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WARRANTY

Beta Max Inc. warrants its equipment to be free from defects in material and under normal use and service.

Our obligation under this warranty, as outlined below, is limited to repairing or replacing, at our discretion, any part of the unit, which proves upon examination to be defective in material or workmanship. The item is to be returned to Beta Max, Inc. through an authorized distributor. The warranty period as below is from the date that the equipment is sold to the original purchaser*. Return shipments must be prepaid.

High Wear Items:
- Wire rope, pulleys, hooks, shackles ........................................ 30 days or 1 month

Electrical:
- Pendant switches, electrical plugs and cable ......................... 90 days or 3 months

Mechanical:
- Motor, brake, wire rope drum, trolley wheels ........................... 1 year

Gears:
- Gear reduction drive assembly ............................................. 5 years

Any parts proven to be defective upon inspection will be repaired or replaced at no cost for the parts. The obligation under this warranty includes labor and freight costs if determined the product failed under normal usage within the above described time.

Any defect in this equipment must immediately be brought to the attention of the distributor from whom the unit was purchased. The distributor will make arrangements with the factory for repairs or replacement of parts with the terms of this warranty. Distributors must get a return authorization number from Beta Max before any item is returned for repair or replacement.

Beta Max Inc.’s’ obligation is limited to replacing parts and does not include replacing the complete unit. This warranty is void on any unit that has been modified or tampered with, repaired by persons other than a factory representative or an authorized Beta Max distributor, repaired with other than Beta Max standard parts, or damaged by reasons of accident, alteration, misuse or abuse.

This warranty is in lieu of all other warranties, expressed or implied. We do not authorize any person or representative to make other guarantee or to assume for us any liability in connection with the sale of our products other than those contained herein. Any agreement outside of or contradictory to the foregoing shall be void and of no effect.

* “Original Purchaser” definition: for rental machines: Dealer; for resale machines: First user.
INTRODUCTION

The Beta Max electric utility hoists are general purpose hoists designed for the construction industry, but suitable for other applications that require a compact, lightweight, easily handled and efficient hoisting unit. The hoists can be mounted in a variety of ways to serve various applications. The hoists are powered by a 110V or 220V AC reversible electric motor. A conical brake system is incorporated into the design and will hold the maximum load when electric current is broken or when neither lifting nor lowering is required. The motor is fan cooled and all electrical components are protected from weather. The gear reduction system is completely enclosed in a die cast aluminum housing with a sealed lubrication system. Gears and bearings operate in an oil bath.

There is an emergency UP-Limit switch, which stops the hoisting operation when the load has reached the upper limit of travel. Different models of the hoist have different weight capacities, cable lengths and minor differences in control configurations.

TOOLS REQUIRED TO REPAIR BETA MAX ELECTRICAL HOISTS

Hex Head (Allen) Wrench (long T-handle type) 4mm, 5mm and 6mm sizes

Sockets and Wrenches (set of 6 point and 12 point)
10mm, 11mm, 12mm, 17mm, 19mm and 22mm Metric sizes
7/16”, 7/8” U.S. sizes

Flat point screwdrivers 1/4” and 3/16”
Phillips head screwdrivers #1 and #2
Retaining snap ring (external) pliers
Diagonal cutting pliers
Bearing pullers as needed
Feeler gauge
Wire rope-servicing tools
Nicopress Crimping Tools 1/16”, 3/16” and 1/4”
(or equivalent wire rope terminating tools or clamps)

AMP pin and socket removal tools:

9 pin and socket removal tool ........................................... #453300-1-0
Brake pin removal tool ..................................................... #1-305183-1-b
Brake socket removal tool ................................................... #1-305183-2
Remote cable pin and socket tool ...................................... #1-305173-r

Large units may use three-phase power. Standard units are single-phase. Single-phase units are NOT field changeable between 110V AC and 220V AC.
ELECTRICAL BASICS

The electricity that powers your Beta Max hoist is as important as the hoist itself. Electricity is more than one thing.

CHARGE is a group of particles gathered together. Charge can flow and build up pressure, which is called VOLTAGE. The greater the voltage, the more charges flow. The measurement of the charge is called AMPERAGE. Limiting the flow of charge is RESISTANCE.

Let us compare electricity to water. Everyone can understand — imagine water passing through a faucet and hose.

- The levels of PRESSURE in the pipe is the equivalent to VOLTAGE.
- The amount of (volume) WATER flowing can be associated with AMPERAGE.
- The FAUCET and the SIZE of hose associated to the power supply and the length and gauge of electrical cable, effecting RESISTANCE.

The voltage at your electrical outlet may be 110 volts or 220 volts with no motor plugged in or even when a couple of pieces of equipment are plugged in and running but... just like with your plumbing, if there are two people taking a shower, a dishwasher machine on the rinse cycle, the lawn sprinklers sprinkling and so on, then the PRESSURE will be less for all of the water faucets.

Electrical power in American cities is not always perfect. When a couple of pieces of equipment are plugged into one circuit, and drawing a high AMPERAGE, the VOLTAGE will drop. The VOLTAGE (PRESSURE) will not always remain unchanged, it will decrease. How badly it drops depends on your electric power company, specific wiring to that job site and the length and type of extension power cable (HOSE SIZE) being used.

What about the FAUCET (RESISTANCE)? If your faucet is rusted, corroded or small, or if the faucet is a long distance from the source, the water PRESSURE is not going to be as strong as you would like? Likewise with electricity, if your electrical connections are not good or the electrical extension cable is too lightweight or the length of your electrical cable excessive or any combination of these circumstances, then the VOLTAGE at the hoist may be too little to lift your load.

Beta Max electrical hoists are high energy hoists and can lift large loads at high speeds, but this requires a lot of AMPERAGE (WATER VOLUME) and therefore, a lot of continuous VOLTAGE (PRESSURE). The greater the load, the more AMPERAGE necessary. Beta Max hoists require more AMPERAGE than a simple rotary saw or drill. 20 to 30 amperes on 110 volt units and 10 to 20 amperes on 220 volt units.

Beta Max hoists are supplied with “Twist Lock” plugs because they are safer, more efficient conductors of your electrical current. Beta Max Hoists also come with 30 amp service because of the higher energy (amperage) requirements of the hoists. Beta Max suggests no less than 10 gauge (10/3 S.O.) for 110 volt machines and 12 gauge (12/3) for 220 volt machines. Heavier electrical cable is required for Beta Max hoists and will allow a longer distance between the power source and the hoist, without causing an excessive resistance to the current flow.

To help remember the basics of electrical motor needs, remember:

- Water Pressure = Voltage Level
- Pipe Diameter = Wire Gauge
- Faucet Opening = Connector Capacity
- Water Volume = Current Draw (amperes)
OTHER IMPORTANT INFORMATION

What is strain relief? A strain relief on an electrical cable does just what it says, it will relieve the strain or pull on the electrical cable when the cable is hanging from a height.

What is the difference between 110 volts and 220 volts of power? This may seem like a dumb question, but the complete answer is not always understood. A 110 volt electrical motor will not run on a 220 volt circuit and visa versa. This is true of all Beta Max hoists. 220 volt electrical motors have the advantage over 110 volt units because they allow for the use of longer extension cords (less resistance). 220 volts also require less AMPERAGE to run and therefore are able to run cooler and longer than 110 volt units.

Beta Max requires a 50% duty cycle for Electrical Hoists. The hoist should be resting 30 minutes in every hour.

