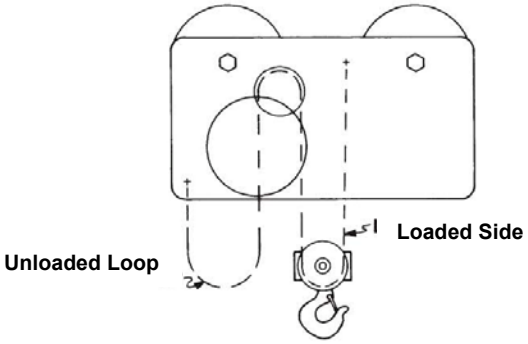
**TABLE 2: LUBRICATION**

| PART | LUBRICANT | INSTRUCTIONS | FREQUENCY |
|---|---|---|---|
| Transmission | Mobilgear #634 Synthetic or Equivalent (see parts manual for quantity) | Drain from drain plug in bottom of housing. Fill to level plug on side of housing. | After initial 50 hours of operation, then every 3 months or 500 hours. |
| Motorized Trolley Gear Box | Mobilgear #634 Synthetic or Equivalent (see parts manual for quantity) | Drain from drain plug in bottom of housing. Fill to level plug on side of housing. | After initial 50 hours of operation, then every 3 months or 500 hours. |
| Load Block | NLGI No. 2 Grease | Lubrication is required only when sheave pin contains grease fittings. | 30 days |
| Load Chain | Intermediate oils preferably with EP Additives<br>Bonded Lubricants such as Dow Molykote M-77 or LPS Chainmate | Immerse in oil or swab with oil soaked rag. Wipe off excess oil. Maintain chain rust-free.<br>Use in place of oil, if oil residue is objectionable. | Daily |
| *Trolley Wheels | NLGI No. 2 Grease | Wheels will have grease fittings. (see note below) | After prolonged use or reassembly. |
| Spur Gears | NLGI No. 2 Grease | Brush on exposed gears. | Weekly |
| *Not required on units equipped with sealed ball bearings. (Wheels will not have grease fittings.) | | | |

