

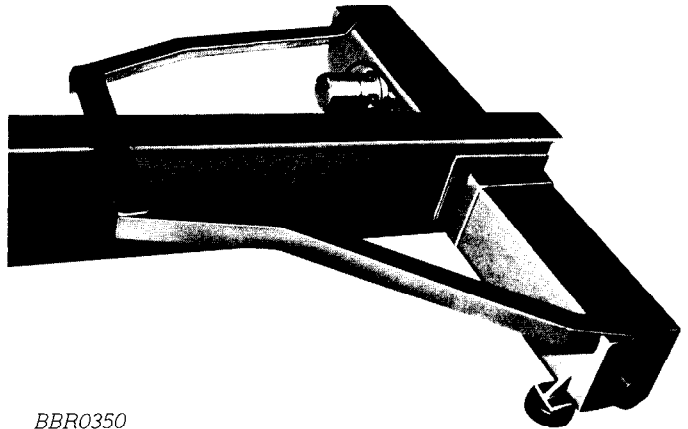
BEEBE Operating and Maintenance Instructions

BEEBE BROS. END TRUCKS
MOTORIZED
HAND GEARED
PUSH PULL

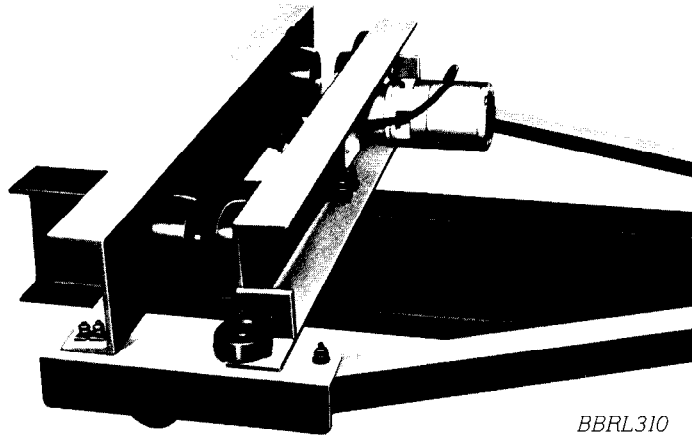
Read before using or installing.

IMPORTANT!!

**When everything
else fails read the
INSTRUCTIONS.**



BBR0350



BBRL310

"It is the owner and users' responsibility to determine the suitability of a product for any particular use. Check all applicable industry, trade association, federal, state and local regulations. Read all operating instructions and warnings carefully."

IMPORTANT:

The National Safety Council, Accident Prevention Manual for Industrial Operations, Seventh Edition and other recognized safety sources make a common point: "All employees working with cranes or hoists or assisting in hooking or arranging a load should be instructed to keep out from under load. From a safety standpoint, one factor is paramount: Conduct all lifting operations in such a manner that if there were an equipment failure, no personnel would be injured. This means keep out from under raised load, keep out of the line of force of any load, and do not lift or move people."



BEEBE BROS., INC.

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SEATTLE, WASHINGTON 98124
Area Code 206-624-0466
Telex 328795

GENERAL:

You have purchased one of the world's fine quality end trucks for standard duty crane service. With proper installation, inspection, maintenance and repair this product will give you many years of fine, trouble-free service.

It is the purpose of this manual to provide you with sufficient information to allow you to correctly operate, maintain, and repair these units in order to insure long and satisfactory use. For installation instructions order Beebe Bros. crane kit instruction manual form - BCA - O or L.

Before shipment each unit was tested for the following functions:

1. Forward and reverse operation
2. Proper operation of brakes
3. Proper operation of locking and safety devices

OSHA:

Contrary to common belief, the Occupational, Safety and Health Act of 1970, as we understand it, generally places the burden of compliance with the user not the manufacturer. Many of the requirements of OSHA are not concerned or connected with the manufactured product but with the final installation.

