



# BETA MAX MAXIAL TRACK HOIST



## USE AND MAINTENANCE INSTRUCTION MANUAL

Rev. 2.2 - 2017

SERIAL NUMBER: \_\_\_\_\_

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**BEFORE OPERATING, INSTALLATION, OR  
CARRYING OUT MAINTENANCE ON THE UNIT IT IS  
IMPORTANT TO READ AND UNDERSTAND THE  
INFORMATION IN THIS MANUAL.**

**DANGER**

The machine must not be used when the instruction manual is missing or not readily available for consultation. A copy of this manual must always be at hand and available to the operators. Improper use of the machine may cause great danger to people or damage other people's property.

**This manual is to be used only if the serial or model shown in the manual corresponds with the identification information shown on the machine. If they do not correspond, contact your local BETA MAX retailer or agent.**



Owner: \_\_\_\_\_

Company name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## USE AND MAINTENANCE INSTRUCTION MANUAL

Brand - Manufacturer: BETA MAX

Model: MAXIAL TRACK HOIST

		<u>Date</u>	<u>Signature</u>
Written By:	Beta Max	06-16-2015	
Approval By:	Beta Max	07-08-2015	





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# CHAPTER 1:INTRODUCTION

Record of modifications

Revision	Executor	Date	Description of modification



## 1. INTRODUCTION

In 1990, Beta Max introduced a portable track hoist system or ladder hoist, as it is sometimes called because of its ladder-like appearance. This product is being employed by scaffolding companies, utilities, processing plants, and a variety of commercial companies. Applications range from boiler repair, building construction and maintenance, to temporary lifting requirements within industrial environments. The Maxial Track Hoist provides a safer and more productive way to erect and dismantle scaffolding, a more cost-effective material lifting solution on long-term construction jobs, and a flexible material handling system for a variety of interior and exterior settings.

Beta Max products provide more value and flexibility for most low-end lift applications than heavy lifting equipment, and are safer and more productive than the “human chain” manual method typically used in the erection of scaffolding. The Maxial Track Hoist requires no tools to assemble.

The Maxial Track Hoist is typically mounted in a vertical position when used with scaffolding. The hoist may be erected on the outside of the scaffold for easy access to the lift equipment or within the scaffolding bay to facilitate offloading of the carrier at elevated locations.

### 1.1 USE AND MAINTENANCE INSTRUCTION MANUAL

#### 1.1.1 The importance of the manual

Thank you for choosing the Maxial Track Hoist. The intended purpose of this manual is to inform, guide, and educate the owner/operator on the safe operation and maintenance of the Maxial Track Hoist. This manual applies to two models of Maxial Track Hoist (standard and narrow) and will note model-specific topics where applicable.

***All Maxial Track Hoists will meet or exceed ANSI, CSA, and OSHA specifications.***

*Beta Max, Inc. reserves the right to make design changes at any time, and the information contained in this manual is subject to change without notice. Beta Max, Inc. is not liable for errors in this manual or for any incidental/consequential damages that may result from the use of the material in this manual.*





### 1.1.2 Conserving the manual

The manual must be carefully kept away from humidity and heat and it is to be used in such a way so as not to damage the content or alter the format.

For no reason whatsoever, do not remove, tear or rewrite any parts of the manual.

### 1.1.3 Consulting the manual

The manual is essentially divided into the following:

- identification page or “OVERVIEW” showing the version of the manual and the date of issue
- index by subject
- instructions and/or notes
- enclosure

This manual contains safety instructions used to identify certain areas, tasks, or conditions that require special attention.

**NOTE:** these instructions provide useful additional information, but they are never used to communicate safety hazards

**CAUTION:** these instructions specify which actions are to be done, not to be done, or particular precautions which are to be taken before operating the machine in order not to cause damage to the machine

**DANGER:** these instructions specify which actions are to be done, not to be done, or particular precautions which are to be taken before operating the machine in order not to cause severe injury or death

## NOTE

The manual must be carefully read and understood by the various operators before carrying out their duties and responsibilities when handling the machine.



The instruction manual for the use and maintenance of the machine is intended for:

- the machine owner;
- the owner;
- the site manager where the machine is installed and used;
- assigned staff for assembling and disassembling the machine;
- the maintenance staff;
- the operators;
- the people in charge of its displacement.

It is mandatory for the instruction manual to be read before handling, installing, using, carrying out any maintenance or shutting down the machine; therefore, it is necessary to keep this manual intact over time by conserving it in a safe place and making copies for frequent use.

Handling, installing, using, carrying out maintenance or shutting down the machine may constitute a danger if not carried out according to the requirements of this manual or without due caution and attention, which such actions require.

## 1.2 PURPOSE OF THE USE AND MAINTENANCE INSTRUCTION MANUAL

This manual provides the necessary information for the proper use of the machine, allowing you to carry out the following operations:

- INSTALLATION
- OPERATION
- MAINTENANCE
- SHUTTING DOWN

### NOTE

If the warnings and suggestions presented in this manual, regarding the above mentioned operations, are not complied with, BETA MAX cannot be held responsible for the safety, reliability and performance of the machine.

### NOTE

Failure to meet the requirements stipulated in this manual relieves the Manufacturer from responsibility, or any incidents pertaining to such negligence.

Moreover, it is to be noted that in any of the instances listed below:

- improper use of the machine
- untrained staff using the machine
- total or partial non-compliance with the instructions contained in this manual
- non-compliance with national regulatory specifications pertaining to safety at work
- installed incorrectly or with configurations that are not permitted
- defects in power supply
- non-compliance with the instructions concerning the scheduled maintenance operations
- unauthorized modifications or interventions carried out on the machine
- use of spare parts other than those provided by BETA MAX

BETA MAX will not be held liable for risks caused as a result of non-compliance with such requirements. The manual cannot be used as a reference if the intention is to carry out modifications that effect the machine's configuration. However, the Company retains the exclusive responsibility pertaining to any manufacture defects.

### **NOTE**

The correct use of the machine entails the precise knowledge of these usage instructions and all risks related to improper use of the machine.

### **NOTE**

The purchaser or the user of the machine bears full responsibility for shutting down the security/safety systems or all that provided by the Manufacturer for the safety of the users and operators.

## 1.3 UPDATES OF THE MANUAL

This instruction manual reflects the conditions of the machine as at the time the machine was marketed and sold; it cannot be considered inadequate solely because it has been subsequently updated based on newly acquired knowledge. BETA MAX reserves the right to upgrade its products and manuals, in line with its policy to continuously improve product quality, with no obligation of upgrading previous productions and manuals, with exception of particular cases.

The edition of an updated version of the use and maintenance instruction manual will not oblige the manufacturer to update this manual, except in the instance of new regulations being introduced, which narrow down the danger posed by the machine during its operation, or upgraded features are installed. In these instances, BETA MAX undertakes to provide the owner of the machine with a new version of the manual.

## 1.4 Definitions

The following definitions will be found in the descriptions within this manual:

- USER
  - OPERATOR
  - MACHINE
- 
- “USER” refers to the person who, due to his qualification, is appointed as site manager where the machine is installed or the person who is directly responsible for the security of the place where the same machine is installed
  - “OPERATOR” refers to the person who, due to his qualification, is designated to install, operate, use, carry out maintenance work, clean, repair or transport the machine
  - “MACHINE” refers to the material hoist with a wire rope cable drive system mounted onto a ladder track, with the brand name BETA MAX MAXIAL TRACK HOIST model, in all its possible conformations and configurations. From this point forward in this instruction manual, when reference is made to the Material Hoist MAXIAL TRACK HOIST model, solely “MACHINE” will appear.

### CAUTION

The operator assigned to work on the machine must be trained on how to use the machine, the safety devices and the installed equipment and accessories correctly. The operator must always wear the specific, individual protection gear and clothing which is appropriate from a safety point of view and also adequate for the type of work that is to be carried out (gloves, ear plugs, safety shoes, safety belts, hard hat, goggles, etc.)



## 1.5 PREREQUISITES FOR THE MACHINE USER

The information contained in this manual must be supported by the work being carried out well and applying firm principles of safety, training, inspection, assembly, maintenance, implementation and operation, consistent with all the data available, pertaining to the parameters of usage required and consideration of the surroundings and environment in question. Given that the user has direct control over the machine's operation and its functions, it is his/her responsibility and that of his/her staff to ensure that these comply with the necessary safety requirements. Any decisions regarding the use and operation of the machine must always be taken after having considered that the machine can only carry materials. The safety of the people, who work on the machine or nearby, depends on such decisions.

### 1.5.1 Use and maintenance training

The user must train his/her maintenance staff on how to inspect, assemble and carry out maintenance on the machine in accordance with the sections in this manual pertaining to the Manufacturer's instructions and recommendations.

### 1.5.2 The user's responsibility

Whenever the user assigns or authorizes an individual to operate the machine, it is his responsibility to ensure that the individual in question has been trained in accordance with the requirements stipulated in this manual under the sections pertaining to the installation and operation, together with the working knowledge imparted by the user himself/herself.

### 1.5.3 Training on the particular model of machine

The user is responsible for training the operator on how to use the particular model of machine he/she is to work on. Such training must take place in an area that is free from any obstruction, under the direction of a qualified person and for a period of time which is long enough to ensure that the person being prepared is competent to use the machine.

Only members of staff who have been well-prepared and who are authorized must be allowed to use the machine.

Before allowing an operator to use the machine, the user must ensure that the operator:

- has been well-prepared, by a qualified person, on the purposes and functions of each control
- has read and understands the instructions in this manual and the safety regulations passed on by the user
- has understood all the warnings and instructions provided for the proper and safe operation of the machine, by reading or by means of the explanations given by a qualified person
- has understood that the machine is to be used in accordance with the applications defined by the manufacturer



## 1.6 PREREQUISITES FOR THE ASSIGNED OPERATOR

The information contained in this instruction manual must be supported by sound judgement, appropriate safety checks and caution in assessing every situation.

Since the operator has direct control of the machine, it is his/her responsibility to comply with the safety requirements in question. The operator must make decisions on the use and operation of the machine, bearing in mind that his/her personal safety and the safety of staff members working on the same machine and in vicinity depends on his/her decisions.

### 1.6.1 Preparatory information

The operator must be aware of where this instruction manual can be found. The operator must be confident in referring to the manual and consulting it whenever he/she is faced with doubts or questions regarding the safe and proper use of the machine.

### 1.6.2 Operators training

The operator must be trained on the same model of machine or on a model that has characteristics of operation and control that corresponds with the machine that is to be used. The operator must operate the machine in an area that is free from any obstruction, under the direction of a qualified person and for a period of time which is long enough to ensure that the person being prepared is competent to use the machine. Only members of staff who have been well-prepared and who are authorized must be allowed to use the machine.

Before being given authorization to use the machine, the operator must have:

- been trained by a qualified person, and understands the purpose and function of each control
- read and understands the instructions for the proper use of the machine and the safety regulations, or been trained on the contents of the instruction manual and the above mentioned regulations by a qualified person
- understands all of the warnings and instructions found on plates and tables on the machine, after having read this instruction manual or by means of the explanations given by a qualified person

## CHAPTER 2: GENERAL INFORMATION

### Record of modifications

Revision	Executor	Date	Description of modification



## 2. GENERAL INFORMATION

### 2.1 IDENTIFICATION DATA OF THE MANUFACTURER AND THE MACHINE

Manufacturer: Beta Max, Inc.  
P.O. Box 2750  
Melbourne, FL 32902-2750  
[www.betamaxhoist.com](http://www.betamaxhoist.com)  
[info@betamaxhoist.com](mailto:info@betamaxhoist.com)

Type: MATERIAL HOIST

Model: ☐ MAXIAL TRACK HOIST

Serial Number: \_\_\_\_\_

Year of Manufacture: 20\_\_\_\_

### 2.2 MACHINE IDENTIFICATION PLATE

The identification plate of the machine is placed on the Motor Pack. The plate allows clear identification of the type of machine, the manufacturer, the serial number and the fundamental characteristics of the machine.