**FIGURE 2: CHAIN REEVING**

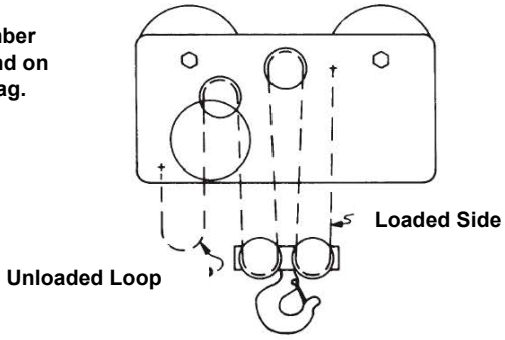



**1-1/2, 2, 5 & 6 Ton**




**3, 4, 8, 10 & 12 Ton**

**Hoist Serial number stamped here and on Serial number Tag.**




**Note: looking at Hoist at Motor Side.**

**16, 20 & 24 Ton**

**FIGURE 3: LOAD SHEAVE TIMING**

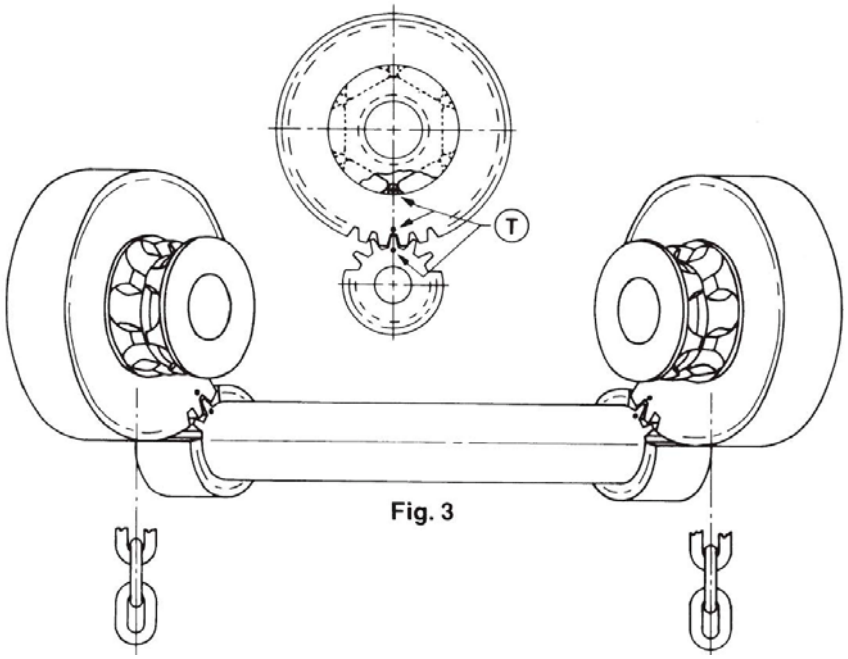



Fig. 3

T indicates three timing marks in alignment.

# WHEEL ASSEMBLY

### INSTALLATION

The hoisting unit is custom sized at the factory to fit on a specific beam size. Most units are slipped over the end of the supporting rail or beam; however, removable wheels* are provided which enables the unit to be fitted on a beam with obstructed ends.

See parts breakdown in Figure 4 for additional Information regarding disassembly.

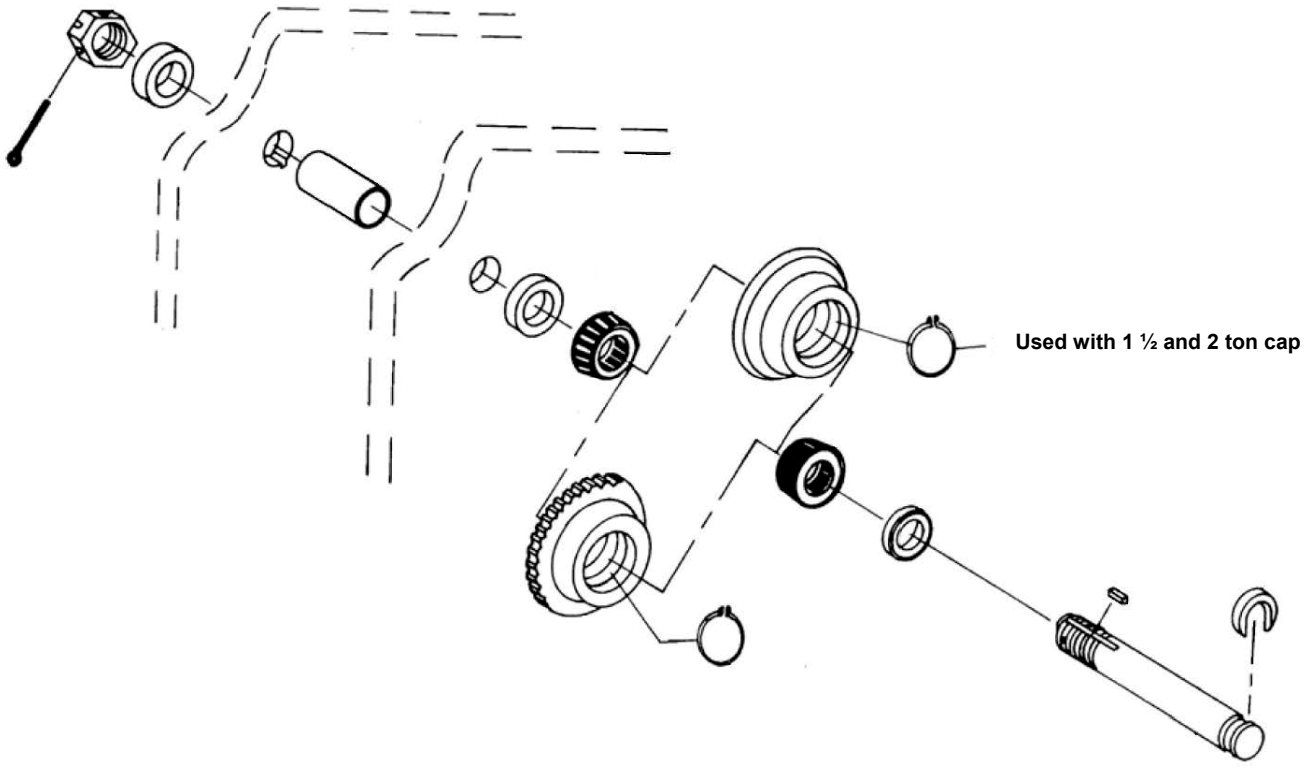
The distance between trolley wheel flanges (measured at the tread diameter) should be 1/8” to 3/16” greater than the beam flange width for proper running clearance. This clearance should be checked before operating the hoist under load. The hoist should be traversed the entire length of the beam to check for beam interference pointe, proper side clearance and effectiveness of the beam stops. If everything is satisfactory, the procedure should be repeated with a capacity load as a functional Installation test.