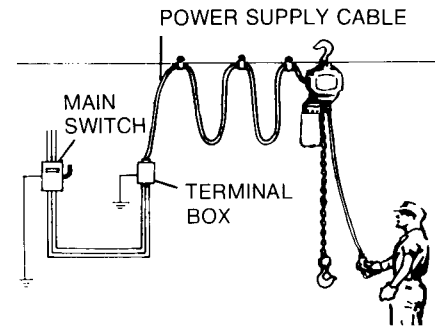
To the best of knowledge, Beebe Bros. electric hoists and crane components are built in compliance with specifications and standards, at the time of manufacture, which are in accordance with our understanding of ANSI B30.16, 1973, overhead hoists, ANSI B30.11, 1973, Safety Standards for Manual Systems and Underhung Cranes, and Occupational Safety and Health Act, 1970.

Among other regulations, the user should be sure to install in accordance with the National Electric Code 1975 ANSI C-1-1975, as approved April 17, 1975. Be sure to check other federal, state and local rule, regulations, standards, etc. which may apply to the installation and use in your particular area.

**Order Beebe Bros. "Discussion of OSHA & ANSI Standards."*

PREPARATION AND INSTALLATION BEFORE USE:

1. Power Supply
 - A. Check for a correct current
 - B. Connect and ground in accordance with National Electric Code ANSI-C1-1975 Article 610.
 - C. Check voltage available and connect motor leads accordingly by following wiring diagram located inside of motor junction box.
2. Precautions
 - A. Terminal box should be installed at an appropriate place and connected firmly with power supply lead wires. A disconnect switch should be installed in the branch circuit supplying the end truck, trolley and hoist. This circuit should have either slow blow fuses or circuit breakers of the rating specified by the National Electric Code and be correctly grounded.
 - B. Make sure connections are securely made. Improper connections cause overheating or the motor may possibly burn out.



3. Lubrication

Your Beebe motorized end truck has lubricant in the gear box when shipped. The gear box must be filled with the proper grease (Shell Albania No. 2 or equivalent, through grease fitting as required - change grease annually.

Truck wheel bearings do not require relubrication as they are prelubricated and sealed.

4. Installation Check List—Before using check the following items:

- A. Wiring is connected properly for voltage, ground, etc.
- B. Travel motion so that it agrees with the control indication
- C. Operation of limit devices
- D. Braking system
- E. Lubrication level
- F. Correct alignment of trucks on runway.

OPERATION

Beebe Bros. motorized end trucks* are part of a complete system which makes up an overhead crane.

Overhead cranes generally handle materials over working areas where personnel and equipment can be seriously injured if the crane is not safely and properly operated. It is therefore important that the operator be carefully instructed in the use of the crane and understand the severe consequences of careless operation.

Crane operation, to be safe and efficient, requires skill; the exercise of extreme care and good judgment; alertness and concentration and a rigid adherence to proven safety rules and practices.

In general practice, no person should be permitted to operate a crane:

- (a) Who cannot speak and read the English language
- (b) Who is under 18 years of age
- (c) Whose hearing or eyesight is impaired (unless suitably corrected—good depth perception)
- (d) Who may be suffering from heart or similar ailments
- (e) Unless he has been properly instructed
- (f) Unless he has passed an examination to determine if he is qualified and has a thorough knowledge of the rules
- (g) Unless he is familiar with hoisting equipment and practices

With the main-line switch open (power off) the crane operator should operate each controller in both directions so he will get the "feel" of each controller and also determine that they do not bind or stick in any position. If any of them do, before he does anything else, he should report the condition to his supervisor.

**For operation of hand geared or push pull type end trucks apply rules and operating practices as described for push pull or hand gear trolleys.*

Having observed the feel of the controllers, the crane operator is now ready to try the crane under power.

First make sure all controllers are on the "off" position. Next, close the main line switch and press the "on" or "reset" button so that power is "on".