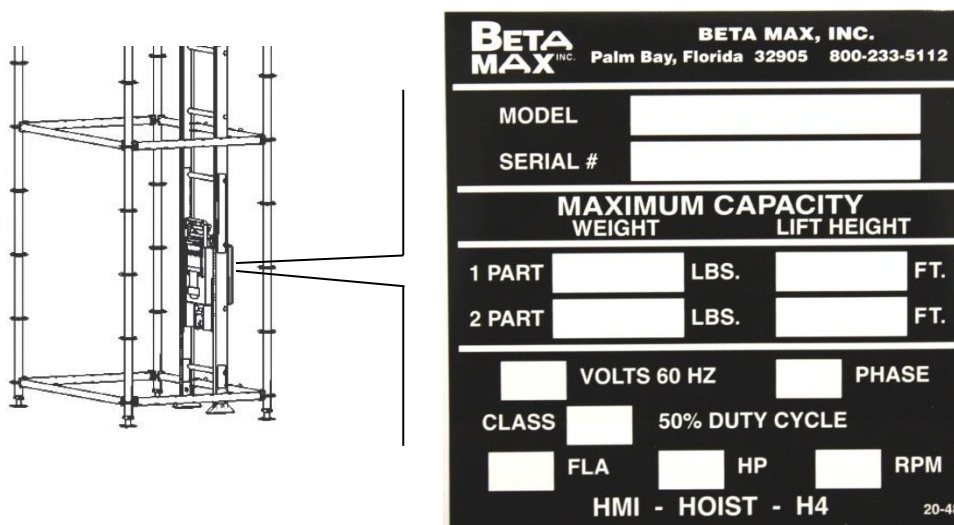


Figure 2.1





## 2.3 IDENTIFICATION SIGN

The machine is identified by means of the identification sign MAXIAL TRACK HOIST where:

- stands for Material hoist (machine used for materials ONLY)
- also meaning that the rated load of the machine is 450 lbs in the carrier basket.

The Maxial Track Hoist is a material hoist with a vertical ladder style supporting mast. Since the machine has been created with characteristics which are totally modular, whichever height of assembly is reached (up to the maximum lifting height of 325 feet) identical modules are to be used.

### **NOTE:**

Depending on the size of the structure or the work arrangement, BETAMAX machines may be equipped with a drum hoist for the lifting unit and the mast section of a ladder style.

The descriptions provided further on and the relative illustrations may show machines which have characteristics that are different from those of the machine referred to in this manual. This applies solely and exclusively to all the general descriptions, where reference is not made to fundamental details for understanding machine operation and more importantly, all descriptions of the machine's safety systems.



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## CHAPTER 3: MACHINE INFORMATION

Record of modifications

Revision	Executor	Date	Description of modification



## 3. MACHINE INFORMATION

### 3.1 PREFACE

In 1990, Beta Max introduced a portable track hoist system or ladder hoist, as it is sometimes called because of its ladder-like appearance. This product is being employed by scaffolding companies, utilities, processing plants, and a variety of commercial companies. Applications range from boiler repair, building construction and maintenance, to temporary lifting requirements within industrial environments. The Maxial Track Hoist provides a safer and more productive way to erect and dismantle scaffolding, a more cost-effective material lifting solution on long-term construction jobs, and a flexible material handling system for a variety of interior and exterior settings.

BetaMax products provide more value and flexibility for most low-end lift applications than heavy lifting equipment, and are safer and more productive than the “human chain” manual method typically used in the erection of scaffolding. The Maxial Track Hoist requires no tools to assemble.

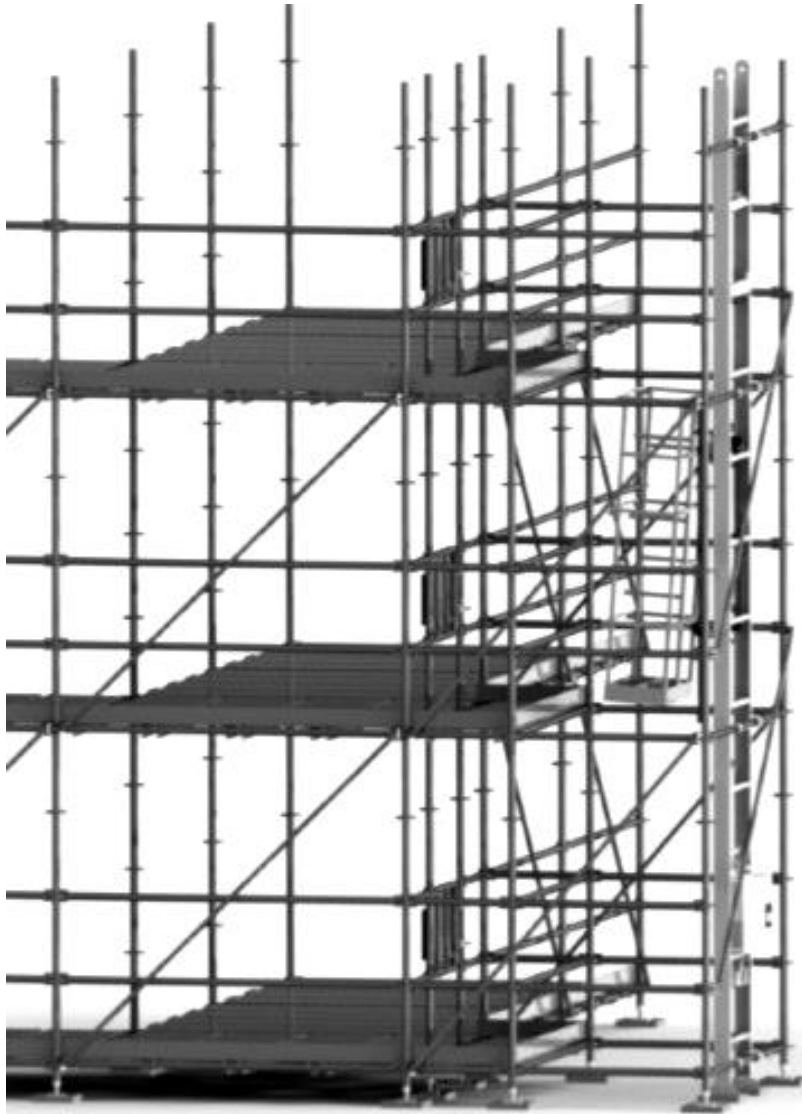
The Maxial Track Hoist is typically mounted in a vertical position when used with scaffolding. The hoist may be erected on the outside of the scaffold for easy access to the lift equipment or within the scaffolding bay to facilitate offloading of the carrier at elevated locations.

This chapter will cover the major components of the Maxial Track Hoist. Both models of hoist have the same major components but may vary slightly in appearance.

The Maxial Track Hoist has the following characteristics:

- Strong, lightweight - 3 lb/ft (44.6 g/cm) - aluminum track sections that are simple to assemble using unique components called Kwik bolts.
- Upper and lower limit switches, integrated with the winch that automatically senses when the load reaches the top and the bottom respectively and turn the motor off.
- A mechanical pawl style safety brake on the universal carriage that stops the entire load in the unlikely event of a broken cable.
- Both mechanical and electrical overload features that prevent workers from attempting to lift more than 450 lb (204.1 kg).
- A broad range of accessories that enables the Maxial Track Hoist to improve productivity, safety, and ease of work in the following construction applications:
  - Roofing
  - General building/construction
  - Scaffold erection and dismantling
  - Tiling
  - Plastering
  - Carpentry
  - Insulation installation

## 3.2 MACHINE LAYOUT



*Figure 3.1*

Maxial Track Hoist

### 3.3 DESCRIPTION OF THE MACHINE

The main sections of the machine shown in figure 3.2 and listed in the legend below are then described in detail in the subsequent paragraphs.

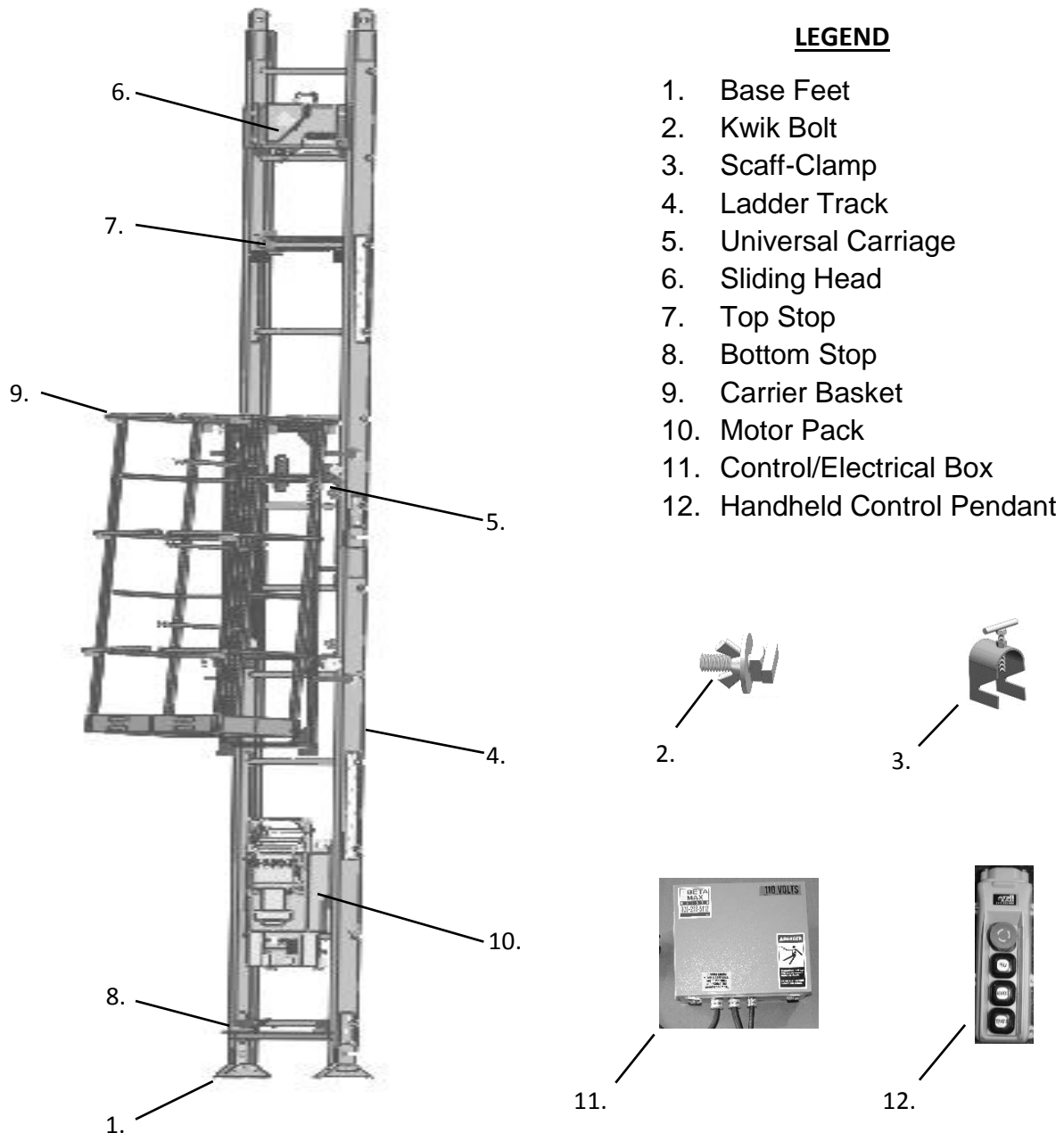


Figure 3.2

### 3.3.1 Track components

#### 3.3.1.1 Base Feet

The Base Feet are an important component in stabilizing the base of the ladder track. The Base Feet create a larger footprint for the ladder track rails. Stability is dependent on the machine's footprint.