**WARNING:**

Always make sure all end stops are securely in place before operating a hoist on a runway beam to prevent the hoist from falling from the open beam end.

*Feature not available on unit’s operating on patented monorail tracks.

**FIGURE 4: WHEEL ASSEMBLY**




**WARNING:**

Before installing this trolley hoist, make certain that the trolley wheel contour is correct for the type of beam the unit will operate on and that the trolley wheel spacing is correct for the beam flange width. Flat flange beams should have flat tread or universal tread wheels and tapered flange beams should have tapered or universal tread wheels.

| TABLE 3. TROUBLESHOOTING | | |
|---|---|---|
| **TROUBLE** | **CAUSE** | **REMEDY** |
| Hook Fails to Stop End of Travel | 1. Improperly adjusted brake.<br>2. Worn brake listings.<br>3. Magnetic reversing controller malfunction. | 1. Adjust per ADJUSTMENT AND REPAIRS SECTION.<br>2. Replace when excessively worn.<br>3. Check out reversing controller. |
| Hoist Does Not Respond to Pushbutton | 1. Power failure in supply lines.<br>2. Wrong voltage or frequency.<br>3. Brake does not release.<br>4. Improper connections in hoist or pushbutton station.<br>5. Faulty magnetic controller. | 1. Check circuit breakers, switched and connections in power lines.<br>2. Check voltage and frequency of power supply against the rating on the hoist nameplate.<br>3. Check brake adjustment. See ADJUSTMENT AND REPAIRS SECTION. Check connection to brake coils for open and short circuit.<br>4. Check all connections at line connectors and on terminal block.<br>5. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed. |
| Hook Does Not Stop Promptly | 1. Hoist overloaded.<br>2. Brake not holding. | 1. Reduce load to within rated capacity of hoist.<br>2. Check brake adjustment. See ADJUSTMENT AND REPAIRS SECTION. Check brake linings for wear. |
| Hook Moves in Wrong Direction | 1. Three-phase reversal.<br>2. Improper connections. | 1. Reverse any two wires (except the green ground wire) at the power source.<br>2. Check all connections against wiring diagram. |
| Hook Raises But Will Not Lower | 1. “Down” circuit open.<br>2. Broken conductor in pushbutton cable.<br>3. Faulty magnetic controller. | 1. Check circuit for loose connections. Check “Down” limit switch for malfunction.<br>2. Check each conductor in the cable. I one is broken, replace entire cable.<br>3. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed. |
| Hook Lowers But Will Not Raise | 1. Hoist overloaded.<br>2. Low Voltage.<br>3. Broken conductor in pushbutton cable.<br>4. Faulty magnetic controller. | 1. Reduces load to within rated hoist capacity.<br>2. Determine cause of low voltage and bring up within plus or minus 10% of the voltage specified on the hoist.<br>3. Check circuit for loose connections. Check “UP” limit switch for malfunction.<br>4. Check each conductor in the cable. If one is broken, replace entire cable.<br>5. Check coils for open or short circuit. Check all connections in control circuit. Check for burned contacts. Replace as needed. |
| Lack of Proper Lifting Speed | 1. Hoist overloaded.<br>2. Brake not releasing fully.<br>3. Low Voltage. | 1. Reduce load to within rated capacity of hoist.<br>2. Check brake adjustment. See ADJUSTMENT AND REPAIRS SECTION.<br>3. Bring up within plus or minus 10% of the voltage specified on the hoist. |