HOIST OPERATION

1. Operational tests

A. Units should be regularly checked to make sure the following is functioning properly:

- (1) Hoisting and Lowering in direction of arrow or push button
- (2) Operation of brakes
- (3) Operation of limit devices

These tests should be made under no load conditions before the hoist is used to handle the load.

2. Normal Operation

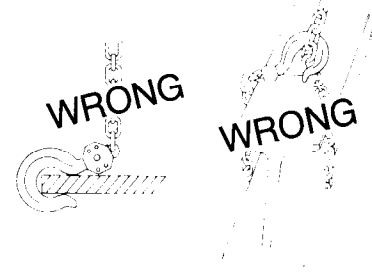
A. Hook travels in direction of arrow. The push button control is electrically interlocked so that it will not operate if buttons are simultaneously pushed or if wired wrong.

B. It is normal when the bottom hook is raised to hear a clicking sound of the load brake mechanism and when the hook is lowered no clicking is heard.

C. Beebe Electric Hoists are designed for normal hoisting service; to insure long and safe use please observe the following:

- (1) Use only within the rated capacity—DO NOT OVERLOAD—overloading may sometimes result in burning out a motor, shortening the life of the machine, or causing other problems.
- (2) Do not jog excessively. This can cause overloading of the motor and burning out of the control.
- (3) Position the load correctly. Place the load on the hooks only in a straight line.
- (4) Hooks are furnished with safety latches. Make certain the safety latches are closed before use.
- (5) If the motor hums and it is not working even though button is pushed, release the button immediately and examine for the following:
 - a. Overloading
 - b. Low voltage condition
 - c. Incorrect wiring
 - d. Loose connection
 - e. Limit switches tripped
- (6) Avoid sudden reverse operation. Hoisting operation should be stopped completely before reversing. If not the motor may be overloaded and gear-ing, drive train, etc. shocked.
- (7) Ease into loads, take up slack to prevent shock load condition.
- (8) Stop operation when there are any indications of jamming, overloading, bindings, etc.
- (9) Some common mis-applications to avoid are as follows:
 - a. Never run the chain or wire rope over a sharp edge

- b. Do not reach around corners or load hooks in the manner as illustrated below. Such loading can cause damage to the hook assembly, chain or wire rope and hoist bar.



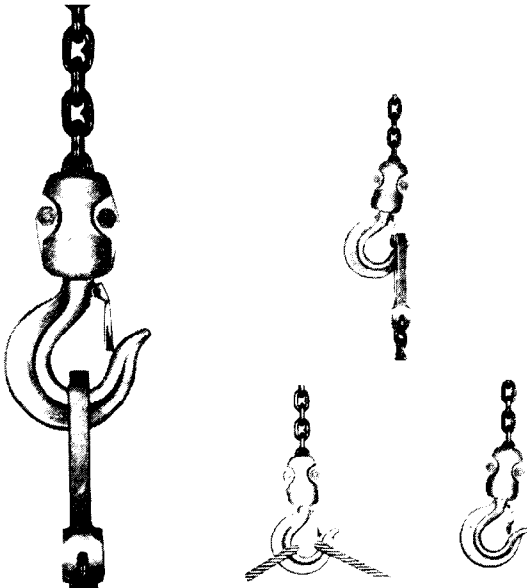
- c. Avoid using two hoists to handle one load unless necessary—if this is necessary it is important that the load is supported by a larger capacity hoist than the load requires, and also that the load is in balance.
- d. Do not use hoist chain or hoist hooks as slings or chokers.
- e. Do not use for lifting, lowering or moving persons. Never lift loads over people.