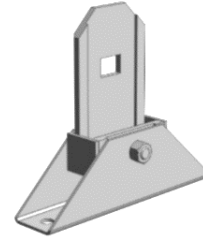


Figure 3.3

#### 3.3.1.2 Kwik Bolts

Kwik Bolts are used to attach the base feet and other ladder track sections together. They are designed to not come apart so that it can be easily installed and tightened without the possibility of dropping the individual components. The openings allowed for Kwik Bolts are longer on one side than the other, this allows the Kwik bolt to be placed in the hole and then twisted 90 degrees. Once twisted 90 degrees the Kwik Bolt can be held in place and the wing nut tightened without the use of additional tools.

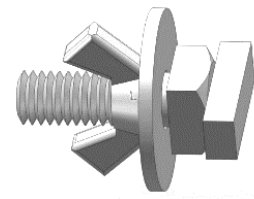


Figure 3.4

#### 3.3.1.3 Scaff-Clamps

Scaff-clamps are used to attach and secure the ladder track sections to a scaffold structure. They are of a u-shape design with cutout notches and a threaded T-bolt. The u-shaped Scaff-clamp slips over a scaffold horizontal member, the notches then grab the inside rail of ladder track, once in place tightening of the T-bolt pulls the ladder track against the scaffold horizontal member. Two Scaff-clamps are to be installed at each attachment location and should be spaced no further than 6 ft. 6 in. apart.

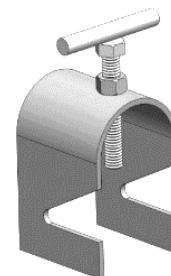


Figure 3.5

#### 3.3.1.4 Ladder Track

The track sections are built of rugged aluminum, so they are strong but lightweight, weighing only 3 lb/ft (44.6 g/cm). The track sections come in three lengths. Each track section is 24 in. (61.0 cm) wide and 4 in. (10.2 cm) deep. The rungs are not centered but are placed back on the section of the track, so the front 1.5 in. (3.8 cm) of the 4 in. (10.2 cm) of depth can be used as a track for the universal carriage. The top of each track has a tongue that fits into the bottom channel of the next track section.

- 9 ft 9 in. (3.0 m)
- 6 ft 6 in. (2.0 m)
- 3 ft 3 in. (1.0 m)

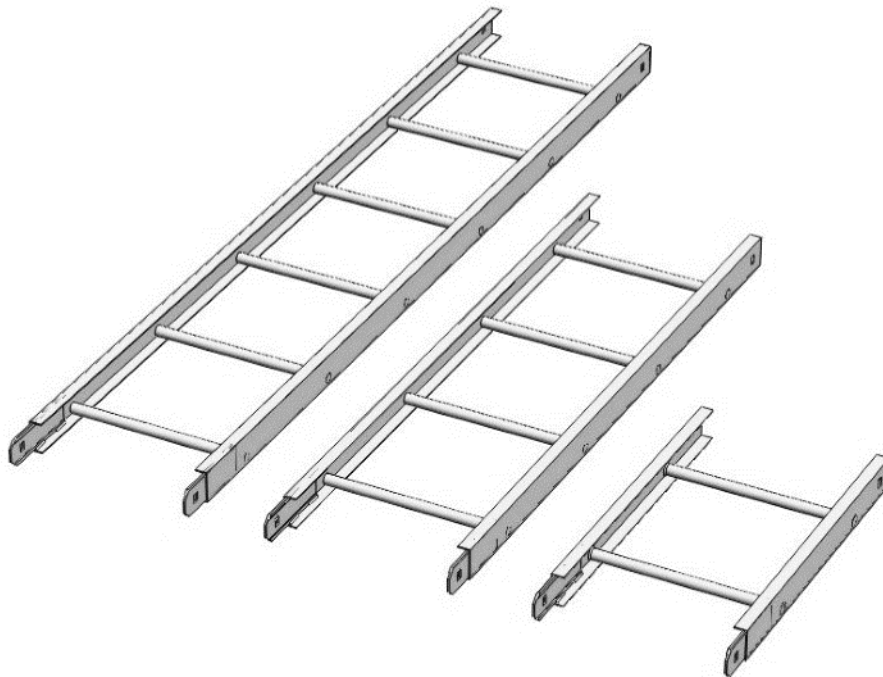


Figure 3.6



### 3.3.1.5 Universal Carriage

The Universal Carriage is made up of a metal frame that travels along the track sections by a series of guide rollers on the border of the frame. The travel movement is controlled by the drum and the wire rope cable in a up or down direction. It is designed to accept any of the different BetaMax designed Carrier Baskets.

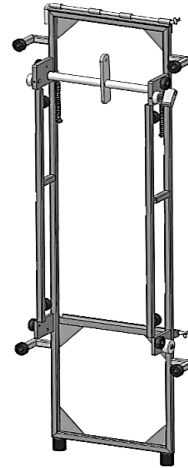


Figure 3.7

The Universal Carriage has a pawl style safety device designed in it to intervene to stop and hold the load of the Universal Carriage in the event of breakage of the wire rope cable.

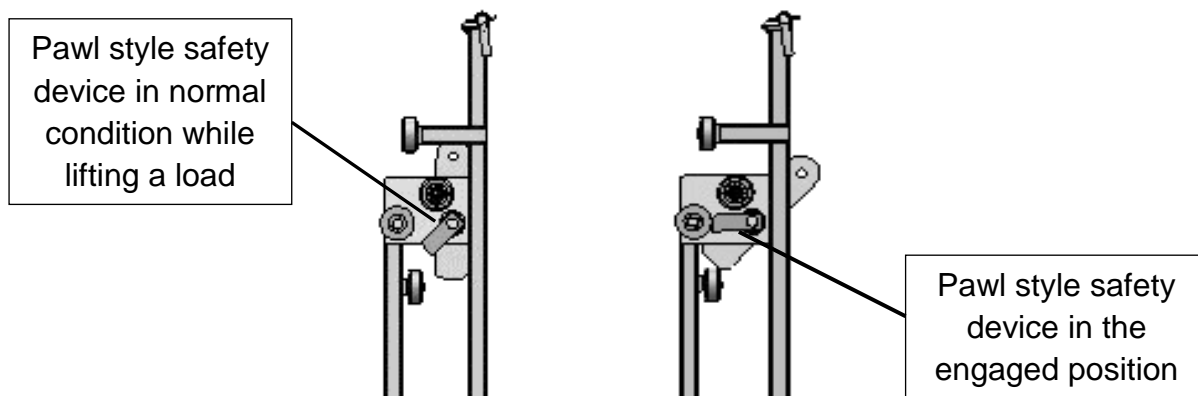


Figure 3.8

## **ANGER**

It is mandatory to identify and resolve the cause of the intervention of the pawl style safety device before placing the Maxial Track Hoist back into service.

### 3.3.1.6 Sliding Head

The Sliding Head holds the pulley over which the wire rope travels and is designed to make it easier to add or remove track pieces. It incorporates a 5-in. (12.7-cm) pulley on which the wire rope coming from the Motor Pack goes up and over clockwise, traveling from the front of the track and back down to the Universal Carriage. The Sliding Head slides on the track and a bottom arm that is spring-loaded pivots out to clear the horizontal rung members.

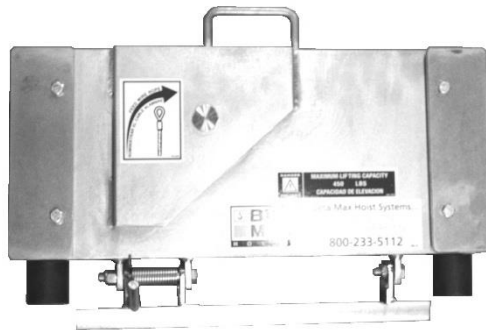


Figure 3.9

## **DANGER**

Sliding Head should never be mounted on the top rung of any ladder track.

## **DANGER**

Do not install the Sliding Head above the highest Scaff-clamp.

## **DANGER**

Do not install the Sliding Head on any unsupported track sections.

## **DANGER**

The final installation of the Sliding Head must at least be 20 feet away from the Motor Pack.

### 3.3.1.7 Moveable Carriage Stops

#### 3.3.1.7.1 Bottom Stop

The Bottom Stop is a movable carriage stop that rests on a rung below the Universal Carriage to stop the downward travel of the Universal Carriage at a predetermined location for loading and unloading a Carrier Basket. The Bottom Stop can be removed for flexibility of system use. It is used to lock out the Universal Carriage during installation, lifting the sliding head, and maintenance/repair to the Motor Pack.

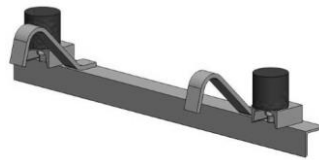


Figure 3.10

## DANGER

Bottom Stop should always be installed to stop the downward movement of the Universal Carriage when performing maintenance or repair to the Motor Pack.

#### 3.3.1.7.2 Top Stop

The Top Stop is a movable stop that slides over a rung of the track and is held in place by a locking pin. The Top Stop stops the upward travel of the Universal Carriage. It must always be installed at least one rung below the Sliding Head. The Top Stop can be moved for flexibility of system anywhere under the Sliding Head to also stop the carriage at a predetermined location for loading or unloading a Carrier Basket.

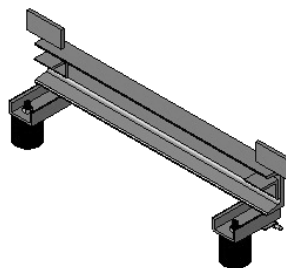


Figure 3.11

## CAUTION

The Top Stop must **ALWAYS** be installed at least one rung below the Sliding Head.

### 3.3.1.8 Carrier Baskets

A variety of attachments are available to lift different kinds of loads known as Carrier Baskets. BetaMax manufactures three main Carrier Baskets and other specialized custom Carrier Baskets that can be attached to the Universal Carriage. Each Carrier Basket is designed to hold the maximum rated load capacity of 450lbs. Main Carrier Baskets in production are the Universal Platform (figure 3.12), Modular (Systems) Scaffold Carrier (figure 3.13), and the Frame Scaffold Carrier (figure 3.14).



Figure 3.12



Figure 3.13



Figure 3.14

### 3.3.2 Hoist components

#### 3.3.2.1 Motor pack

The Motor Pack is the brawn of the system. It is made up of the shroud structure, transmission and drum, electric motor and brake, and the wire rope cable. The motor pack also contains the two safety limit switches of the unit, one for the up direction and one for the down direction.



Figure 3.15

#### 3.3.2.2 Electrical equipment

The electrical control system is the brains of the system. It is made up of the Control/Electrical Box and the Handheld Control Pendant. The safety limit switches although located on the Motor Pack are part of the electrical control system as well.