BETA MAX MOUNTING OPTIONS

<table>
<thead>
<tr>
<th>MOUNTING DEVICE</th>
<th>HOIST MAX.</th>
<th>RATED LOAD*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scaff-Trac</td>
<td>Gemini Plus Scorpio New Yorker Leo</td>
<td>1,200 lbs.</td>
</tr>
<tr>
<td>Trestle Monorail 1200</td>
<td>Gemini Plus New Yorker</td>
<td>1,200 lbs.</td>
</tr>
<tr>
<td>Trestle Monorail 2000</td>
<td>Gemini Plus New Yorker Leo</td>
<td>2,000 lbs.</td>
</tr>
<tr>
<td>Vertical Post support System Window Mount Between Floor Mount Scaffolding Mounting</td>
<td>Scorpio</td>
<td>400 lbs.</td>
</tr>
<tr>
<td>I-Beam Mounting</td>
<td>Gemini Plus New Yorker Leo</td>
<td>2,000 lbs.</td>
</tr>
<tr>
<td>Mac-Trac</td>
<td>Scorpio</td>
<td>500 lbs.</td>
</tr>
</tbody>
</table>

Mounting load* capacities are not the same as lifting capacity. Know the lifting capacity of your hoist. Know the load capacity of your mounting device.

Make sure that the mounting devices are secured correctly at the work site before attempting to attach the hoist. Secure the hoist properly to the mounting device. Inspect the entire installation each day to assure all nuts, bolts and other fittings are secure.
SCAFF-TRAC HOIST MOUNTING SYSTEM

TECHNICAL SPECIFICATIONS

The Scaff-Trac monorail system is designed for most models of Beta Max hoists. The system is made for the suspension under standard 6 ft. walk-thru tubular scaffold frames, with a 7 ft. center spacing. The basic section allows for a 3.5 ft. cantilever at the outward end of the scaffold run. A load may be raised up on the cantilevered end and then rolled horizontally in between the scaffold frames.

The basic section is 11 ft. long and includes 2 mounting saddles and 4 mounting pins. Optional Scaff-Trac extension section are 7 ft. long and include 1 mounting saddle and 2 mounting pins. Extensions are butted up to the inboard end of the basic section and fitted into guide pins (see diagram pg. 7). Additional extension sections can be added as needed.

The mounting saddles and brackets allow mounting on various brands of scaffolds. The spacing between the top and bottom horizontal ledgers (variable X in the diagram pg. 7) of 6 ft. walk-thru scaffolding depends on the brand of scaffolding. The Monorail/Trac MUST ALWAYS be mounted snug against the bottom ledger of the scaffolding. The mounting saddles and brackets are designed with multiple hole configurations to allow for a wide range of variable X.

SCAFF-TRAC MODELS

<table>
<thead>
<tr>
<th></th>
<th>MODEL #60-4*</th>
<th>MODEL #60-11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>1,200 lbs.</td>
<td>1,200 lbs.</td>
</tr>
<tr>
<td>Weight of Unit</td>
<td>155 lbs.</td>
<td>85 lbs.</td>
</tr>
<tr>
<td>Extendible</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

*Adaptable to trestle monorail system

Scaffold frames should always be securely pinned together, anchored to building face and counter-balanced appropriately. Check Scaffolding Industry Association guidelines.
List of Parts:

2 ea. Saddles
1 ea. Scaff-Trac Monorail/Trac (11 ft. length)
4 ea. Mounting Pins with keys
1 ea. Inboard End Retaining Pin

PREPERATION OF THE MOUNTING SITE

As the name implies, the Scaff-Trac hoist mounting option is designed for use on any 6 ft. walk-thru scaffolding frames. The X-brace spacing between frames must be set at 7 ft. A full width deck must be installed at the location of the hoist to provide adequate working room and footing for installing and operating the hoist. The scaffolding must be horizontally level (check the scaffolding manufactures mounting specifications for leveling your scaffolding platform). Guardrails and toe boards may also be necessary (check local safety requirements to be sure).
Scaffolding frames must be in good condition and free of dents, bends, heavy corrosion, cuts, modifications or any other damage. All X-braces must be in place and secured before attempting to install the Scaff-Trac. Scaffolding frames must be pinned or bolted to the frames below and all frames must be anchored to the vertical building face. Check with the scaffold manufacturer for the correct way to erect and anchor your scaffolding. Use no less than two people to install the Mono-rail/Trac.

The design of the saddles and mounting brackets on the Scaff-Trac are intended to allow mounting on various brands of scaffolding. The spacing (dimension-X on diagram) between the top and bottom horizontal ledger on 6 ft. walk-thru frames can and does vary from one brand of scaffolding to another. The amount of space or play between the top of the Scaff-Trac and the lower horizontal ledger of the scaffold frame should be as small as possible. The saddles and mounting brackets are designed with multiple holes to allow mounting to various manufacturers scaffold frames. These holes allow for minimum top to bottom ledger distance of 5/8”, an intermediate distance of 6” and maximum distance of 6 1/4”.

INSTALLATION OF THE SCAFF-TRAC MONORAIL

1. Place one saddle over the center of each of the scaffolding frames. The holes in the saddles should line up. There are two sets of holes on each saddle to allow for different manufacturers scaffolding frames.

2. Raise both ends of the Scaff-Trac Monorail/Trac to the under side of the saddles and insert the pins into the same set of holes on each saddle. The monorail must be level.

INSTALLATION OF THE SCAFF-TRAC EXTENSION

List of Parts:

- 2 ea. Saddles
- 1 ea. Scaff-Trac Monorail/Trac (7 ft. length)
- 4 ea. Mounting Pins with Keys
- 1 ea. Inboard End Retaining Pin

1. A Scaff-Trac monorail must first be correctly mounted.

2. Place the saddle over the next scaffolding frame on the inboard side of the mounted Scaff-Trac.

3. Raise the outboard end of the Monorail/Trac extension to the inboard end of the Scaff-Trac and correctly align it with the ears and alignment tabs. The extension will slide into place.

4. Raise the inboard end of the extension to the saddle and secure it with the pins.

5. Install succeeding extensions in the same manner.
MAC-TRAC HOIST MOUNTING SYSTEM

TECHNICAL SPECIFICATIONS

Mac-Trac, the Masons and Chimney-builders’ Trac was designed to lift materials to workmen on a short run of scaffolding while still allowing for a sufficient work area on the platform.

Mac-Trac mounts easily on top of 4 ft., 5 ft., or 6 ft. standard 1 5/8” tube frame scaffolding.

The system is set for 7 ft. X-bracing and the track cantilevers 2 ft. out over the X-brace side of your scaffolding tower. By removing the X-brace at the level work is performed, a load can be pulled in by hand and set down on the work platform.

For lifting larger loads, the system can be adjusted to raise material up through the center of the scaffolding to the work platform. The hoist and Trac can be cantilevered in the center of the 7 ft. span or to the left or right of center in optional mounting holes.
COMPONENTS

The Mac-Trac system consist of two supports and the Monorail/Trac. Two identical horizontal supports (30 lbs. each) span the 7 ft. The frame and rest on the scaffold coupling pins. Gravity lock pins fasten the supports to the coupling pins and J-hooks clamp securely around the top horizontal ledger of the scaffolding.

The Monorail/Trac is formed channel (45 lbs.) specifically made to accept the roller wheels of the Scorpio hoist model. The Trac is slotted at the open end to make it easy to load the hoist. Mounting stud bolts on the Trac fit into one of three (3) optional mounting locations on the horizontal supports.

FEATURES

- No loose parts.
- No threads to get damaged.
- Can be installed easily by one man.
- Hoist secured by U-clamp at 1 ft. or 2 ft. overhang for varying types of loads.
- Safety pin prevents the hoist from rolling out of the Trac.