4. Operating Practice

A. Each individual who will operate a Beebe Electric Hoist should be instructed in the material contained in this manual before using the hoist. Good practices are as follows:

- (1) Do not engage in any practice which would divert the operator's attention while using the hoist.
- (2) When an out of order sign is on the controls the hoist operator should not power the hoist or start operation until the sign has been removed by a designated person.
- (3) Before starting the hoist, be sure all personnel are clear of the area.
- (4) The operator should familiarize himself with all equipment and its proper care. If adjustments or repairs are necessary, they should be reported promptly to someone properly authorized and also should be notified to the next operator upon changing shifts.
- (5) All controls should be tested by the operator at the beginning of each shift. If any controls are not operating in the proper manner, they should be repaired before using.
- (6) Before operating, be sure hands are clear from all moving parts.
- (7) Hoisting chain or wire rope should not be wrapped around the load. The load should be attached only to the hook or slings to that it pulls in a straight line on the load hook.
- (8) The load should not be moved or lifted more than a little until it is well balanced in the sling or lifting device.
- (9) Care should be taken that:
 - a. Chains or wire ropes are not kinked or twisted
 - b. Load does not contact any obstructions or become jammed.
 - c. Multiple parts of chain or wire rope are not twisted about each other or that on multiple part units the load hook should not be upset

- d. The chain or wire rope should be properly seated in the drum
- e. Pull in straight line only



CORRECT

INCORRECT

- f. Do not operate hoist for handling people or handling loads over people
- g. The operator should test the brakes each time a load approaching the rated load is handled by raising a sufficient distance to clear the floor and check for brake action. The lift should be continued only after the operator is sure the brake system is proper.
- h. Inch the hoist into engagement with the load to avoid shocking and to also avoid unnecessary starts and stops.
- j. The limit devices should not be used as a normal operating control.

TROLLEY OPERATION

When handling loads, the trolley should be brought directly over the load that is to be handled. When the slack is taken out of the slings, if the trolley is not exactly over the load, bring it exactly over the load before hoisting is continued. Otherwise the load will start swinging.

1. Electric Hoists mounted on motorized trolleys and motorized end trucks are furnished with one control station. There are six or eight buttons from top to bottom as follows:
 - a. emergency (omit for six button) stop-start
 - b. hoist up-down
 - c. trolley left-right
 - d. bridge forward-reverse
2. It is important to avoid having the load move as a pendulum when using the trolley. The pendulum motion can cause difficulty in control and may be damaging to the trolley, operator and objects in the area.
3. The best way to operate the trolley is to keep the swing movement to a minimum which may be accomplished as follows:
 - a. Push the trolley button first and then release it for a short time.

- b. Push the trolley button again when the load has swung to a position directly underneath the trolley and continue movement.
- c. In using this technique, do not tilt the hoist excessively for lifting a load. The tilt should not exceed 2° and even less is better. It is also important to avoid sudden reverse operation which can cause a pendulum action in the opposite direction. It is best to come to a complete stop and then reverse the trolley using the procedure already described.

BRIDGE OPERATION

Before a load is handled by the crane, the bridge should be brought in position so that it is directly over the load. Otherwise it will be impossible to "spot" the trolley and hoist hook over the load. Before moving the trolley or bridge of the crane, be sure the hook is high enough in the air to clear any obstruction or person below.

On floor controlled cranes, the electric brake will set automatically when the pushbutton is released.

If extra fine control (fluid coupling or ballast resistors) is not provided, follow the practice of "inching," namely: move the control button on and off the point that produces a minimum of motion. This practice should be followed only as necessary because it causes extra wear on the controller contacts and the electric brake. Skidding of wheels when stopping will result in flat spots on the wheels and rough bridge action.

GENERAL OPERATING RULES

INSPECTION

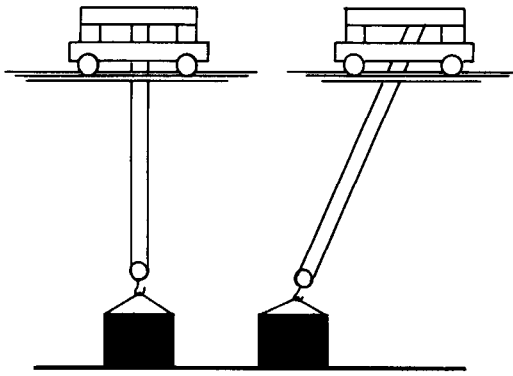
Inspect the crane at the beginning of each shift. Be sure the limit switches, and other SAFETY devices are in good working order.