# ILLUSTRATED PARTS LIST

### GENERAL

The illustrated parts list that follow are designed to help you identify replacement parts for your Chester hoist. In addition to exploded illustrations which cover a large part of your hoist, some manufacturers' sheets are included for such items as geared limit switches, magnetic reversing controllers, relays and other items. If assistance is required please contact your Chester representative.

### HOW TO USE THE PARTS LISTS

To identify a part from your hoist, locate the illustration for the affected section of the hoist. Study the illustration and locate the part you wish to find. An arrow will be pointing to the part from a number. This figure number will be found in the accompanying parts list with the part name, part number and quantity required.

When ordering parts, please send the following Information:

1. Serial Number of your hoist (see Figure 2 tor location).
2. Your power supply (voltage, phase and cycles).
3. Title of illustration (for example, 3 - 4 Ton bottom block assembly).
4. Figure Number, Part Name, Quantity Required and Part Number.
5. Any additional information required by notes at the bottom of parts lists.

# MAINTENANCE AND OPERATING PROCEDURES: (USER'S RESPONSIBILITY)

All equipment should be inspected, tested, operated, and maintained according to the manufacturer's recommendations and the applicable sections of ASME/ANSI B30.16, B30.11 and B30.17. Consideration should also be given to pertinent federal, state and local regulations.

### POST INSTALLATION INSPECTION CHECK LIST

After installation the following items should be checked:

a. Hoist hook motion and trolley motion for agreement with control indication direction and prompt return of actuators to the OFF position.
b. Hoist load chain free from twists, damage, and improper seating in pockets.
c. Lift and travel limiting devices tor proper operation.
d. Braking system for proper operation.
e. Load chain for proper lubrication.
f. Hoist and trolley for proper lubrication.

# CHAIN CONTAINER

### CHAIN CONTAINER INSTALLATION

The chain container for this hoist has been shipped loose. Follow these instructions to install the container and to load the chain into the container.

a. Attach mounting bracket to hoist with mounting bolt and tighten bolt securely.
b. Attach container to bracket using the shoulder bolts provided. Tighten securely. Container should swivel.
c. Mount Container with this angled surface toward the hoist bottom block.
d. SEE FIGURE 5.

### CHAIN LOADING

Lower load block as far as possible. After installing the chain container run the load block up allowing the hoist mechanism to fill the container. Verify the chain is loading properly into the container.