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Scaffolding frames should always be securely pinned together, anchored to the building face and counterbalanced appropriately. Check Scaffolding Industry Association guidelines.
MAC-TRAC ASSEMBLY AND MOUNTING

List of Parts:

- 2 ea. 7 ft. horizontal braces
- 1 ea. 7 ft. Mac-Trac Monorail/Trac
- 4 ea. 2 in. retaining clips
- 2 ea. retaining clips

PREPARATION OF THE MOUNTING SITE

Mac-Trac mounting option is designed for use on most scaffold frames. The X-brace spacing between frames must be set at 7 ft. A full deck must be installed at the location of the hoist to provide adequate work room and footing for installing and operating the hoist. The scaffolding must be level (check the scaffold manufacturers mounting specifications for leveling your scaffolding platform). Guardrails and toe boards may also be necessary (check local safety requirements to be sure).

Scaffolding frames must be in good condition and free of dents, bends, heavy corrosion, cuts, modifications or any other damage. All X-braces must be in place and secured before attempting to install the Mac-Trac. Scaffolding frames must be pinned or bolted to the frames below and all frames must be anchored to the vertical building face. Check with the scaffold manufacturer for the correct way to erect and anchor your scaffolding.

INSTALLATION OF THE MAC-TRAC MONORAIL

1. Set the two braces to the top of the scaffold frames as shown in the diagram. Secure to the scaffolding with the clamp.

2. Slip the monorail into the desired set of mounting holes on the braces as shown in the diagram. Attach the clips to secure the monorail from slipping out.

3. Load the hoist from the open end of the monorail and secure in place with the retaining pins.
The universal mounting option system for all Beta Max portable hoists, the Trestle Monorail is ideal for mounting on a flat roof or an intermediate floor. The system allows a 3.5 ft. cantilever. Two people can assemble the system in minutes.

**TRESTLE MONORAIL ANCHORING METHODS**

Trestle Ceiling Brace: For use when the trestle will be installed on an intermediate floor of a building with a rigid structural ceiling above the trestle. The brace that locks the rear of the trestle between the ceiling and the floor on which the system is mounted stabilize the trestle monorail. After the trestle is assembled and placed in the desired location the jack is bolted to the top of the inboard end of the monorail. The jack must be in firm contact with the ceiling structure.

Floor Tie Down Clamps: Most suitable for permanent applications. The clamps attach to the inboard legs of the trestle and allow the system to be anchored by chains or wire rope.

Ballasting: A counterbalance system employing two rigid metal containers (each with a capacity of 9.5 cubic ft.) that are bolted to the inboard leg of the trestle. The weight of the material in the ballast containers counterbalances the combined weight of the load and the hoist at the outboard end of the trestle. Ballast material must conform to certain requirements. Bricks, solid concrete blocks, stone or other high-density non-flowable materials are suggested.

Counterweighting: Uses counterweight clamps, which come complete with mounting hardware and attach securely to the inboard legs of the trestle. This method lets you make use of flat steel counterweights commonly used for roof outriggers. Standard 50 lb. counterweights slide down over the 27 in. upright.

Whateveranchoring method you use, additional tie back ropes should always be in place to secure the system.
<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART #</th>
<th>DESCRIPTION</th>
<th>QTY.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>30-76</td>
<td>Uprights</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>60-4</td>
<td>Scaff/Trestle Trac</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>10-63</td>
<td>Track Mounting Pins with Keepers</td>
<td>4</td>
</tr>
<tr>
<td>D</td>
<td>30-77</td>
<td>Braces 1,200 lb. system</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>590</td>
<td>Cap screws</td>
<td>2</td>
</tr>
<tr>
<td>F</td>
<td>790</td>
<td>Cap Screws and Nuts 1,200 lb. / 2,000 lb. system</td>
<td>4 / 6</td>
</tr>
<tr>
<td>G*</td>
<td>30-75</td>
<td>Cantilever Braces Brackets 2,000 lb. system</td>
<td>1</td>
</tr>
<tr>
<td>H*</td>
<td>707</td>
<td>Cap Screws</td>
<td>2</td>
</tr>
<tr>
<td>I*</td>
<td>30-74</td>
<td>Cantilever Braces 2,000 lb. system</td>
<td>2</td>
</tr>
<tr>
<td>J*</td>
<td>606</td>
<td>Cap Screws and Nuts</td>
<td>2</td>
</tr>
<tr>
<td>K</td>
<td>10-64</td>
<td>Hoist Stop Pin with Keeper</td>
<td>1</td>
</tr>
<tr>
<td>L</td>
<td>30-5</td>
<td>Saddle for use with frame scaffold only</td>
<td>2</td>
</tr>
</tbody>
</table>
TRESTLE MONORAIL ASSEMBLY

PREPERATION AND ASSEMBLY

The Trestle Monorail system is ideal for mounting Beta Max hoists on a flat roof or intermediate floors. An area of approximately 10 ft. x 15 ft. is needed to assemble the Trestle Monorail. Beta Max suggest that two people assemble the system. The system should be assembled at the site of installation. (It is possible to assemble the system in one area and then move it to the installation area).

List of parts (1200 lb. capacity trestle monorail): see pg. 13

- 2 req. Uprights—Trestle monorail
- 1 req. Scaff-Trac
- 4 req. Braces—Trestle Monorail (1200 lb. capacity)
- 2 req. 1/2” bolt 2” long
- 1 req. Long Pins

ASSEMBLY OF 1200 LB. CAPACITY TRESTLE MONORAIL

1. Attach 4 braces (D) to upright (A) using bolts (F). Tighten loosely.
2. Connect braces (D) in center towards each other using bolt (E). Tighten loosely. This is temporary. The uprights (A) should be approx. 7 ft. apart.
3. Attach Trac (B) to uprights (A) from underneath using pins and keepers (C).
4. Disconnect bolts (E) from braces (D).
5. Connect braces (D) to Trac (B) using bolts (E).
6. Tighten all bolts securely and use the keepers for the pins holding Trac to uprights. Always use counterbalancing. (see pg. for formula).

List of parts (2000 lb. capacity trestle monorail): see pg. 13

Same as above/also with

- 2 req. 1/2” bolt 3 1/2” long
- 1 req. Cantilever Bracket
- 2 req. 1/2” bolt 1 1/2” long
- 2 req. 1/2” bolt 3” long

ASSEMBLY OF 2000 LB. CAPACITY TRESTLE MONORAIL

1. Follow above instructions.
2. Attach cantilever brace bracket (G) to Trac (B) using bolts (H).
3. Attach cantilever braces (I) to uprights (A) using bolts (F).
4. Attach cantilever braces (I) to cantilever brace bracket (G) using bolts (I).
TRESTLE MONORAIL ANCHORING METHODS

INSTALLING THE TRESTLE MONORAIL

Once the Trestle Monorail is assembled it must then be properly anchored before it can be used with a Beta Max hoist. Beta Max warranties cover only the following four methods of anchoring.

1. Trestle ceiling brace: When the trestle will be installed on an intermediate floor of a building so that there is a rigid structural ceiling above the trestle, it may be stabilized with a jack which locks the rear of the trestle between the ceiling and floor on which the trestle is placed. After the trestle is assembled and placed in the desired location the jack is bolted to the top of the inboard (rear) end of the monorail. The jack is extended until it is in firm contact with the ceiling structure.

2. Floor tie down clamps: This method of trestle Monorail installation is the most suitable for more permanent applications. Anchor bolts must be secured to the floor near the base of the inboard end of the trestle arch. Beta Max suggests no fewer than two bolts per arch leg and at a distance of no less than 12 inches from the trestle arch legs. Beta Max floor tie down clamps are adequate to attach to the trestle arch legs. A heavy chain or equivalent should be used to connect the floor tie down clamps to the anchor bolts.

3. Ballasting: Two rigid metal containers each with a capacity of 9.5 cubic feet are bolted to the inboard legs for the trestle. The weight of the material in the ballast containers counterbalances the combined weight of the load and the hoist at the outboard end of the trestle. The choice of ballast material must conform to certain requirements. Bricks, solid concrete, blocks, stone or other high-density material is suggested. Loose sand may not be considered suitable in some installations. Liquids are not approved. To assure maximum stability, each box should be filled to capacity.