Figure 3.16

### **NOTE:**

For the detailed description of the mechanisms installed on the control panel, please refer to Chapter 7 "COMMAND AND CONTROL DEVICES" in this manual



## 3.4 TECHNICAL SPECIFICATIONS OF THE MACHINE

### 3.4.1 General data

Lifting speed.....	80 fpm
Rated load.....	450 lbs
Maximum lifting height.....	325 ft
Max. wind speed allowed during installation.....	25 mph
Max. wind speed allowed when in operation.....	35 mph
Max. wind speed allowed when not in operation (machine on the ground).....	70 mph
Required power line (110 version).....	110Vac-1Ph-30A
(220 version).....	220Vac-1Ph-20A
Absorbed current (110 version).....	22 A
(220 version).....	12 A
Max inrush current (110 version).....	77 A
(220 version).....	42 A
Power cable section.....	Section 3.4.9

### 3.4.2 Wire rope specifications

Type.....	7x19 galvanized aircraft cable
Size.....	3/16" or 1/4"
Capacity (3/16").....	350 feet
(1/4").....	250 feet
Wire rope breaking strength (3/16").....	4500 lbs
(1/4").....	7150 lbs

### 3.4.3 Electrical specifications of the machine

Number of electric motors installed.....	1
Motor lifting power consumption.....	1.1 Kw
Motor Supply voltage (110 version).....	110Vac-1Ph
(220 version).....	220Vac-1Ph
Power frequency.....	60 Hz
Voltage of controls.....	24Vac
Frequency of controls.....	60 Hz



#### 3.4.4 Technical specifications of electric motor

Type .....	self-braking single-phase
Motor size .....	TIPO 2329
Protection against the elements .....	IP55
Duty cycle .....	50%
Isolation class .....	B
Rated output .....	1.1 Kw
Revolutions .....	1600
Rated voltage (110 version) .....	110Vac
(220 version) .....	208Vac
Rated current (110 version) .....	20 A
(220 version) .....	11 A
Inrush current (110 version) .....	70 A
(220 version) .....	39 A
Power factor .....	0.99 cos
Frequency .....	60Hz

#### 3.4.5 External dimensions and weight

Base feet (dimension) .....	3" x 9" x 8"
(weight) .....	3 lbs
Kwik bolt (dimension) .....	2" x 2" x 2"
(weight) .....	0.2 lbs
Scaff-clamp (dimension) .....	3" x 3" x 5"
(weight) .....	0.8 lbs
Ladder track (9'-9") (dimension) .....	24" x 4" x 122"
(weight) .....	30 lbs
(6'-6") (dimension) .....	24" x 4" x 83"
(weight) .....	21 lbs
(3'-3") (dimension) .....	24" x 4" x 44"
(weight) .....	13 lbs
Universal carriage (dimension) .....	27" x 9" x 76"
(weight) .....	60 lbs
Sliding head (dimension) .....	24" x 5" x 16"
(weight) .....	18 lbs
Top stop (dimension) .....	21" x 4" x 8"
(weight) .....	12 lbs
Bottom stop (dimension) .....	23" x 6" x 5"
(weight) .....	6 lbs



Motor pack (dimension).....	20" x 11" x 35"
(weight).....	166 lbs
Control/electrical box (dimension).....	16" x 16" x 15"
(weight).....	30 lbs
Handheld Control Pendant (dimension).....	12" x 12" x 4"
(weight).....	5 lbs
Universal Platform (dimension).....	32.5" x 24" x 64.25"
(weight).....	84 lbs
Modular (Systems) Scaffold Carrier (dimension).....	2 – 15.5" x 21" x 72"
(weight).....	96 lbs
Frame Scaffold Carrier (dimension).....	67" x 24" x 74"
(weight).....	114 lbs

#### 3.4.6 Internal dimensions and capacity

Universal Platform (dimension).....	30" x 17" x 36"
(capacity).....	450 lbs
Modular (Systems) Scaffold Carrier (dimension).....	2 – 13" x 12" x 72"
(capacity).....	450 lbs
Frame Scaffold Carrier (dimension).....	64" x 18" x 72"
(capacity).....	450 lbs

#### 3.4.7 Safety equipment

Downward stopping device.....	YES
Upward stopping device.....	YES
Anti-fall device (SAFETY BRAKE).....	YES
Electric motors overload device.....	YES
Automatic electric motor brake when power supply is interrupted.....	YES
Overload control device.....	YES



### 3.4.8 Forces on scaffold

For a balanced load; the pullout force will be equally distributed into **F1** and **F2** as denoted. For forces that push on the scaffold **F1** and **F2** will be reversed. For a balanced load, shear force is minimal. Wind is not taken into account. Forces are for a 175 ft system, maximum push/pull forces in direction indicated; **P1=490 lb** and **P2=214 lb**. Forces shown is assuming Maxial system is clamped to scaffolding using 2 Scaff-Clamps every 6.5 ft; these clamps should be arranged as shown: 21 in. apart, centered on centerline. Forces shown are the maximum when the basket is at any position in the system.

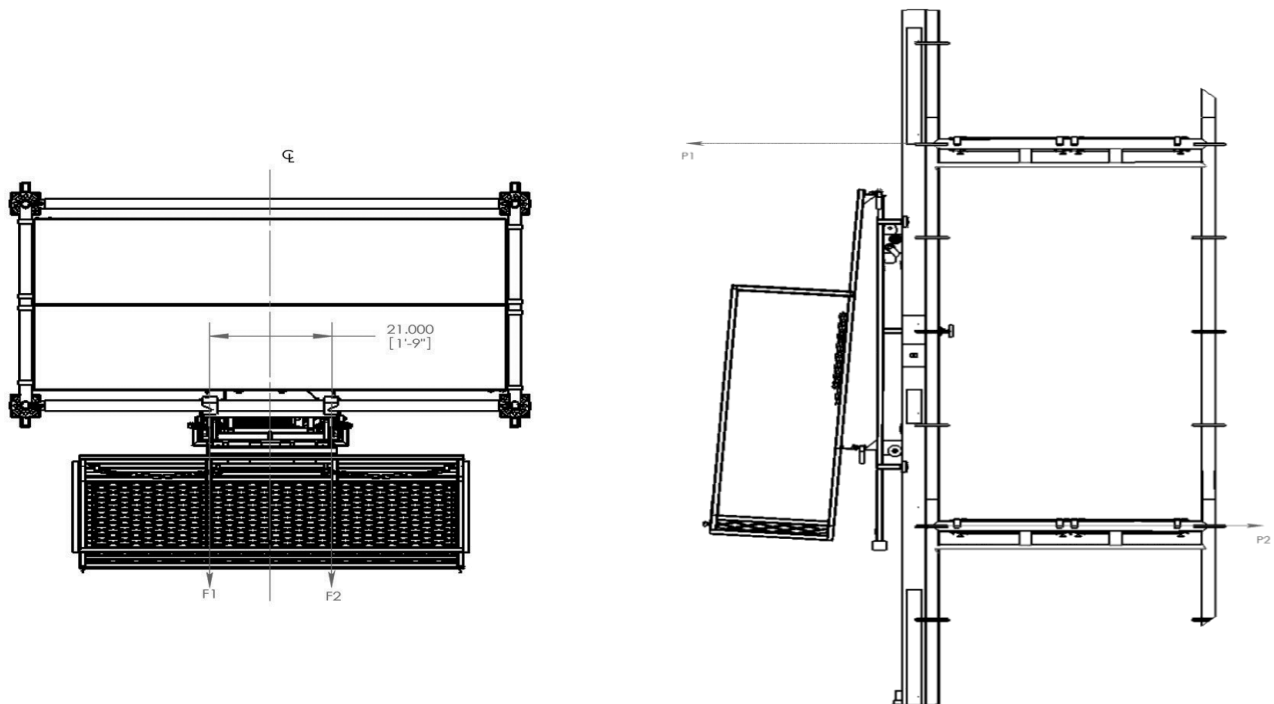


Figure 3.17



### 3.4.9 Electrical

#### 3.4.9.1 *Understanding electricity*

The electricity that powers your Maxial Track Hoist is as important as the hoist itself. Electricity may seem complicated, and an easy-to-understand explanation would be helpful. The following is an attempt to help explain and simplify electricity.

Let us compare electricity to water in a way everyone can understand. Electricity is like water passing through a hose or pipe and controlled by a faucet.

The following is a list of terms and their explanations:

- CHARGE
- VOLTAGE
- AMPERAGE
- RESISTANCE

- “CHARGE” is a group of particles gathered together.
- “VOLTAGE” is CHARGE that flows and builds up pressure. The higher the voltage, the more charges that flow.
- “AMPERAGE” is the measurement of the charge.
- “RESISTANCE” is restricting or limiting the flow of charge.

In using the example of water in a pipe, the amount of pressure in the pipe is the equivalent to the VOLTAGE. The amount of water flowing through the pipe (volume) can be thought of as the AMPERAGE. And finally, RESISTANCE can be described as the interaction of the faucet (power supply) and the size of the hose (length and gauge of electrical cable).

The measured voltage at the electrical outlet may be 110V AC or 220V AC with nothing plugged in or just a couple of pieces of equipment running. In the context of the water pipe, if the shower is in use, the dishwasher machine is running, and the lawn sprinklers operating, then the pressure (VOLTAGE) 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 constant, it will decrease. How much the voltage drops depends on the electric power company, specific wiring to the job site, and the length and type of extension power cable (hose size) being used.

What about the faucet (RESISTANCE)? If the faucet is rusted, corroded, undersized, or located a long distance from the source, the water pressure (VOLTAGE) will not be as strong as desired. Likewise, with electricity, if the electrical connections are corroded, the electrical extension cable is undersized or too long, or any combination of these circumstances exist, then the VOLTAGE at the hoist may be too low to lift the load, and the hoist could become damaged.



Beta Max electrical hoists are high energy and can lift large loads at high speeds, which require a lot of AMPERAGE (water volume). Therefore, a lot of continuous VOLTAGE (pressure) is required. As the load increases, more AMPERAGE is needed. Maxial Track Hoists require more AMPERAGE than a simple rotary saw or drill because of the extra work being performed.

### NOTE

BETA MAX Maxial Track Hoists require 30 amperes for the 115V AC models and 20 amperes for 220V AC models.

### NOTE

BETA MAX requires a 50-percent duty cycle for the Maxial Track Hoist. This means the hoist should be in continuous operation for only 20 minutes out of every 40 minutes.

#### 3.4.9.1.1 Plug connectors

Maxial Track Hoists are supplied with interlocking plugs because they are safer and more efficient conductors of electrical current. The hoists are also fitted with 30-ampere or 20-ampere supply service due to the higher energy (amperage) requirements. BetaMax suggests no less than 10 gauge 3 conductor power cable (10/3) for these models. Heavier electrical cable is required for Maxial Track Hoists and will allow a longer distance between the power source and hoist without causing an excessive resistance to the current flow. A result of an increase in resistance is the buildup of heat and voltage drop.

### CAUTION

Using excessively long electrical cable and/or incorrect wire gauge size will generate high resistance, heat, and the potential for a fire hazard. Use only the correct length and gauge as recommended by the manufacturer.



Electrical cables, whether hanging from a height or stretched out along a flat surface, will have strain. Strain will damage the cable by either pulling apart the connectors or separating the wires inside. A strain relief is a securing device on an electrical cable that allows the cable to move freely without separating it from the connector or power supply. The strain relief allows flexibility in the cable without putting stress on attachment points.

BETA MAX strongly recommends the use of strain relief devices on the electrical cables to protect the hoist, connectors, and power supply from damage.

The Maxial Track hoist is powered by 115V AC or 220V AC motor that drives a gear reduction transmission providing a single-rope lifting capacity of 600 lb (272.2 kg). The 600 lb lifting capacity is an end of the wire rope cable capacity. The net capacity is 450 lbs which is from the end of rope capacity minus the Universal Carriage and Carrier Basket. The electric motor has two windings with one end of each connected together and run capacitors across the other two ends.