Whenever the operator finds anything wrong or apparently wrong, he should hang an "out of order" sign on the crane controls, and report it immediately to his Supervisor.

The measure of a good crane operator is the smoothness of operation of the crane. Jumpy and jerky operation, flying starts, quick reversals and sudden stops are the "trade marks" of the careless operator. The good operator knows and follows these tried and tested rules for safe, efficient crane handling.

1. Slack must be removed from the sling and hoisting cables 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 hoist cables or chains should be kept vertical. Do not make side pulls with the crane and do not drag loads or hitching equipment.

Side pull may cause hoist cables to contact and burn on electric trolley conductors or cause undue wear on cables, chains, drums and other crane parts. (See Figure 3 below)



4. On wire rope hoists only, never lower the block below the point where less than three full wraps of cable remain on the hoisting drum. Should all the cable be unwound from the drum, be sure it is rewound in the correct direction or otherwise the cable will be damaged and the hoist limit switch will not operate to stop the hoist in the high position.
5. Be sure everyone in the immediate area is in the clear before the load is moved. Sound the warning bell or siren when raising, lowering or carrying loads wherever people are working, to give them time to get out of danger.
6. Do not make lifts beyond the safe carrying capacity of sling chains, rope slings, etc.
Do not operate the crane if limit switches are out of order or if cables show defects.
Check to be sure that the load is hoisted high enough to clear all apparatus and workmen when moving bridge or trolley.
8. It is the joint responsibility of the crane operator and the Hitcher to see that hitches are secure and that all loose material, chips or tools have been removed from the load before starting a lift.
Do not lift loads with any sling hooks hanging loose. (If all sling hooks are not needed, remove extra hooks or use a different sling)
All slings or cables should be removed from the crane hooks when not in use. (Dangling cables or hooks hung in sling rings are very dangerous)
9. Do not block, adjust or disconnect limit switches in order to go higher than the switch will allow.
To check that the limit switch is effective, it should be tested in stopping the hoist when going on duty.
10. Never move loads carried by magnets over anyone. If electric power fails or a fuse blows, the load will drop.
Molten metal should never be carried over people.
11. Always stop the controllers momentarily in the OFF position before reversing—except to avoid accidents.
(The slight pause is necessary to give the braking mechanism time to operate.)
12. When two or more cranes are used in making one lift, it is very important that the crane operators take signals from only one authorized person on the floor.

13. In case of emergency or during inspection, repairing, cleaning or lubricating a warning flag should be put out 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. Never attempt to close a switch that has a "HOLD OFF" or "DO NOT OPERATE" card on it. Even when a crane operator has placed the hold off card himself, it is necessary to make a careful check to determine that no one else is working on the crane, before removing the card.
15. Do not change fuse sizes. Do not attempt to repair electrical apparatus or to make other major repairs on the crane unless specific authorization has been received.

RESPONSIBILITY

Each crane operator should be held directly responsible for the safe operation of his 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) he has been ordered to proceed by his Supervisor, who then assumes all responsibility for the SAFETY of the lift.

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

SIGNALS

Standard crane signals (See Figure 2) should be accepted only from ONE authorized person—except where it is apparent that to do so would result in an accident.

Obey a STOP signal at all times, no matter who gives it.

Loads should not be moved unless the standard crane signals are clearly given, seen and understood.

Unusual signals are seldom required, but if used they should be thoroughly understood by the crane operator and his authorized signalman.