4. Counterweighting: 2 U-shaped counterweight clamps are attached securely to the inboard legs of the trestle. 50 lb. flat steel counterweights slide down over the 27" upright. (See counterbalance requirements on page 16 & 17.)

The reactive loads on the trestle system and its foundation are shown on page 38. The foundation under the trestle must be adequate to support the entire load. Load spreading planks must be placed under the trestle if the combined weight for the ballast, payload, trestle and hoist exceeds the unit loading capacity of the floor.

Use tie back cables on all methods of anchoring. Tie back the rear arches of the trestle.
MOUNTING THE HOIST ON A MONORAIL/TRAC SYSTEM

Monorail/Trac mounting is only possible with hoist that have rollers attached. See table for further information about mounting options for your hoist. Beta Max suggests the mounting be done by two or more people.

1. Remove the retaining pin or bolts from the inboard end of the Monorail/Trac.

2. Raise the hoist and roll it into the Monorail/Trac.

3. Reinstall the retaining pins to prevent the hoist from rolling out of the rear of the Monorail/Trac.

4. Make sure that the hoist rolls freely over the entire length of the Monorail/Trac. Clean any dirt, rust, mortar, etc. which may be on the inside of the Monorail/Trac.

5. Be sure that the Monorail/Trac is horizontally level and mounted securely. The hoist should not roll to one end by itself.

COUNTERBALANCING MONORAIL SYSTEMS

When the load is at the outboard end of the Monorail/Trac, the inboard end of the Monorail/Trac will have a lifting tendancy, and must be properly counterbalanced or secured in place. A load suspended at the outboard end of the Monorail/Trac will exert an upward force of approximately one half its weight on the inboard end of the Monorail/Trac.

Scaffold sections in a Scaff-Trac mounting system must be pinned or bolted together to resist the weight of the load at the outboard end. In addition, extra weight can be added above the rear (inboard end) scaffold frame. When first lifting the maximum weight, the job superintendent should inspect the scaffolding in the vicinity of the hoist operation to insure that the scaffold components are NOT distorted or seperated.

HOIST / LOAD COUNTERBALANCE REQUIREMENTS

To determine the proper amount of counterweight to use - see the formula and chart below:

When mounting to Trestle Monorail or Scaff-Trac:

Take weight of hoist plus weight of load. Multiply by length of outward cantilever (Trestle Monorail, Scaff-trac = 3.5 ft.) Multiply by 2x safety factor. Divide by backward cantilever (Trestle/Monorail, Scaff-Trac = 7 ft.).
for example:

Gemini Plus lifting 600 lb. load on Scaff-Trac
600 + 150 = 750
750 x 3.5 = 2,625
2,625 x 2 = 5,250
5,250 / 7 = 750 lbs. Total of counterweight

When mounting to vertical post:

Using 1 to 1 safety factor you must provide counterweight equal to weight of hoist and load.

for example:

Scorpio Plus lifting 400 lb. load on vertical post
400 + 100 = 500 total counterweight

ASSEMBLY / INSTALLATION OF BETWEEN FLOOR MOUNT SYSTEM

The floor is used on the edge of balconies or just inside windows and doors, where both the upper and lower end of the mount rests against a flat surface. The small diameter end of the mount is placed toward the ceiling and the larger diameter tube is set toward the floor. Tighten the system with the adjustment screw to lock the vertical post between the two surfaces. Make sure the post is vertical to the floor. Attach the tubular mounting clamps as high as possible on the window mount. Secure the clamps and the hoist as described above. Connect your hoist to the proper electrical supply and you are ready to lift.

INSTALLATION OF A SCAFFOLDING MOUNT SYSTEM

Scaffold mounting is simple and quick. The scaffold section that is to be mounted to should be erected and properly secured to the building face. All sections should be correctly secured to each other. Diagonal braces for the scaffold sections must also be in place. Attach the tubular mounting bar and hoist as described above, to one of the OUTER legs of the scaffolding sections. Connect your hoist to the proper electrical supply and you are ready to lift.

---

DO NOT MOUNT HOIST TO FREE STANDING SCAFFOLDING SCAFFOLDING MUST BE SECURED TO A BUILDING FACE

---
VERTICAL POST MOUNTING SYSTEMS

ASSEMBLY / MOUNTING OF WINDOW MOUNT SYSTEM

The Window Mounting system can be mounted in any masonry framed window.

1. Remove the retaining pin and thread the adjustment screw completely closed. Extend the assembly to the approximate window opening size. Insert the pin under the adjusting screw. If the smallest adjustment for the mount exceeds the window dimension, then both tubes of the mount must be cut off a suitable amount. Use a hack saw or pipe cutter to cut the tubes straight across, not at an angle.

2. Place the assembled mount in the window opening with side flanges on the OUTSIDE and toggles on the inside. The larger diameter tube should be on top.

3. Rotate the adjustment screw until the top and bottom plates are firmly against the window opening.

4. Insure that side flanges are firmly against outside wall and that the mount is plumb vertical, use a level if necessary. Turn adjustment screw to tighten the mounting securely into place.

5. give adjustment screw a final turn, but do not use a leverage bar to over torque.

6. attach the tubular mounting clamps as high as possible on the window mount. Secure the clamps and hoist as described above. Connect your hoist to the proper electrical supply and you are ready to lift.

7. Re-tighten all bolts and clamps after the initial load has been placed on the window mount system.

---

WARNING

APPROVED ONLY FOR MASONRY WALLS

---
HOIST OPERATION

Electrical power for the hoist must be the correct voltage (see nameplate data). The power source and connecting cords must be of sufficient capacity to carry the current requirements of the hoist. A minimum of 20 amp. service is required for all units. Electrical extension cable plug ends should be “twist lock” type. Connectors must be straight, undamaged, and clean and should incorporate suitable ground connections. #10 or #8 gauge electrical cable should be used for extensions, #6 is suggested for excessive lengths. Consult your dealer or the Beta Max factory.

--- WARNING ---

CONTINUOUS OPERATION OF A MOTOR WITH BORDER LINE OR POOR VOLTAGE DUE TO THE POWER SOURCE OR POWER CONNECTIONS CAN DAMAGE YOUR BETA MAX HOIST MOTOR!

On remote control machines, the remote control cable consists of a basic 6 ft. electrical cable and pendant with the push buttons at one end and quick disconnect plug at the other. Electrical cable extensions of 25 ft. and 85 ft. can be added to operate the hoist from remote locations. When using the longer remote control extensions securely attach the cable to firm anchor points to prevent strain on the connectors or the electrical cable. Intermediate connections should use strain relief provisions provided to prevent strain on the connectors.

Press the DOWN button to lower the cable and load. The load will be powered down and does not free fall. Press the UP button to raise the load. Releasing either button will cut power to the motor and automatically apply the brake. Always control the load motion with the control buttons. DO NOT run the load into the ground and DO NOT use the UP-Limit switch to stop upward motion.

The wire rope will stretch and tighten when a load is first “snatched”. The tightening of the rope will cause the load to rotate slightly in one direction. The non-rotational qualities of the rope will stop this rotation and the rope and load will seek a “balanced” state. The load may also rotate due to air movement or the bulk and nature of the payload. A tag line may be attached to the load to steady it but should not be used to pull the load out at an angle away from the hoist.

WIRE ROPE RIGGING

Some hoists are shipped with the components for rigging either for single rope or double rope lifting. Double rope rigging requires an 8” sheave and pulley, another hook and a shackle. The hoists’ wire rope is terminated with a weight (headache ball) and thimble.

SINGLE ROPE RIGGING

for single part rigging it is only necessary to attach the small hook to the end of the cable using the shackle. This allows the maximum lifting height and speed for the hoist. (See table pg. 23 for maximums).