When the up winding is directly across the power supply and the down winding is in series with the capacitors, the phase shift makes the hoist turn in the up direction, reeling in wire rope. When the down winding is directly across the power supply and the up winding is in series with the capacitors, the phase shift makes the hoist turn in the down direction reeling out wire rope.

Remember, voltage decreases or is dropped across the power cord as current increases and current carrying capacity is proportional to the size of the conductors. When longer wire runs are necessary, the supply wire size should increase up to 8 and 6 gauge due to the inrush of current needed to start the electric motor.

Power Cord Extension Size and Length	10/3 SO cord up to 100 ft and 8/3 SO cord up to a maximum of 150 ft
--------------------------------------	--

### 3.5 INTENDED USE

The machine's specific applications:

- Roofing
- General building/construction
- Scaffold erection and dismantling
- Tiling
- Plastering
- Carpentry
- Insulation installation

The machine is designed to provide the user with the following advantages:

- transport material and work equipment safely, efficiently and economically
- optimize and rationalize the work process in a modern construction site
- easy assembly and disassembly requiring only two people
- safety during operation, assembly, disassembly and when the structure may be repositioned to other parts of the construction site
- conformity with all existing international regulations for this type of machine

#### **DANGER:**

Safe operation of the machine is guaranteed only for the functions and material listed in this instruction manual.

BETAMAX disclaims all responsibility if the machine is not used in accordance with the purposes indicated and in conformity with the instructions stipulated in this manual

### 3.6 NORMAL CONDITIONS OF STORAGE

Storage of the machine's various components does not require particular environmental conditions. The only recommendation is to store the equipment in a place where water infiltration is avoided as much as possible, as in the long run, this may affect the reliability of the machine's electrical system. Do not cover the machine or its components with synthetic fabrics or plastic in order to prevent condensation from forming. If the machine and its components are stowed when wet, always ensure that the place where they are stowed is adequately ventilated.

### 3.7 STORAGE CONDITIONS WITH TEMPERATURES REACHING A MINIMUM OF 14°F

If the machine is stored in a closed and heated place so as to protect it from the elements, no particular precautions need to be taken, as long as the temperature is kept higher than 14°F. After having stored the machine outdoors, with temperatures close to 14°F, it is necessary to check for any structural damage caused by water infiltration and subsequent freezing.



### **3.8 STORAGE CONDITIONS WITH TEMPERATURES LOWER THAN 14°F**

The following precautions must be taken when storage temperatures are lower than 14°F:

- in order to protect the electrical system from damage caused by low temperatures, remove the electrical control panel and the pendant and store them in a dry, heated place or either way in a place where the temperature is not lower than 14°F.
- in order to protect the motor pack from damage caused by low temperatures, remove the motor pack from the ladder mast structure and store in a a dry, heated place or either way in a place where the temperature is not lower than 14°F.

### **3.9 AMBIENT WORKING CONDITIONS**

The machine is designed and constructed to be used in temperature conditions which are not lower than 14°F. The lubricating grease for the gear system has working temperatures ranging from 14°F to 122°F.

Temperatures lower than 14°F do not provide sufficient reliability from the fitting components of the electric motors, generators, etc. and more importantly from the mechanical behavior of the machine's structural components, as they tend to weaken at low temperatures. Therefore, in either case, do not start-up the machine if the temperature is close to or lower than 14°F.

## CHAPTER 4: HANDLING AND TRANSPORTATION

Record of modifications

Revision	Executor	Date	Description of modification



## 4. HANDLING AND TRANSPORTATION

### 4.1 INTRODUCTION AND PRELIMINARY OPERATIONS

The area to be used for preparation of the material, loading, unloading, temporary storage or warehousing must have clear signs and closed off, in such a way so as to prevent access to outsiders or anyone not authorized.

#### **ATTENTION:**

The operations of preparing, packaging, transporting, handling, loading and unloading the machine, must be carried out by personnel who are experienced and/or properly trained

The operations of preparing, packaging, handling, loading and unloading the machine must be carried out by personnel who is trained appropriately and effectively and directly monitored by the site manager (SUPERVISOR) who has to ensure that the above mentioned operations are carried out up to standard, in compliance with all the safety conditions while meticulously adhering to the instructions found within this instruction manual.

#### **DANGER:**

An approximate assessment of the installation conditions is the greatest and most common cause of accidents, often with a fatal outcome

All the components constituting the machine must be meticulously checked and examined before making them available for a new installation, in order to remove any parts which may be broken, deformed, cracked, corroded or affected by other factors, and no longer ensure sufficient reliability. Once the load is set in place, one must absolutely ensure its stability, and this must be done with a sufficient quantity of belts, ropes etc. arranged in the most appropriate ways and of adequate sturdiness in order to block the load in question.

#### **ATTENTION:**

The members of staff, qualified and trained in carrying out the operations of preparing, packaging, transporting, handling, loading and unloading the machine, must be equipped with suitable equipment, according to the particular risks they may be exposed to and individual protection gear such as, work gloves, hard hat, safety footwear with non-slip soles and reinforced metal as well as a toe-cap, safety belts with shoulder straps having hook components, and a high visibility jacket.





## 4.2 TRANSPORTATION

The packaging of the modular components constituting the machine is designed primarily to reduce clutter, as much as possible. This particular type of packaging greatly facilitates the process of unloading the material; it is obligatory to use a lift truck (forklift) to unload the material, due to the weight as well as for reasons of safety of personnel; moreover, in this way, the material is handled with care when in movement and damage is avoided.

The various small components are placed inside proper packaging, inside appropriate boxes and these are grouped together with all the machine's accessories.

Normally, the same types of components are packed together; the machine components are loaded as follows:

- the first components to be loaded are all the packages of the ladder track, previously packed together in stacks (depending on the measurement of the loading unit of the transport vehicle)
- the universal carriage and carrier basket are packaged together
- the motor pack, electrical/control box, pendant, top stop, bottom stop, base feet, sliding head, kwik bolts, and scaff-clamps are all packed together in a crate

## 4.3 HANDLING

Transportation of the machine must be carried out in compliance with the Highway Code that is in force in the locality where it must be carried out, even if the distance covered is short, from one construction site to another. With regards to transportation for the first installation, BETA MAX uses a tested positioning system, to place the various components of the machine onto the various transport vehicles. This allows the warehousing department to establish the exact overall dimensions and therefore, the capacity that the transport vehicle is required to have for any type of arrangement of hoist which is to be dispatched. This positioning system is valid for the classic type of transportation by truck as well as for transportation by container. The handling procedure described below can be considered as a general rule, applicable for every trip the machine will make during its operational life.

The general criteria to be followed, in order to avoid any damage when handling the machine when transporting it from one construction site to another, mainly concerns the maneuvers when loading and unloading, which are critical stages during which considerable damage can be done. Consequently, the members of staff who are responsible for these operations must:

- always ensure that the material to be lifted, which may consist of a packed group of components or a single component, does not accidentally hook onto other components of the machine, dragging them high up
- if the package that is being lifted consists of the same type of components and these are joined together, ensure that the binding tie is intact and adequately strong enough
- not apply any means to the components of the machine, in any way, to facilitate the lifting process, such as metal eye bolts, which could cause structural damage to various components of the machine
- use flexible belts, which are allowed, arranging them in a suitable layout for the component to be strapped correctly when lifted, in accordance with the load capacity that the belt itself can sustain
- avoid, in every way, knocking the load against any other components of the machine or against the ground
- ensure that when the material is made to rest on the ground, it can maintain its stability

When the machine is lifted, you must avoid it from jerking or swinging abruptly, and you must also pay utmost attention when resting it on the ground, which must be done in such a way so as not to damage the machine.

### **DANGER:**

It is absolutely forbidden to stay in the operating area of the lifter while the machine's components are lifted and moved.

### **ATTENTION:**

During the loading/unloading stage, which will be described further on, or any other stages of work that involve lifting material, for no reason whatsoever should anyone pass or stay under the suspended load.

## 4.4 LOADING AND UNLOADING

In order to optimize all subsequent stages of work, before proceeding to load or unload the machine, carry out the operations described below:

- close off the area where operations of loading and unloading the machine are carried out, in a clear and unequivocal manner, and enclose its perimeter in an effective manner, to prevent possible access to outsiders or persons anyhow not authorized. Bear in mind that the subsequent operations will be implemented at a substantial height from the ground and should any component or equipment accidentally fall, it can result in immediate and serious danger
- ensure that the floor on which the equipment constituting the machine is to be placed, is horizontal and sufficiently stable, so not to cause dangerous situations of the equipment tipping over, collapsing or subsiding
- unload the machine from the transport vehicle using a lift truck which has an appropriate lifting system. The machine must be perfectly balanced
- for no reason whatsoever should anyone pass or stay under suspended loads during this stage and the other stages, which will be described further on, of un/loading. Using a lift truck only the driver of the same truck will be authorized to carry out the operations; all other persons will have to stay at a distance, where they cannot be affected in case of the load accidentally tipping over and they have to remain there until the operation is carried out completely. It is absolutely necessary for individual protection gear to be worn during these operations
- unload the remaining material and accessories constituting the machine and distribute them in an orderly and safe manner within the closed off area. Ensure that the material placed on the ground cannot, in any way, accidentally move, constitute a danger to persons working nearby or subsequently interfere when moving the machine;
- if part of the material has been placed in the free spaces inside the machine, or components have been placed in rows lying on top of each other (to optimize space allocation), remove the material from this layout and place it on the ground before carrying out any other handling operation

### **DANGER:**

Close off the area where operations of loading and unloading the machine are carried out, in a clear and unequivocal manner and prevent possible access to outsiders or persons anyhow not authorized to enter this area. Should any components or equipment accidentally fall from a substantial height when loading or unloading, this can result in immediate and serious danger.



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## CHAPTER 5: INSTALLATION

Record of modifications

Revision	Executor	Date	Description of modification



## 5. INSTALLATION

### 5.1 INTRODUCTION

The operations described in this chapter are of particular importance as they explain the installation, disassembly and raising the sliding head procedures of the machine. Experience has shown that accidents (fortunately rare) have never occurred during normal operation, but have always occurred during the installation process, raising the sliding head, and even more during the disassembly process of the machine. During these operations there are utensils and equipment, material and components of the machine which have not yet been permanently fixed and they simply rest on the horizontal level of the working area and the machine itself can seem to be stable even though it is not yet completely and definitely mounted and anchored to the structure in question.

#### **ATTENTION:**

Before starting to implement the operations mentioned below, the persons who are designated to perform the work must have read and more importantly UNDERSTOOD the instructions in this manual.

The operations of: loading/unloading, handling, transporting, assembling, using and disassembling the machine must be carried out by personnel who is trained appropriately and effectively and directly monitored by the site manager (SUPERVISOR) who has to ensure that the above mentioned operations are carried out up to standard, in compliance with all the safety conditions and meticulously adhering to the instructions found within this instruction manual.

#### **DANGER:**

An approximate assessment of the installation conditions is the greatest and most common cause of accidents, often with a fatal outcome.

#### **ATTENTION:**

During the installation process, the use of the machine must be absolutely forbidden to all unauthorized personnel and must remain the exclusive responsibility of the person designated to carry out this process

All the components constituting the machine must be meticulously checked and examined before every new installation, in order to remove and unequivocally mark any parts which may be broken, deformed, cracked, corroded or affected by other factors, and no longer ensure sufficient reliability. The members of staff, qualified and trained in carrying out the operations of assembling, checking, handling, using and disassembling the machine, must use suitable equipment, according to the particular risks they may be exposed to and individual protection gear such as, work gloves, hard hat, safety footwear with non-slip soles and reinforced metal as well as a toe-cap, safety belts with shoulder straps having hook components, and high visibility jacket, etc.