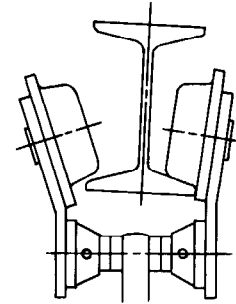
<p>HOIST. With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</p>		<p>LOWER. With arm extended downward, forefinger pointing down, move hand in small horizontal circle.</p>	
<p>BRIDGE TRAVEL. Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.</p>		<p>TROLLEY TRAVEL. Palm up, fingers closed, thumb pointing in direction of motion, jerk hand horizontally.</p>	
<p>STOP. Arm extended, palm down, hold position rigidly.</p>		<p>EMERGENCY STOP. Arm extended, palm down, move hand rapidly right and left.</p>	
<p>MULTIPLE TROLLEYS. Hold up one finger for block marked "1" and two fingers for block marked "2". Regular signals follow.</p>		<p>MOVE SLOWLY. Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist Slowly shown as example)</p>	

MAINTENANCE

1. A preventive maintenance program should be established. As a minimum the following should be adhered to:
 - A. Check the grease in the gear box at least once every three months; if low replenish.
2. Maintenance and repair procedures
 - A. Disconnect the electrical supply to the unit.
 - B. Install warning "out of order" signs while the unit is being worked on.
 - C. After adjustments and repairs, the end truck shall be operated in accordance with the same recommendations for a new unit.
3. Inspection Procedures
 - A. Initial inspection
 - (1) All new end trucks are inspected by manufacturer and should be by the user before operating.
 - B. Regular procedures for inspecting the trolley and end truck should be established.
 - (1) Intervals of inspection are dependent upon the nature of the components of the end truck & trolley and the degree of exposure to wear, deterioration, shock, etc.
 - (2) Two classifications are commonly used. These are frequent and periodic.
 - A. Frequent - daily to monthly intervals
 - b. Periodic - monthly to yearly
 - (3) Frequent inspections check for the following:
 - a. All controls and operating mechanisms operating properly - daily
 - b. All safety devices for malfunction - daily
 - c. Deterioration of power supply system
 - d. Hooks for deep formations, cracks openings, etc.
 - Any hook that is twisted or has throat opening in excess of normal indicates abuse or overloading of the unit. Accordingly other load bearing components of the hoist should be inspected for damage - daily
 - e. Chain should be inspected daily for wear, twist, distortion, stretching, etc. Also check for weld splatter, cleanliness, etc.
 - (4) Periodic inspection check for the following:
 - a. In addition to the frequent inspection the following items should be checked also, periodically:
 - Loose bolts or rivets
 - Cracked castings, or chain or wire rope sheaves
 - Corroded, worn, cracked, bent or distorted parts such as pins, bearings, shafts, gears, etc.
 - Excessive wear on motor brake or load brake

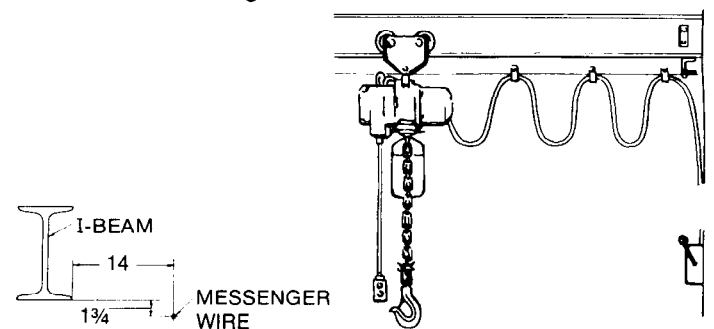
- Excessive wear on chain, sprocket drums, sheaves, chain stretch, wire rope fraying, etc.
- Magnetic particle or dye tests for crack detection on hooks
- Electrical system for signs of pitting, deterioration, burning, etc. including limit switches, push buttons, reversing switches, etc.
- Supporting structure such as trolleys, I beams etc., should be continually checked to see that they can support the pull and loads
- Link chain or wire rope should be inspected and replaced in accordance with ANSI B30.16 - 1973
- Check side plates of Trolley (see illustration). If distorted be sure to correct or replace before use - Note: Failure to correct may cause a serious accident.
- Consult specifications and procedures for wear inspection on end truck components and motors. Form BB-ETI

Use only genuine Beebe Bros. parts for replacements.