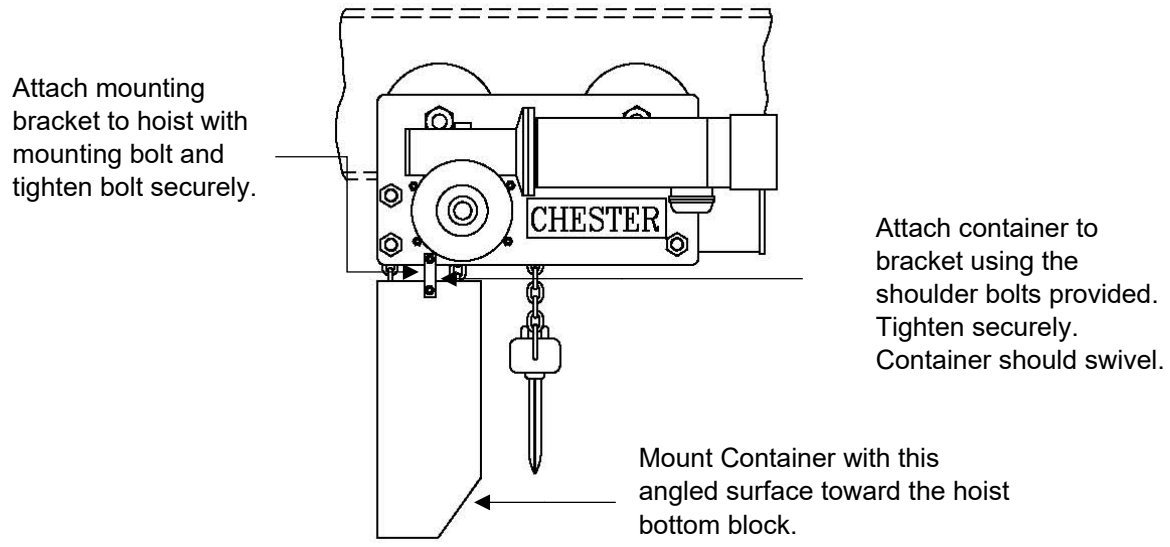
### WARNING

Never load chain into the container by hand. Hand loading will cause the chain to tangle which will jam and damage the hoist.

### CHAIN CONTAINER INSPECTION

The mounting bolts for the container should be checked each time the hoist is inspected to ensure they remain tight. The mounting holes on the container and bracket should be checked each time the hoist is inspected to ensure they are not elongating and weakening the container or bracket.

**FIGURE 5: CHAIN CONTAINER**



# WARRANTY

## LIMITATION OF WARRANTIES, REMEDIES AND DAMAGES

**INDEMNIFICATION AND SAFE OPERATION**

Buyer shall comply with and require its employees to comply with directions set forth in instructions and manuals furnished by Seller and shall use and require its employees to follow such instructions and manuals and to use reasonable care in the use and maintenance of the Goods and any Replacement Parts. Buyer shall not remove or permit anyone to remove any warning or instruction signs on the Goods or Replacement Parts. In the event of personal injury or damage to property or business arising from the use of the Goods or Replacement Parts, Buyer shall within 48 hours thereafter give Seller written notice of such injury or damage. Buyer shall cooperate with Seller in investigating any such injury or damage and in the defense of any claims arising therefrom.

If Buyer fails to comply with this section or if any injury or damage is caused, in whole or in part, by Buyer's failure to comply with applicable federal or state laws, rules or regulations safety requirements, Buyer shall indemnify and hold Seller harmless against any claims, loss or expense for injury or damage arising from the use of the Goods and/or Replacement Parts.

**CMCO Warranty (HOISTS)**

A. Columbus McKinnon Corporation ("Seller") warrants to the original end user ("Buyer") that, for a period of one (1) year from the date of Seller's delivery of the goods (collectively, the "Goods") to the carrier, the Goods will be free from defects in workmanship and materials. . In addition, Seller warrants to Buyer that, for a period of one (1) year from the date of their delivery by Seller to the carrier, any aftermarket or replacement parts, accessories or components purchased by Buyer with respect to any Goods (collectively, "Replacement Parts") will be free from defects in workmanship and materials.