The following functions have to be constantly monitored during the assembly operations:

- the exact positioning of the structures and components constituting the machine, in accordance with the heights and indications shown in the installation design, and particularly in conformity with the horizontal and vertical measurements or distances provided in the design itself;
- proper implementation of the machine's anchor devices, in conformity with the executive layouts and particular instructions provided by the manufacturer;
- functionality and efficiency of the mechanical, electromechanical and electrical safety devices, specifically intended for assembly, use and disassembly of the machine.

### **ATTENTION:**

Meticulously adhere to the configurations and layouts provided and permitted in this instruction manual. Layouts and configurations which are different from those provided are exclusively allowed if specific authorization is given by BETAMAX's technical office. BETAMAX disclaims all responsibility for non-compliance or all the more for contributory negligence in respect to the restrictions given.

## **5.2 INSTALLATION DATA SHEET**

The data sheet contains the weight of the machine and the heights relative to the installation of the machine in question.

The data sheet must be completed by the site manager.

The data sheet duly photocopied and signed must be handed over to the operator designated to carry out the machine's assembly. This document is to be the reference document for the installation process. See appendix A in this manual.

### **DANGER:**

Non-conformity with the indications given in the assembly data sheet can damage the machine and endanger the operators responsible for its use. BETAMAX disclaims all responsibility deriving from non-compliance with that which is specified in the assembly data sheet.

### 5.3 INSTALLATION PROCEDURE

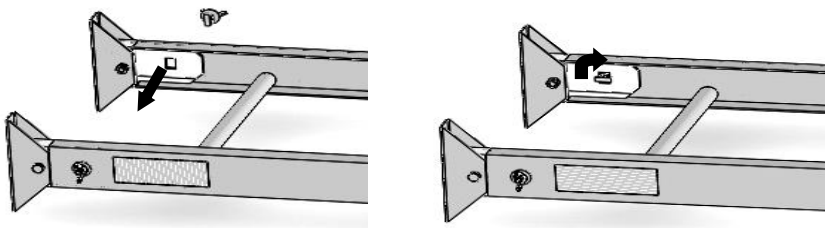
Once the ideal location for the Maxial Track Hoist has been determined, the setup and operation are not complicated. There are no tools necessary for installing your Maxial Track Hoist. When deciding upon the most suitable position for the hoist, several items are to be considered. These include whether the unit is to be attached to modular or frame scaffolding, whether the operating system is centrally located, and whether the scaffold carrier clearances are satisfied.

1. Using a 9 ft 9 in. (3.0 m) section of track, lay the track flat on the ground. Notice that the rungs are not centered front to back on the track. Track should be positioned with rungs closer to ground than to installer.
2. Insert the Base Feet into the bottom of the 9 ft 9 in (3.0m) section of track.



*Figure 5.1*

3. Fasten the Base Feet to the track with a Kwik bolt in each foot assembly. When installing the Kwik Bolt there is no need to remove the wing nut and washer. Push the Kwik Bolt through and turn 90 degrees. Hold in place and tighten the wing nut.



*Figure 5.2*



4. Locate the Universal Carriage. Insert the Universal Carriage onto the track section starting with the bottom of the Universal Carriage (bumper end) at the top the track to the bottom of the track. To fully install the Universal Carriage onto the track you must manually release the Pawl Safety Device.

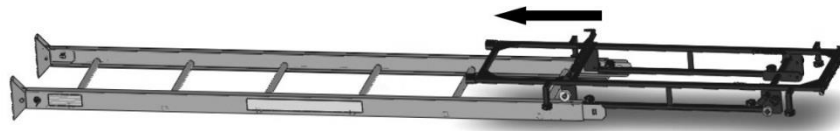


Figure 5.3

5. Slide the Universal Carriage all the way down the track until the bumpers at the bottom of the Universal Carriage is even with the bottom of the track section, not all the way to the end of the Base Feet. There must be enough room at the base of the track to lift it vertically.

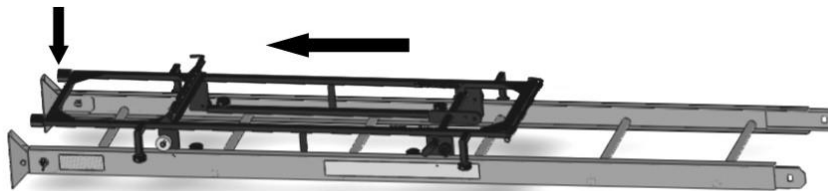


Figure 5.4

6. Lift the track section into an exact vertical position against the scaffolding, so that the carriage is facing out.

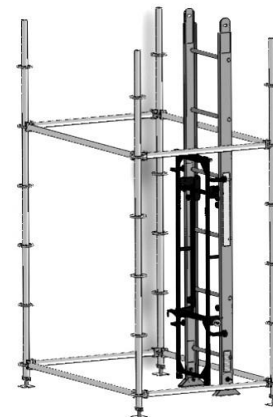


Figure 5.5

7. Once the track is in the correct position and plumb, attach it to the horizontal members of the scaffolding section using Scaff-clamps. Twist the T-bolt to pull the track tightly against the scaffolding. There should be 2 Scaff-clamps positioned no farther than 6 ft 6 in. (2.0 m) apart all the way up the track.

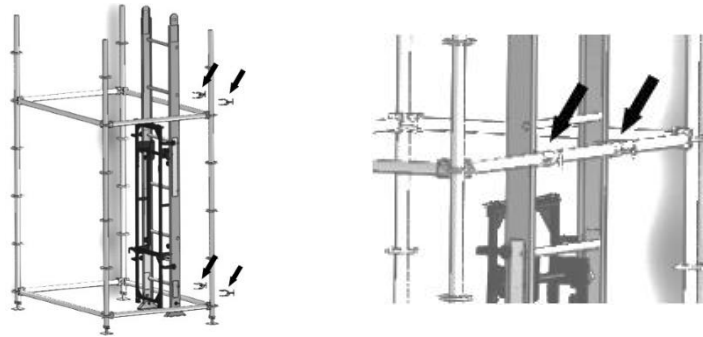


Figure 5.6

8. Using a second 9 ft 9 in. (3.0 m) section of track, lay the track flat on the ground. Insert the Sliding Head section so that the rung-lock mechanism is positioned toward the bottom of the track and the pulley facing front.

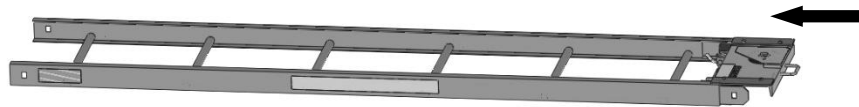


Figure 5.7

9. Slide the Sliding Head section down from the top of the track section until it is secured onto a rung in the middle of the track.

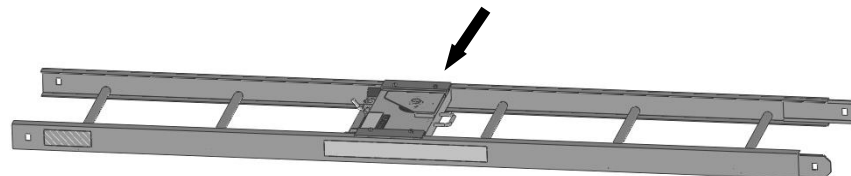
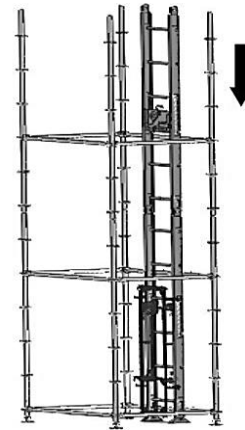


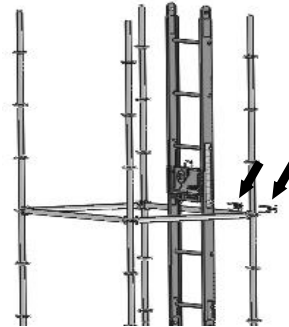
Figure 5.8

10. Stack the track section with the Sliding Head vertically onto the track section securely fastened to the scaffolding. Align the holes that are in the tongue with the holes in the channel.



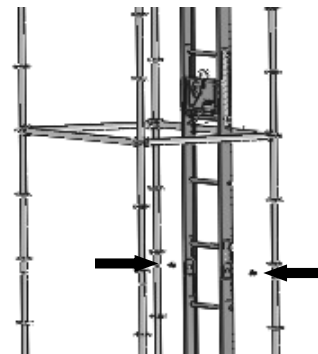
*Figure 5.9*

11. Secure the track to the horizontal scaffolding with two Scaff-clamps on the sides of the track.



*Figure 5.10*

12. Fasten the two track sections together with a Kwik bolt in each side. When installing the Kwik bolt there is no need to remove the wing nut and washer. Push the Kwik bolt through and turn 90 degrees. Tighten wing nut.



*Figure 5.11*

13. Grasp the sliding head section by the handle, pulling it up the track and resting it on the rung that is no higher than the last scaff-clamp. Ensure the sliding head locks into position on top of the rung.

### **DANGER**

Sliding Head should never be mounted on the top rung of any ladder track.

### **DANGER**

Do not install the Sliding Head above the highest Scaff-clamp.

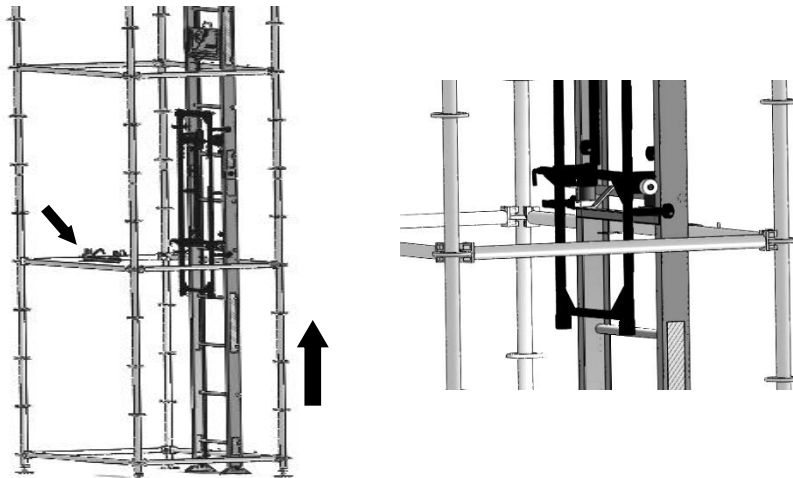
### **DANGER**

Do not install the Sliding Head on any unsupported track sections.

### **DANGER**

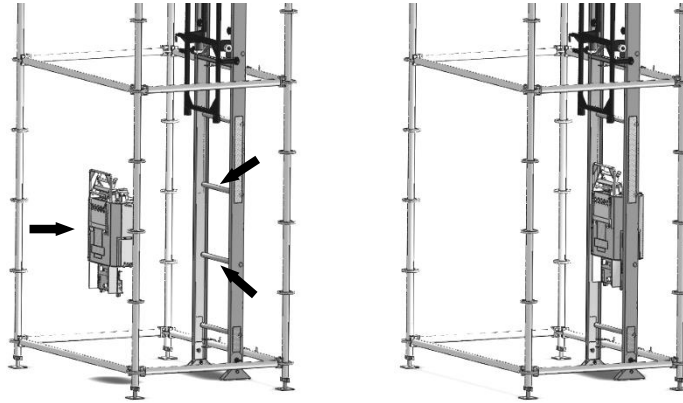
The final installation of the Sliding Head must at least be 20 feet away from the Motor Pack.