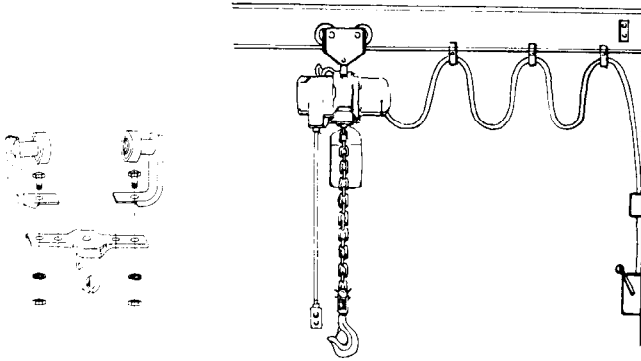


ADDITIONAL POWER SUPPLY INFORMATION FOR HOIST AND MOTORIZED TROLLEY

1. Voltage Conversion - on electric hoist with motorized trolley there are two (2) conversion boxes. Voltage conversion is the same for both boxes as it is for the electric hoist described earlier.
2. For power supply systems contact the factory. Specific instructions will be furnished for the type of system to be used.
3. Power Supply cable system - Two (2) systems are generally used: one is a messenger wire system along straight I beam, the other is a cable trolley along curved tracks.
 - A. I Beam - messenger wire installation is most commonly used; $\frac{1}{8}$ to $\frac{1}{4}$ " diameter steel wire is required. This system is most economical when distance is not too long. The messenger wire should be installed as in the drawings below.



- B. Cable Trolley type system - this system is used for a curved beam and is installed in accordance with the drawings below;



The interval of the cable trolley installation is approximately 3' for small curved beam with a 5' swing radius.

All wiring should be in accordance with previous instructions and comply with the National Electrical Code 1975 ANSI C-1-1975 Article 610

INSTALLATION OF MOTORIZED TROLLEY ON I BEAM

1. The ideal way to install a trolley on an I beam is from the end of the I beam *after* the proper adjustments have been made in conformity with the width of the I beam. However, when the space between the I beam end and the building structure is limited, and this procedure method is inappropriate then it is necessary to assemble the trolley directly on the I beam.
2. How To Adjust Trolley Width
 - A. Beebe Trolleys may be adjusted in amounts of $\frac{1}{8}$ " by removing bolts or stopper and inserting or removing adjusting spacers.

- B. Put an equal number of adjusting spacers on each side of the suspenders so that it will fit I beam suited for the work. Sometimes oil is needed in the small hole of the pinion on the geared trolley. No oiling is necessary on the bearings or the wheels as they are permanently sealed.

CONNECTING THE ELECTRICAL SUPPLY TO THE MOTORIZED TROLLEY AND ELECTRIC HOIST

1. A power supply cord is attached to the connection box furnished on the motorized trolley. There are three connection plugs or sockets on the connecting box:
 - a. The three pole plug attaches to the cable coming from the trolley motor.
 - b. The eight pole plug attaches to the cable coming from the hoist.
 - c. The third plug is already attached to the control cord.

SPECIAL INSTRUCTIONS FOR MANUAL TYPE PLAIN OR GEARED TROLLEYS USED WITH ELECTRIC HOISTS

1. Position hand chain as applicable opposite the side where the power supply cable runs to the hoist.
2. On the plain type trolley, do not use the control cord for pulling the trolley. Instead use the load chain of the hoist which may be pulled when unloaded but should be pushed in the desired direction when the load is suspended. On geared type trolleys, pull the hand chain in a downward motion **ONLY**, to start movement.

IMPORTANT

On all trolley installations, it is recommended that stoppers be installed on both ends of the I beam to prevent the trolley from falling from an open end.

For any and all your hoisting or winching needs, see Beebe Bros. other quality products.

Beebe Bros. manufactures the most complete and diverse hoisting equipment of any company in the world.

Write or Telex for catalog.



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