DOUBLE ROPE RIGGING

For two parts rigging, secure the wire rope to the side of the hoist with the shackle. Unscrew the center bolt of the 8” pulley / hook and remove the wheel. Insert the cable (as shown on the diagram pg. 21). Re-secure the pulley wheel and central bolt. Be sure to secure the bolt with the safety clip provided. This bolt MUST be secured with a safety pin. Double rigging will limit the lifting height and speed to 1/2 load capacity for your hoist. Be certain your mounting is rated for the increased weight that double rope rigging will allow.
SOME THINGS EVERY USER SHOULD KNOW ABOUT USE AND CARE OF WIRE ROPE AND WIRE ROPE SLINGS

The following information is NOT a complete discussion of wire rope or wire rope slings.

WHAT FOLLOWS IS A BRIEF OUTLINE OF THE BASIC INFORMATION REQUIRED TO SAFELY USE WIRE ROPE AND WIRE ROPE SLINGS

1. Wire rope WILL FAIL IF WORN OUT, OVERLOADED, MISUSED, DAMAGED or IMPROPERLY MAINTAINED.

2. In service, wire rope loses strength and work capability. Abuse and misuse increase the rate of loss.

3. The NOMINAL STRENGTH, sometimes called CATALOG strength, of a wire rope applies ONLY to a NEW, UNUSED rope.

4. The Nominal strength of a wire rope SHOULD BE CONSIDERED the straight line pull, which will ACTUALLY BREAK a new, UNUSED rope. The nominal strength of a wire rope should NEVER BE USED AS ITS WORKING LOAD.

5. To determine the working load of a wire rope, the NOMINAL strength MUST BE REDUCED by a DESIGN FACTOR (formerly called a Safety Factor). The Design Factor will vary depending upon the type of machine and installation, and the work performed. YOU must determine the applicable Design Factor for your use.

For example, a Design Factor of "5" means that the Nominal strength of the wire rope must be DIVIDED BY FIVE to determine the maximum load that can be applied to the rope system.
Design Factors have been established by OSHA, by ANSI, by ASME and similar government and industrial organizations.

No wire rope or wire rope sling should ever be installed or used without full knowledge and consideration of the Design Factor for the application.

6. WIRE ROPES WEAR OUT. The strength of a wire rope begins to decrease when the rope is put in use and continues to decrease with each use.

7. NEVER OVERLOAD A WIRE ROPE. This means NEVER USE the rope where the load applied to it is greater than the working load determined by dividing the Nominal Strength of the rope by the appropriate design factor.

8. NEVER "SHOCK LOAD" a wire rope. A sudden application of force or load can cause both visible external damage and internal damage. There is no practical way to estimate the force applied by shock loading a rope. The sudden release of a load can also damage a wire rope.

9. Lubricant is applied to the wires and strands of a wire rope when it is manufactured. This lubricant is depleted when the rope is in service and should be replaced periodically.

10. Regular, periodic INSPECTION of the wire rope and keeping of PERMANENT RECORDS SIGNED BY A QUALIFIED PERSON are REQUIRED BY OSHA FOR ALMOST EVERY WIRE ROPE INSTALLATION. The purpose of inspection is to determine whether or not a wire rope or wire rope sling may continue to be safely used on that application. Inspection criteria, including number and location of broken wires, wear and elongation have been established by OSHA, ANSI, ASME and similar organizations.

IF IN DOUBT, REPLACE THE ROPE

AN INSPECTION SHOULD INCLUDE VERIFICATION THAT NONE OF THE SPECIFIED REMOVAL CRITERIA FOR THIS USAGE ARE MET BY CHECKING FOR SUCH THINGS AS:

- Surface wear, Normal and unusual
- Broken wires: Number and location. Reduction in diameter
- Rope stretch (elongation)
- Integrity of end attachments
- Evidence of abuse or contact with another object
- Heat damage
- Corrosion

In addition, an inspection should include the condition of sheaves, drums and other apparatus with which the rope makes contact.

11. When a wire rope has been removed from service because it is no longer suitable for use. IT MUST NOT BE RE-USED ON ANOTHER APPLICATION.

12. Every wire rope user should be aware of the fact that each type of fitting attached to a wire rope has a specific efficiency rating which can reduce the working load of the rope assembly or rope system, and this must be given due consideration in determining the capacity of a wire rope system.
13. Some conditions that can lead to problems in a wire rope system include:

- Sheaves that are too small, worn or corrugated cause damage to a wire rope.
- Broken wires mean a loss of strength.
- Kinks permanently damage a wire rope and must be avoided.
- Knots damage wire ropes, and wire ropes with knots must never be used.
- Environmental factors such as corrosive conditions and heat can damage a wire rope.
- Lack of lubrication can significantly shorten the useful service life of a wire rope.
- Contact with electrical wires and the resulting arcing will damage a wire rope.

**WIRE ROPE SPECIFICATIONS**

Beta Max hoists come equipped with 19 x 7 rotation resistant wire rope. Rotation resistant wire ropes are less likely to unravel when loaded. This results in improved rotational stability. Please refer to the following table for sizes, length and quality specifications when replacing wire ropes.

---

**CAUTION**

ALWAYS REPLACE WIRE ROPE WITH THE SPECIFIED DIAMETER SIZE FOR YOUR HOIST. DO NOT ATTEMPT TO PLACE LARGER / SMALLER THAN SPECIFIED DIAMETER WIRE ROPE ON YOUR HOIST WITHOUT FIRST CONSULTING WITH YOUR DEALER OR THE FACTORY.

---

<table>
<thead>
<tr>
<th>MODEL</th>
<th>ROPE</th>
<th>MAX. WEIGHT SINGLE</th>
<th>MAX. WEIGHT DOUBLE</th>
<th>MAX. HEIGHT SINGLE</th>
<th>MAX. HEIGHT DOUBLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scorpio</td>
<td>3/16 in.</td>
<td>400 lbs.</td>
<td>N/A</td>
<td>80 ft.</td>
<td>N/A</td>
</tr>
<tr>
<td>Scorpio XL</td>
<td>3/16 in.</td>
<td>400 lbs.</td>
<td>N/A</td>
<td>160 ft.</td>
<td>N/A</td>
</tr>
<tr>
<td>New Yorker</td>
<td>3/16 in.</td>
<td>600 lbs.</td>
<td>N/A</td>
<td>350 ft.</td>
<td>N/A</td>
</tr>
<tr>
<td>Gemini</td>
<td>1/4 in.</td>
<td>600 lbs.</td>
<td>1200 lbs.</td>
<td>220 ft.</td>
<td>110 ft.</td>
</tr>
<tr>
<td>Leo</td>
<td>5/16 in.</td>
<td>1000 lbs.</td>
<td>2000 lbs.</td>
<td>160 ft.</td>
<td>80 ft.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DIAMETER OF ROPE</th>
<th>APPROXIMATE WEIGHT PER FT. IN LBS.</th>
<th>PURPLE GRADE</th>
<th>PURPLE PLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/16 in.</td>
<td>.064</td>
<td>1.42</td>
<td>1.57</td>
</tr>
<tr>
<td>1/4 in.</td>
<td>.113</td>
<td>2.51</td>
<td>2.77</td>
</tr>
<tr>
<td>5/16 in.</td>
<td>.177</td>
<td>3.90</td>
<td>4.30</td>
</tr>
</tbody>
</table>

Nominal strength at 1 ton or 2,000 lbs.
These Strengths Apply Only When A Test Is Conducted With Both Ends Fixed. Avoid Common Wire Rope Abuses Such As Shock Loading, Over Stressing, Corrosion, Crushing, Too Sudden Load Release And Lack of Lubrication.

REMOVAL OF WIRE ROPE

Mount the hoist in the proper horizontal lifting position and remove the weight, thimble and hooks from old rope.

1. Connect hoist to correct power source, operate down button on pendant station until rope is completely spooled away from the drum.