14. Slide the Universal carriage up the track so that the bottom of the carriage is higher than the fifth rung from the bottom section of the track. The carriage will stay up by the mechanical brake. Install the Bottom Stop on the fifth rung and lower the Universal Carriage for added safety while working underneath the Universal Carriage. The mechanical brake will need to be released to lower the Universal Carriage.



*Figure 5.12*

15. Set the hoist Motor Pack in front of the base section with the wire rope on the drum facing out to the Universal Carriage side of the track. Set the bottom of the Motor Pack on the second rung from the ground. Slide the Motor Pack in towards the back of the track, twisting and locking the bottom and top rung latch.



*Figure 5.13*

16. Attach the Control/Electrical Box to a horizontal member of the scaffolding, so the box will be in view of the person operating the hoist.
17. Connect the motor cable from the Control/Electrical Box to the Motor Pack.
18. Connect the Handheld Control Pendant to the Control/Electrical Box.
19. Connect the power plug from the Control/Electrical Box to the correct power source (110Vac-1ph-30A or 220Vac-1ph-20A) using no smaller than 10/3 power cord extensions.
20. Press the DOWN button on the Handheld Control Pendant with one hand and grasp the end of the wire rope cable with the other hand, constantly pulling against the slack rope roller assembly. While pressing the DOWN button on the Handheld Control Pendant, walk backwards away from the hoist about 20ft (6.096 m).
21. Keeping a tight pull on the wire rope from the drum, pass the end of the wire rope cable to a person at the Sliding Head section.

22. Thread the wire rope cable from the hoist through the outer side of the pulley on the Sliding Head assembly and back down through the center to attach to the Universal Carriage. **Do not attach to the Universal Carriage, pull all of the extra wire rope cable through the Sliding Head Section.**

## CAUTION

Pull all of the extra wire rope cable through the Sliding Head section and re-spool onto the drum of the Motor Pack before connecting to the Universal Carriage.

23. Be sure to re-spool any extra wire rope back on the drum of the Motor Pack before connecting to the Universal Carriage to assist in eliminating twist in the wire rope. Connect the end of the wire rope to the braking bar hitch pin on the Universal Carriage.
24. Press the UP button on the Handheld Control Pendant to lift the Universal Carriage off of the Bottom Stop. Remove the Bottom Stop. And lower the Universal Carriage to the ground by pressing the DOWN button on the Handheld Control Pendant.

25. Secure the desired carrier onto the universal carriage (using carriage mounting pins with keepers). Install the top mounting pin first and then the lower mounting pin.

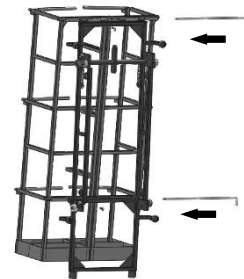


Figure 5.14

26. Insert the top stop onto the track one rung under the sliding head.

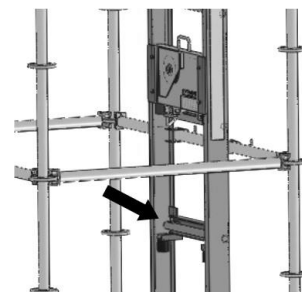


Figure 5.15

27. The Maxial Track Hoist is now ready for use.



## 5.4 RAISING THE SLIDING HEAD

This procedure takes two people, one at the Motor Pack and one above the Sliding Head.

1. Raise the Universal Carriage up the track by pressing the UP button on the Handheld Control Pendant so that the bottom of the carriage is higher than two rungs above the Motor Pack.
2. Install the Bottom Stop on the rung that is two rungs above the Motor Pack and lower the Universal Carriage by pressing the DOWN button on the Handheld Control Pendant onto the Bottom Stop while working underneath the Universal Carriage.
3. With a glove on, grasp the wire rope cable with one hand at least 1 ft (30.48cm) above the Motor Pack. (Always keep a tight pull on the wire rope.)
4. With the opposite hand, press the DOWN button on the handheld control pendant while keeping a tight pull on the wire rope cable with the other hand. Release approximately 20 ft (6.096 m) of wire rope cable.

### CAUTION

Do not disconnect the wire rope cable from the Universal Carriage.

5. The person working above at the Sliding Head will grasp the sliding head section by the handle by reaching around the track, pulling it up the track and resting it on the rung that is no higher than the last Scaff-clamp. Ensure the Sliding Head locks into position on top of the rung.

### DANGER

Sliding Head should never be mounted on the top rung of any ladder track.

### DANGER

Do not install the Sliding Head on any unsupported track sections.



## **DANGER**

Do not install the Sliding Head on any unsupported track sections.

## **DANGER**

The final installation of the Sliding Head must at least be 20 feet away from the Motor Pack.

6. If you need more wire rope to get to a higher rung, repeat steps 3 through 5.
7. If you have extra wire rope cable after the Sliding Head is resting on the rung at the desired height, keep a tight pull on the wire rope cable with a gloved hand, press the UP button and reeve the excess wire rope cable onto the drum, never letting your hand get closer than 1 ft (30.48 cm) to the Motor Pack.
8. Press the UP button on the Handheld Control Pendant to lift the Universal Carriage off of the Bottom Stop. Remove the Bottom Stop. And lower the Universal Carriage to the ground by pressing the DOWN button on the Handheld Control Pendant.
9. Remove the Top Stop from the track and reinstall it one rung under the Sliding Head section.
10. The Maxial Track Hoist is now ready to begin work at the desired height.





## 5.5 TEST AND VERIFICATION DATA SHEET OF THE MACHINE'S COMPONENTS

The test data sheet, attached to the machine's use and maintenance instruction manual, is the original, and a double copy of it must be completed by the person who is adequately trained to carry out the installation operations. It is obligatory to state the name and address of the installation technician in this copy. A copy of the above mentioned data sheet, with all sections completed correctly, must be handed over to the site manager where the machine is to be installed and to the owner of the machine.

The data sheet in question must be completed and signed before an installation process is carried out or, alternatively, every time the machine is returned after being installed in a construction site and therefore, kept as proof after having checked the functionality of the machine. See appendix B in this manual.

### **NOTE:**

Verifying and testing all the material listed in the data sheet will allow the machine to be installed correctly.



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## CHAPTER 6: COMMAND AND CONTROL DEVICES

Record of modifications

Revision	Executor	Date	Description of modification

## 6. COMMAND AND CONTROL DEVICES

### 6.1 GENERAL INFORMATION ON COMMAND DEVICES

The commands and control devices pertaining to the machine referred to in this manual are described in detail in the following paragraphs, therefore, it is of the utmost importance to read this chapter attentively in order to use all the commands described correctly.

### 6.2 COMMANDS ON THE HANDHELD CONTROL PENDANT

With reference to figure 6.1, the Handheld Control Pendant includes:

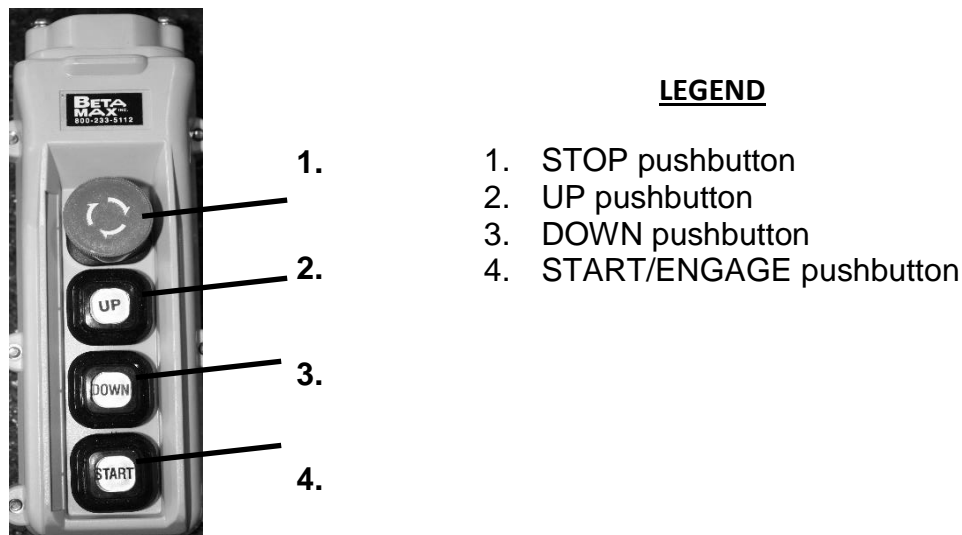


Figure 6.1

#### 6.2.1 STOP button

This is a safety device and once pressed locks into place, the supply voltage of the main contactor of the electrical control panel is interrupted. The operator can intentionally rotate the same button in the same direction of the arrows in order to enable and restore supply power to the system. This operation prevents the restore of the supply power to the system from being enabled by mistake which would put the operator or other workers at risk.

#### 6.2.2 UP pushbutton

The UP pushbutton allows the operator to control the machine in the upward direction. This pushbutton has a momentary contact, contact is only closed by continued pressure on the pushbutton and opens upon release.



#### 6.2.3 DOWN pushbutton

The DOWN pushbutton allows the operator to control the machine in the downward direction. This pushbutton has a momentary contact, contact is only closed by continued pressure on the pushbutton and opens upon release.

#### 6.2.4 START/ENGAGE pushbutton

The START/ENGAGE pushbutton allows the operator to engage the main contactor and initialize the system after a power loss or the interruption of the system by an electrical safety device. After engagement of the START/ENGAGE pushbutton the UP and DOWN pushbuttons are activated for directional operation. This pushbutton has a momentary contact, contact is only closed by continued pressure on the pushbutton and opens upon release.

### NOTE

The operator must press the START/ENGAGE pushbutton once to restore supply power back to the up and down directional contactors after an intervention of loss of power or activation of the STOP button.



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## CHAPTER 7: SAFETY REGULATIONS

Record of modifications

Revision	Executor	Date	Description of modification

## 7. SAFETY REGULATIONS

### 7.1 MOVABLE GUARDS

Panels, doors, or bars made of steel are set in place to close off parts of the machine used to transport materials, or areas which can be particularly dangerous due to the machine's movable parts or to an area where electricity passes. The machine is equipped with movable guards on Motor Pack for the access to the electric motor brake (1.) and the wire rope drum (2.). The Electrical/Control box is equipped with clamps (3.) to lock the cover in place and requires tools to open. Carrier Baskets have locking bars to contain the material being transported.