B. IN THE EVENT OF ANY BREACH OF ANY SUCH WARRANTY, SELLER'S SOLE OBLIGATION SHALL BE EXCLUSIVELY LIMITED TO, AT THE OPTION OF SELLER, REPAIR OR REPLACEMENT, F.O.B. SELLER'S POINT OF SHIPMENT, OF ANY GOODS OR REPLACEMENT PARTS THAT SELLER DETERMINES TO HAVE BEEN DEFECTIVE OR, IF SELLER DETERMINES THAT SUCH REPAIR OR REPLACEMENT IS NOT FEASIBLE, TO A REFUND OF THE PURCHASE PRICE UPON RETURN OF THE OR REPLACEMENT PARTS TO SELLER. NO CLAIM AGAINST SELLER FOR ANY BREACH OF (i) SUCH WARRANTY WITH RESPECT TO THE ELECTRICAL COMPONENTS OF ANY GOOD OR ANY REPLACEMENT PARTS, SHALL BE VALID OR ENFORCEABLE UNLESS BUYER'S WRITTEN NOTICE THEREOF IS RECEIVED BY SELLER WITHIN ONE (1) YEAR FROM THE DATE OF SELLER'S DELIVERY TO THE CARRIER AND (ii) SUCH WARRANTY WITH RESPECT TO THE MECHANICAL COMPONENTS OF ANY GOOD SHALL BE VALID OR ENFORCEABLE UNLESS BUYER'S WRITTEN NOTICE THEREOF IS RECEIVED BY SELLER WITHIN ONE (1) YEAR FROM THE DATE THE DATE ANY ALLEGED CLAIM ACCRUES. EXCEPT FOR THE WARRANTIES SET FORTH ABOVE, SELLER MAKES NO OTHER WARRANTIES WITH RESPECT TO THE GOODS OR ANY REPLACEMENT PARTS, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, QUALITY AND/OR THOSE ARISING BY STATUTE OR OTHERWISE BY LAW OR FROM ANY COURSE OF DEALING OR USE OF TRADE, ALL OF WHICH ARE HEREBY EXPRESSLY DISCLAIMED.

C. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER OR ANY THIRD PARTY WITH RESPECT TO ANY GOOD OR REPLACEMENT PART, WHETHER IN CONTRACT, TORT OR OTHER THEORY OF LAW, FOR LOSS OF PROFITS OR LOSS OF USE, OR FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, DIRECT OR INDIRECT DAMAGES, HOWSOEVER CAUSED. SELLER'S MAXIMUM LIABILITY TO BUYER WITH RESPECT TO THE GOODS OR ANY REPLACEMENT PART SHALL IN NO EVENT EXCEED THE PRICE PAID BY BUYER FOR THE GOODS OR REPLACEMENT PART THAT ARE THE SUBJECT OF THE APPLICABLE CLAIM.

D. Seller shall not be liable for any damage, injury or loss arising out of the use of the Goods or any Replacement Part if, prior to such damage, injury or loss, such Goods or Replacement Parts are: (1) damaged or misused following Seller's delivery to the carrier; (2) not maintained, inspected, or used in compliance with applicable law and Seller's written instructions and recommendations; or (3) installed, repaired, altered or modified (a) with any part or accessory other than those supplied by Seller or (b) without compliance with such laws, instructions or recommendations.

E. This warranty is limited and provided only to the original end user. **Each Good and Replacement Part must be registered within sixty (60) days of receipt of each product to establish eligibility**. Please register at www.cmworks.com/hoist-warranty-registration or submit registration card via US mail.

F. Any action against Seller for breach of warranty, negligence or otherwise in connection with the electrical components of any Good must be commenced by Buyer within one (1) year after: (a) the date any alleged claim accrues; or (b) the date of delivery of the Goods to Buyer, whichever is earlier. Any action against Seller for breach of warranty, negligence or otherwise in connection with the mechanical components of any Good must be commenced by Buyer within one (1) year after the date any alleged claim accrues. . Any action against Seller for breach of warranty, negligence or otherwise in connection with any Replacement Part must be commenced by Buyer within one (1) year after: (y) the date any alleged claim accrues; or (z) the date of delivery of the Replacement Part to Buyer, whichever is earlier.

G. This warranty is contingent upon Buyer's proper maintenance and care of the Goods and/or Replacement Parts, and does not extend to normal wear and tear. Seller reserves the right, at its option, to void this warranty in the event of Buyer's use with the Goods and/or Replacement Parts of parts or accessories other than those supplied by Seller.

**⚠ WARNING**

**Alterations or modifications of equipment and use of non-Seller replacement parts can lead to dangerous operation and injury.**

**TO AVOID INJURY:**
- **Do not alter or modify equipment.**
- **Do use only replacement parts manufactured by Seller.**

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