KEEP FINGERS AWAY FROM DRUM WHEN HOIST IS OPERATING

2. Locate the cavity in the rear of the drum and pull the sleeve end of the rope out far enough to cut and remove sleeve. The rope will then slip out of the drum.

INSTALLING THE WIRE ROPE

Mount the hoist in the proper horizontal lifting position. Be sure to use the proper rope diameter and length for your hoist model (see rope size specification table pg. 23). New wire rope must be terminated with a press fitting on the drum end of the rope (see specifications for terminating wire rope pg. 25).

1. If new rope is already terminated with press fitting, feed the end through cavity on the motor end of the drum until firmly seated in cavity.

2. If new rope has not been terminated, feed one end through hole and pull out through the cavity. terminate the rope in the proper manner. (see instructions on terminating wire rope pg. 25).

3. connect hoist to the correct power source and operate the UP button on the pendant switch. Guide and layer the rope carefully onto the drum. Keep the rope tight against the drum. Do not allow the rope to loosely spool onto the drum.

KEEP FINGERS AWAY FROM DRUM WHEN HOIST IS OPERATING.

4. Be sure the free end of the rope is threaded through the emergency up limit stop bar. Re-source the weight and thimble with press fitting or clamps. (see instructions for terminating wire rope pg. 25).
TERMINATING WIRE ROPE ENDS

Though most wire ropes today are pre-formed, eliminating the tendency to “explode” or fly apart when cut, it is advisable to place sizing securely on each side of the point where a cut is to be made. Either sizing strand or annealed wire may be used; the important point is that sizing be drawn taut enough to prevent any strand from being even slightly displaced. Two sizing on each side of the point where the rope is to be cut should be sufficient for all the rope sizes on Beta Max hoists.

All wire rope shipped from the Beta Max factory with termination ends has high quality press fit endings. Wire rope clips may be purchased from Beta Max for all of the sizes of wire rope that Beta Max hoists require. When applying a terminating device other than press fitting, such as a wire rope clip, follow the manufactures specifications or the following method.

1. Turn back the specified length of rope from the thimble. Apply the first clip one base width from the dead end of the wire rope (U-bolt over the dead end — live end rests in the clip saddle). Tighten nuts EVENLY to the recommended torque.

2. Apply the next clip as near the loop as possible. Turn on nuts firmly but do not tighten.

3. Additional clips if required should be spaced equally between the first two.

4. Take up rope slack.

5. Tighten all nuts evenly an all clips to the recommended torque.

---

**NOTE**

Apply the initial load and re-tighten nuts to the recommended torque. Wire rope will stretch and shrink in diameter when loads are applied. Inspect clips periodically and re-tighten.

---

<table>
<thead>
<tr>
<th>ROPE/CLIP SIZE</th>
<th>MINIMUM # CLIPS</th>
<th>AMOUNT TO TURN BACK</th>
<th>TORQUE IN FT./LBS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/16 in.</td>
<td>2</td>
<td>3 3/4 in.</td>
<td>7.50</td>
</tr>
<tr>
<td>1/4 in.</td>
<td>2</td>
<td>4 3/4 in.</td>
<td>15</td>
</tr>
<tr>
<td>5/16 in.</td>
<td>2</td>
<td>5 1/4 in.</td>
<td>30</td>
</tr>
</tbody>
</table>

When uncoiling the rope, always roll the coil like a hoop. Never lay the coil down and throw the rope out in loops. When this is done, kinks are liable to form and the rope becomes twisted and hard to handle.
CARE AND STORAGE

Beta Max hoists are rugged and durable. However, because they are used under all sorts of conditions, service timetables and guidelines must be followed for the hoist to perform effectively and safely. Store the hoist away from excess moisture when not in use. Keep the hoist covered if it is being stored in a corrosive environment.

MOTOR AND ELECTRICAL CONNECTORS

Do not damage motor housing cooling fans. If the fins are broken, have the motor examined immediately by a qualified technician. Do not allow the pendant control switch to become submerged in water or any other liquid. Keep all electrical cable and connections from becoming cut, bent, corroded or in any way damaged.

WIRE ROPE

The wire rope is the most important component of the hoist and should be carefully monitored during use and after extended periods of storage. Keep wire rope lubricated. Do not allow the rope to be bent sharply, pinched, tied in a knot or otherwise damaged.

GEAR BOX

The gear reduction assembly is maintenance free and permanently lubricated. It should be inspected monthly for leaks or damage and should be inspected by a factory service center after the first year of use.

SHROUDS AND HOUSING

Always handle the hoist with care when transporting and mounting. Do not allow any part of the hoist to be battered against other objects. Use the handles to carry the hoist, do not lift hoist using the UP-limit bar, power cable or pendant cable.

OPERATORS SAFETY PRECAUTIONS

KEEPS HANDS AND CLOTHING AWAY FROM DRUM AND WIRE ROPE UP-LIMIT SWITCH IS AN EMERGENCY STOPPING DEVICE ONLY

- DO NOT Use emergency UP-limit switch to stop the hoists up motion.
- DO NOT Use hoist if hoist is damaged or malfunctioning.
- DO NOT Use hoist if limit switch is not functioning properly.
- DO NOT Use hoist if wire rope cable is twisted or damaged.
- DO NOT Use hoist to lift humans.
- DO NOT Use hoist for side lifting/loading.
- DO NOT Use remote control of the hoist if you cannot see the hoist or are not in direct communication with someone who is monitoring the hoist.
• DO NOT Swing the load or hook when moving the hoist.
• DO NOT Overload the hoist with static load or by jerking the load.
• DO NOT Leave a suspended load unattended.
• DO NOT Lower the hook to the extreme end of the cable.
• DO NOT transport loads over the heads of workers.
• DO NOT Allow persons to stand under a loaded hoist.
• DO NOT Exceed recommended duty cycle of the hoist.
• DO NOT Exceed fuse rating recommended by the National Electric Code.
• DO NOT Change the wiring leads of the limit switch or push-button station.

PLEASE REMEMBER TO:

• read all manuals
• Observe all safety precautions.
• Disconnect the power supply before attempting repair or maintenance.
• Take up slack wire rope slowly.
• Move hoist slowly when sliding it along the Monorai/Trac.
• Pull slack cable off the drum when in the down direction.
SAFETY RULES CHECKLIST

GENERAL

☐ Lift meets safety and electrical regulations for local authorities.
☐ Operator is fully instructed in the operation of the hoist.
☐ Operator has read and fully understands this manual.
☐ Operator is not tired or under stress.
☐ Operator is not under the influence of medicine, drugs or alcohol.
☐ Operator is not alone while operating the hoist.
☐ Operator is wearing personal safety clothing and equipment.
☐ The hoist I.D. is not modified in any way.

WIRE ROPE, HOOKS AND CLASPS

☐ Wire rope is not old, twisted, nicked, gouged or otherwise damaged.
☐ Wire rope is properly wound on drums.
☐ Hooks and clasps not deformed, cracked or pulling apart.
☐ Hook spring catch installed and not bent.
☐ Wire rope is terminated properly.

ELECTRICAL SOURCE AND CABLES

☐ Voltage from source must be clean, correct and properly grounded. (220 volts for 220 volt models or 110 volts for 110 volt models).

☐ Voltage from power source should not vary more than 10 % when the hoist motor is lifting a load.

☐ Emergency UP-Limit switch and bar must be undamaged and functioning properly.

☐ Electrical cable between power source and hoist should not be of excessive length nor too lightweight. (#10 gauge or heavier is suggested)

☐ Electrical “Twist-lock” connections of the proper 30 amperes specification.

☐ Control pendant housing is not cracked or damaged.

☐ Control pendant buttons are not sticking and are snapping in and out.
**HOIST ELECTRICAL SPECIFICATIONS**

Beta Max hoist are designed as 110 volt units or 220 volt units, all 60 cycle, single phase AC electric current and 30 ampere circuitry. They must be ordered as either 110 volt or 220 volt models.

**SPECIFICATIONS**

The motor has one primary or strong winding and one secondary or weak winding.

The fail-safe conical brake operates from the inductive forces in the rotor created by the AC current through the stator wires.

The hoist is equipped with an UP-Limit switch that interrupts the 24V coil of the UP control relay on remote control models, or the primary AC (110V or 220V) line to the UP-Limit switch on models without remote control relays. This UP-Limit switch is an EMERGENCY safety shut-off and should never be used as a substitute for stopping upward motion.

Push button controls are “deadman” type and work on 24 volt circuitry with remote control and 110 or 220 volts on standard units.

On remote control models, a 24 volt output transformer is connected to the primary power when the unit is plugged in. The 24 volts are used to energize the UP contactor of the UP-Limit switch is closed (hook not all the way up) and the UP push-button is depressed. The 24 volts are also used to energize the DOWN contactor if the down-button is depressed.

When the UP or DOWN push-button is depressed, the operating voltage is applied to the diode bridge, causing the magnetic brake to overcome the pressure of the three brake springs and pull the brake stationary plate away from the brake disc.

When the UP push-button is depressed, the operating voltage is applied directly across the primary or strong motor winding and through the capacitors to the secondary or weaker motor winding.

When the DOWN push-button is depressed, the operating voltage is applied directly across the secondary or weaker motor winding and through the capacitors to the primary or stronger motor winding.

<table>
<thead>
<tr>
<th>MODEL</th>
<th>VOLTS</th>
<th>CAPACITOR(S)</th>
<th>CURRENT* UP</th>
<th>CURRENT* DOWN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gemini Plus</td>
<td>110V</td>
<td>4 ea. 70UF in parallel</td>
<td>21 amps</td>
<td>11.5 amps</td>
</tr>
<tr>
<td>Scorpio Plus</td>
<td>110V</td>
<td>4 ea. 60UF</td>
<td>8 amps</td>
<td>7.5amps</td>
</tr>
<tr>
<td>Gemini plus</td>
<td>220V</td>
<td>1 ea. 70UF</td>
<td>12 amps</td>
<td>8 amps</td>
</tr>
<tr>
<td>New Yorker</td>
<td>220V</td>
<td>1 ea. 70UF</td>
<td>11 amps</td>
<td>3 amps</td>
</tr>
<tr>
<td>Leo</td>
<td>220V/1Ø</td>
<td>1 ea. 80UF</td>
<td>22 amps</td>
<td>7.5amps</td>
</tr>
<tr>
<td>Leo</td>
<td>220V/3Ø</td>
<td>None</td>
<td>21 amps</td>
<td>5.5amps</td>
</tr>
</tbody>
</table>
CONICAL BRAKE

OPERATION

The Conical brake operates from the inductive forces in the rotor created by the AC current through the stator wires.

When voltage is applied to the rotor (1) this attaches the steel at the end of the brake (7). The brake (7) is pulled against tension pin (2) overcoming the spring tension established by tension adjusting lock-nut (6). The nominal air gap is .025 inches. When the brake surface (7) clears the motor brake end cap (11), the motor can turn.

The amount of compression of tension spring (3) determines the force applied between the brake surface on (7) and end cap (11) and that is the brake load holding force.

---

**NOTE**

Before doing any adjusting, mark where adjustments are at present.

---

When the air gap is increased by loosening 3 ea. screw (14) and turning the air gap adjustment ring (12) counter-clockwise, then tightening 3 ea. screw (14) the brake tension is decreased.

Contrarily, when the air gap is decreased by loosening 3 ea. screw (14) and turning the adjustment ring (12) counter-clockwise, and then tightening 3 ea. screw (14) pulling the bearing (9) and the inner air gap adjustment ring (8) back the tension is increased.

When adjusting the air gap, the rotor (1) bearing (9) and nut (10) move in or out as the air gap changes, while tension pin (2), tension pin (3), tension shaft (4), washer (5), tension adjustment locknut (6) and brake (7) all remain fixed in reference to end cap (11)

This is especially important to consider because the air gap adjustment and the tension adjustment are two separate adjustments, but both effect each other.

for example; if the air gap is large (over .30 inches) and the tension adjustment locknut (6) is tightened (turned counter-clockwise) excessively then the magnetic force cannot overcome the tension across the large air gap to release the brake.

---

**NOTE**

Tension adjustment locknut (6) is a left hand thread. Counter-clockwise increases tension and clockwise decreases tension.

---

Generally speaking and as reference only, for a starting point there should be about three threads showing in the end cap (11) where the outer air gap adjustment ring (12) is turned in and the end of tension shaft (4) should barely protrude through locknut (6) more then 1/8 inches.
The best way to adjust the brake if starting from scratch and all previous adjustments are unknown is:

With motor brake assembled correctly and the above reference part set. Then, first loosen 3 screw (14) and turn (12) counter-clockwise about 1 turn, tighten 3 screw (14) equally in small increments while watching to see if the outer rod of bearing (9) begins to come in contact with the inner side of air gap adjustment ring (12). When this happens, the air gap should be zero. Then begin increasing the air gap in small 1/8”—1/4” turn increments until the hoist works properly on nominal voltage. Then another 1/8” turn should be correct.

**CONICAL BRAKE DIAGRAM**
# CONICAL BRAKE PARTS LIST

<table>
<thead>
<tr>
<th>ITEM</th>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Rotor</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Tension Pin</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Tension Spring</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Tension Shaft</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Washer</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Tension Adjustment Locknut</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Brake</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Inner Air Gap Adjustment Ring</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>Bearing</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Bearing Locknut</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Motor Brake End Cap</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Outer Air Gap Adjustment Ring</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Lock Washer</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>Hex Head Screw</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Cooling Fan</td>
</tr>
</tbody>
</table>
## TRANSMISSION / DRUM ASSEMBLY

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SCORPIO/SCORPIO XL PART #</th>
<th>GEMINI PLUS/NEW YORKER/LEO PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Retaining Ring</td>
</tr>
<tr>
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<td>14</td>
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Numbers in the diagram correspond to the item numbers in the table.

---

BETA MAX PORTABLE HOIST SYSTEMS
# MOTOR / BRAKE ASSEMBLY

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SCORPIO/SCORPIO XL PART #</th>
<th>GEMINI PLUS/NEW YORKER/LEO PART #</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>1</td>
<td></td>
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<td>Condenser</td>
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<td>Cable Passage Plate</td>
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<td>Plate</td>
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<td>Packed Casing</td>
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<td></td>
<td>Oil Splash Guard</td>
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<td>Terminal Unit</td>
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<td>Fan Cover Plug</td>
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<td>Tie Rod</td>
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<td>Rear Bearing</td>
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<td>Auto Locking Nut</td>
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<td>Auto Locking Ring Nut</td>
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<td>21</td>
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<td>Complete Brake Lock</td>
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<td>22</td>
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<td></td>
<td>Screw</td>
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<td>23</td>
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<td>Fan</td>
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<tr>
<td>24</td>
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<td>Fan Cover</td>
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</table>
# Technical Specifications

<table>
<thead>
<tr>
<th>Hoist Model</th>
<th>Eclipse</th>
<th>Scorpio Plus XL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting Options</td>
<td>Post Mount only</td>
<td>Post Mount, Mac Trac, Scaff Trac, Trestle Monorail, 1-Beam Trolley, Fixed 1-Beam</td>
</tr>
<tr>
<td>Pendant Options</td>
<td>6 ft. Fixed only</td>
<td>Extendable, Dual Control, Wireless Remote</td>
</tr>
<tr>
<td>Voltage Requirement</td>
<td>110V - 8.0 amps, 50% Duty Cycle</td>
<td>10V - 8.5 amps, 50% Duty Cycle</td>
</tr>
<tr>
<td>Lift Capacity</td>
<td>300 lbs.</td>
<td>400 lbs.</td>
</tr>
<tr>
<td>Lift Height/Speed</td>
<td>75 ft. at 75 fps</td>
<td>Standard Drum: 80 ft. at 80 fps, Long Drum: 160 ft. at 80 fps</td>
</tr>
<tr>
<td>Unit Weight</td>
<td>85 lbs.</td>
<td>Standard Drum: 90 lbs, Long Drum: 100 lbs.</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>95 lbs.</td>
<td>Standard Drum: 100 lbs, Long Drum: 110 lbs.</td>
</tr>
</tbody>
</table>
## TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>HOIST MODEL</th>
<th>GEMINI PLUS</th>
<th>LEO</th>
<th>NEW YORKER</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOUNTING OPTIONS</td>
<td>Scaff-Trac</td>
<td>Scaff-Trac (single line only)</td>
<td>Scaff-Trac</td>
</tr>
<tr>
<td></td>
<td>Trestle monorail</td>
<td>Trestle monorail</td>
<td>Trestle monorail</td>
</tr>
<tr>
<td></td>
<td>Fixed I-Beam</td>
<td>Fixed I-Beam</td>
<td>Fixed I-Beam</td>
</tr>
<tr>
<td></td>
<td>I-Beam Trolley</td>
<td>I-Beam Trolley</td>
<td>I-Beam Trolley</td>
</tr>
<tr>
<td>PENDANT OPTIONS</td>
<td>Extendable</td>
<td>Extendable</td>
<td>Extendable</td>
</tr>
<tr>
<td></td>
<td>Dual Control</td>
<td>Dual Control</td>
<td>Dual Control</td>
</tr>
<tr>
<td></td>
<td>Wireless Remote</td>
<td>Wireless Remote</td>
<td>Wireless Remote</td>
</tr>
<tr>
<td>VOLTAGE REQUIREMENT</td>
<td>110V - 13 amps</td>
<td>Single Phase or Three Phase</td>
<td>220V - 8 amps</td>
</tr>
<tr>
<td></td>
<td>220V - 8 amps (not field changeable)</td>
<td>220V - 10 amps (not field changeable)</td>
<td>50% Duty Cycle</td>
</tr>
<tr>
<td></td>
<td>50% Duty Cycle</td>
<td>50% Duty Cycle</td>
<td>50% Duty Cycle</td>
</tr>
<tr>
<td>LIFT CAPACITY</td>
<td>600 lbs. (single line)</td>
<td>1000 lbs. (single line)</td>
<td>600 lbs. (single line)</td>
</tr>
<tr>
<td></td>
<td>1200 lbs. (double line)</td>
<td>2000 lbs. (double line)</td>
<td></td>
</tr>
<tr>
<td>LIFT HEIGHT/SPEED</td>
<td>Long Drum:</td>
<td>220 ft. single line-80 fpm</td>
<td>350 ft. single line-80 fpm</td>
</tr>
<tr>
<td></td>
<td>220 ft. single line-80 fpm</td>
<td>110 ft. double line-40 fpm (special lengths up to 250 ft. also available on request)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>110 ft. double line-40 fpm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UNIT WEIGHT</td>
<td>180 lbs. Long Drum</td>
<td>195 lbs.</td>
<td>185 lbs.</td>
</tr>
<tr>
<td>SHIPPING WEIGHT</td>
<td>180 lbs. Long Drum</td>
<td>210 lbs.</td>
<td>200 lbs.</td>
</tr>
</tbody>
</table>

**Diagram:**
- Side View I-Beam Trolley
- Long Drum
- Short Drum
- Side View Monorail/Scaff-Trac
# Trouble Shooting

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Diagnosis</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoist will not work, no response from the UP or DOWN button and hoist makes no sound.</td>
<td>Power source problem</td>
<td>Check circuit breakers, fuses and electrical cord connections</td>
</tr>
<tr>
<td>Hoist makes excessive vibrating noise</td>
<td>Wire rope has come off of the drum or nuts and bolts securing shroud and housing have come loose</td>
<td>Check the wire rope to insure it is properly spooled onto the drum. Check all nuts and bolts and tighten if necessary</td>
</tr>
<tr>
<td>Hoist will go down but will not go up</td>
<td>UP-Limit switch problem</td>
<td>Check circuit breakers, fuses and electrical cord connections</td>
</tr>
<tr>
<td>Hoist will not lift a load from a suspended stop position; Unit clicks and hums</td>
<td>Power source problem, Brake needs adjustment, Load is larger than the rated standard for the machine, Capacitor damage or malfunction</td>
<td>Check for correct voltage at the unit with hoist loaded and lifting, adjust the brake, Reduce the load, Test capacitors and replace if necessary</td>
</tr>
<tr>
<td>Hoist will go up with no load or a small load but will not lift a rated load</td>
<td>Power source problem, Brake needs adjustment, Load is larger than the rated standard for the machine, Capacitor damage or malfunction</td>
<td>Check for correct voltage at the unit with hoist loaded and lifting, adjust the brake, Reduce the load, Test capacitors and replace if necessary</td>
</tr>
<tr>
<td>Hoist raises load up when the DOWN button is pushed and down when the UP button is pushed</td>
<td>Wire rope has been improperly spooled onto the drum, Switch wired incorrectly</td>
<td>Check / correct the spooling direction of the wire rope, Check the electrical wiring of all switches</td>
</tr>
<tr>
<td>Suspended load goes down when UP button is pushed</td>
<td>Load is larger than the rated standard for the machine, Capacitor damage or malfunction</td>
<td>Reduce the load, Test capacitors and replace if necessary</td>
</tr>
<tr>
<td>Hoist is not loaded but fails to turnover when the UP or DOWN buttons are pushed; unit hums</td>
<td>Brake needs adjustment, Capacitor damage or malfunction</td>
<td>Adjust the brake, Test capacitors and replace if necessary</td>
</tr>
<tr>
<td>Brake slips under rated load</td>
<td>Brake needs adjustment</td>
<td>Adjust the brake</td>
</tr>
<tr>
<td>Hoist lifts rated load up but will not lower rated load or hoist lowers rated load but will not lift rated load</td>
<td>Possible pendant switch and/or cable damage</td>
<td>Repair/replace the pendant switch and/or cable assembly, Check the electrical wiring of all switches</td>
</tr>
<tr>
<td>SYMPTOM</td>
<td>DIAGNOSIS</td>
<td>SOLUTION</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Pendant switch buttons do not exhibit distinct &quot;click&quot; when pushed</td>
<td>Pendant switch damaged</td>
<td>Repair/replace the pendant switch</td>
</tr>
<tr>
<td>Load starts and stops jerkily when hoist is operating in the up direction</td>
<td>Wire rope is dragging against the UP-Limit bar</td>
<td>Be sure to tag lines are attached to wire rope</td>
</tr>
<tr>
<td></td>
<td>UP-Limit bar is bent and needs replacing</td>
<td>DO NOT USE TAG LINES!</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Repair or replace the UP-Limit bar if necessary</td>
</tr>
<tr>
<td>Load does not stop when headache ball (cable weight) contacts the UP-Limit bar when going up</td>
<td>UP-Limit bar and switch assembly has been by-passed or damaged</td>
<td>Repair/replace the UP-Limit bar assembly linkage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Repair/replace the UP-Limit switch electrical assembly</td>
</tr>
<tr>
<td>Wire rope is not tracking evenly on the drum</td>
<td>Unit is not level horizontally A tag line is being used</td>
<td>Remount the hoist, preferably either a accurate bubble level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DO NOT USE TAG LINES!</td>
</tr>
</tbody>
</table>