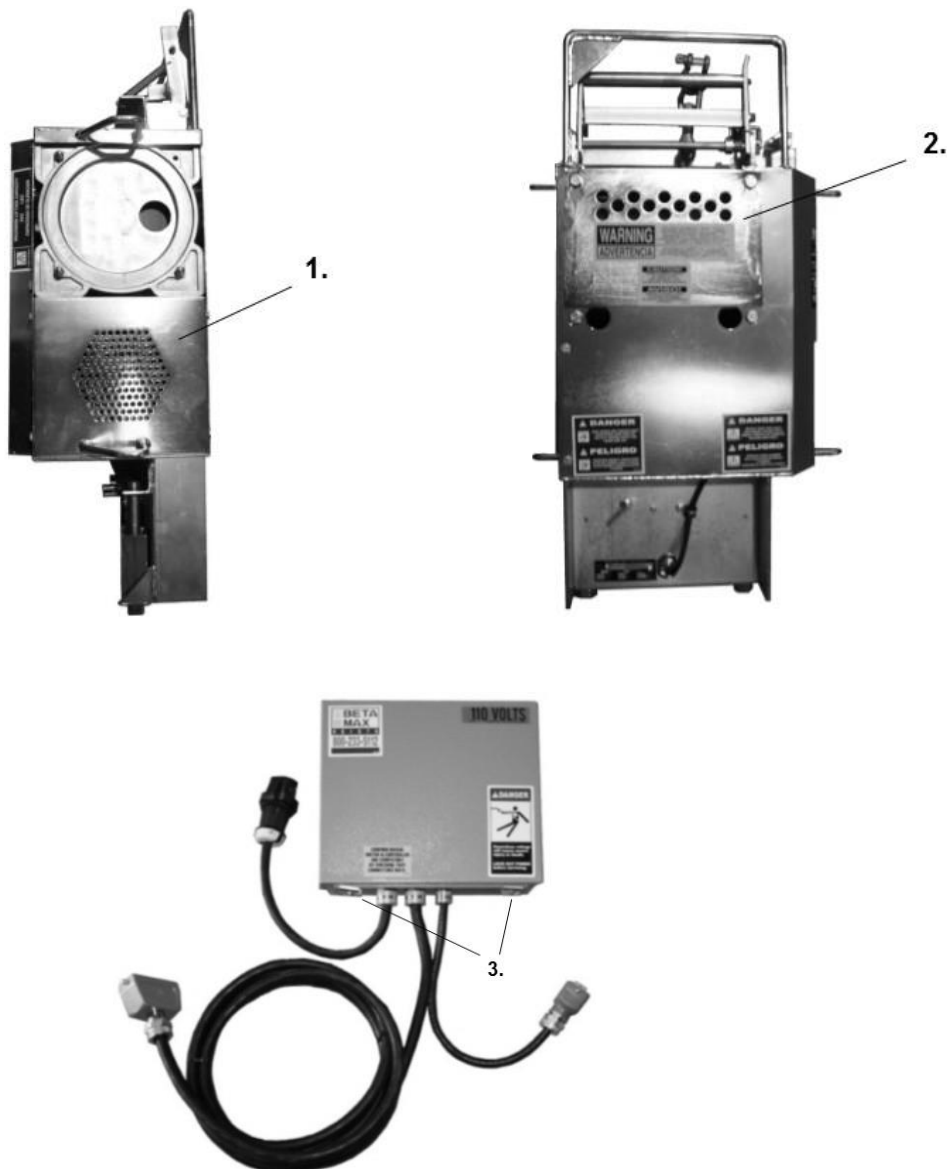


Figure 7.1





## 7.2 SAFETY EQUIPMENT

The machine is supplied with the following safety equipment:

- mechanical safety equipment
- electro-mechanical safety equipment
- electrical safety equipment

### 7.2.1 Mechanical safety equipment

The following mechanical safety equipment are installed on the machine:

- silent block shock absorbers
- pawl style safety device on Universal Carriage

#### 7.2.1.1 *Silent block shock absorbers*

The silent blocks, also called shock absorbing buffers are mounted on the bottom of the Universal Carriage for when the system lands in the downward direction to the ground, mounted on the Bottom Stop for when the systems lands in the downward direction onto the Bottom Stop, and mounted on the Top Stop for when the system lands in the upward direction at the Top Stop. The shock absorbing buffers have also been installed on the Sliding Head for if the Top Stop was not installed to help protect the Sliding Head section from impact with the Universal Carriage.

### **DANGER**

All installations of the Maxial Track Hoist system require the Top Stop to be installed at least one rung below the Sliding Head section.

#### 7.2.1.2 *Pawl style safety device*

The pawl style safety device is a safety device located on the Universal Carriage. The safety device intervenes to stop and hold the load of the Universal Carriage in the event of breakage of the wire rope cable. It is mandatory to identify and resolve the cause of the intervention of the safety device before placing the machine back into service.

### **DANGER**

It is mandatory to identify and resolve the cause of the intervention of the pawl style safety device before placing the Maxial Track Hoist back into service.



### 7.2.2 Electro-mechanical safety equipment

The following electro-mechanical safety equipment is installed on the machine:

- Slack rope assembly

#### 7.2.2.1 Slack rope assembly

The slack rope assembly is a directional safety device located on the Motor Pack. The slack rope assembly intervenes when tension on the wire rope cable is lost. The slack rope assembly is equipped with a switch known as the slack rope limit switch that interrupts the downward travel circuit. Its purpose is to stop excess unspooling of wire rope cable from the drum on the motor pack and to prevent a free falling situation in the event that the travel of the Universal Carriage is obstructed. When the slack rope limit switch is activated only upward directional travel is available for the operator.

### 7.2.3 Electrical safety equipment

The following electrical safety equipment is installed on the machine:

- STOP pushbutton
- Switch for upward travel

#### 7.2.3.1 Stop pushbutton

The STOP pushbutton is a safety device located on the Handheld Control Pendant. It is a clearly visible red mushroom locking pushbutton used to stop the machine in case of emergency. Pressing the locking pushbutton breaks the control circuit power supply to the main contactor which in turns interrupts the supply power to the up and down directional contactors. To restore supply power to the machine at the end of the emergency, the pushbutton has to be rotated, reconnecting its normally closed contact which is opened by the pressure exerted from when the operator pressed it. The operator must then press the START/ENGAGE pushbutton once to restore supply power back to the up and down directional contactors.

#### 7.2.3.2 Switch for upward travel

The switch for upward travel is a directional safety device located on the Motor Pack known as the Overweight Limit switch. The limit switch interrupts the upward travel circuit. Its purpose is to prevent an overweighted situation of the machine and stop upward travel if the Universal Carriage were to hit an obstruction during use. When the Overweight Limit switch is activated only downward directional travel is available for the operator. Operation and adjustment for the Overweight Limit switch is explained in section 10.3.8.

## 7.3 LIST OF PLATES FOUND ON THE MACHINE

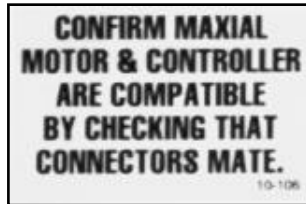


Figure 7.2

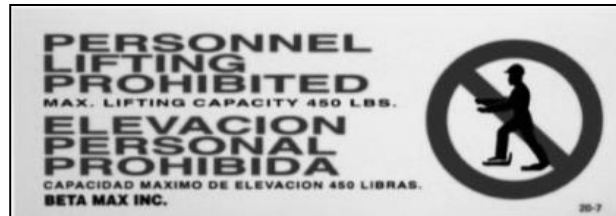


Figure 7.3

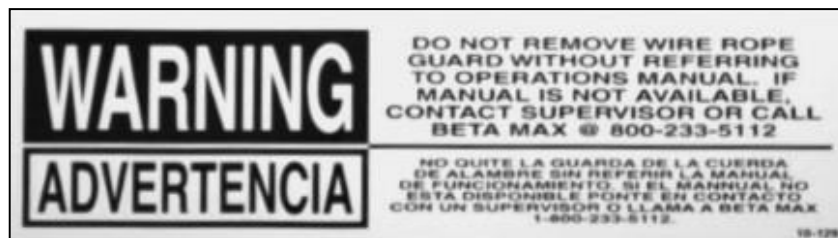


Figure 7.4



Figure 7.6



Figure 7.7



Figure 7.8



Figure 7.9



Figure 7.10



## 7.4 FUNDAMENTAL SAFETY REGULATIONS

Over the years, serious accidents have occurred during the assembly and disassembly operations of similar style of machines. These accidents have a human factor in common, such as failing to comply with safety regulations and lack of good sense. This document is for all personnel, including general workers, involved in the assembly and disassembly operations and those assisting in such operations.

As an example, if a worker leans out of the opening that is to mount the masts, while the machine is in motion, he can be hit by the basket carrier or universal carriage; or, if the bolts used on the vertical mast are not completely installed and tightened, this may cause the mast sections to separate and the lifting unit to fall, resulting in serious injuries or possible fatalities. Many other cases or examples can be given. To avoid accidents from being caused, read these instructions attentively. Do not be hasty in carrying out your work and always ensure that it has been done properly.

### 7.4.1 General safety regulations

Always adhere to the indications described below in order to carry out correct installation, use and maintenance operations:

- read all the warnings and instructions relative to the work and/or danger
- keep the work area clean near and around the hoist and hoistway from obstructions, clutter, and trip hazards
- under no circumstances, is the machine to be put in motion if a person is inside the hoistway when the Universal Carriage and Carrier Basket is raised onto the Ladder Track or at an anchor level. The power supply must be interrupted during these operations
- complete each operation before starting another or before taking a break. This is particularly important when the sections of the Ladder Track are being tightened and when the anchors or other structural parts are being installed
- always apply the required torsion when tightening Kwik bolts and Scaff-clamps
- if structural damage or significant corrosion is noticed in parts such as the Ladder Track sections, Sliding Head, Scaff-clamps, or wire rope; machine operation must be immediately stopped and the damage must be identified and repaired before operating the machine again (these operations are to be carried out exclusively by authorized and particularly experienced personnel, otherwise, you must contact Beta Max Technical Support)

### 7.4.2 Local safety regulations

Strictly adhere to all national safety regulations in the country where the machine is installed.

### 7.4.3 Environmental conditions

The machines must not be assembled or disassembled if the wind speed exceeds 25 mph. In countries where local regulations are more restrictive, abide by the specific indications.

#### 7.4.4 Pre-installation requirements

To install the machine correctly, the designated technical expert must:

- study the use and maintenance instruction manual attentively before starting the work
- secure the assembly/disassembly area from objects that may fall, by delimiting or closing off the area in such a way so as to prevent access to outsiders, who are not authorized or who are not equipped with suitable protection devices or gear
- forbid unauthorized personnel to access the machine, during assembly, disassembly and normal operation

#### 7.4.5 Individual protection gear regulations

Protection and safety gear pertaining to the work being carried out must be used and/or worn, such as hard hats, safety shoes, safety belts, or any other, which is suitable to prevent injuries.

### **DANGER:**

It is absolutely prohibited to work on the machine without utilizing the above mentioned individual protection gear.

#### 7.4.6 Regulations pertaining to electricity

Only competent personnel are to perform work on electrical parts. The power supply must be interrupted and shut off before commencing such work. All necessary measures must be taken in order to prevent the power supply from being turned back on, even inadvertently.

#### 7.4.7 Regulations pertaining to spare parts

Only original or approved spare parts must be used.

## 7.5 REGULATIONS PERTAINING TO MAXIMUM LOADS

The admissible load on the machine must be in accordance with its configuration and the tables placed on the machine itself regarding maximum loads.

The site manager, who is responsible for the installation process, must verify the machine's layout and affix the plate indicating the loads, relative to this layout, as stipulated earlier on.

### **NOTE:**

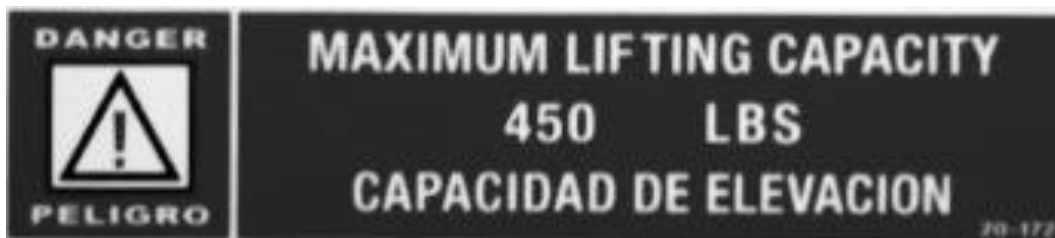
All data pertaining to the maximum installation height, loads and maximum rated load, strictly pertains to standard installations given in this manual and is not applicable to non-standard configurations.

### **ATTENTION:**

You are recommended to contact BETAMAX technical support regarding non-standard installations, which are not included in this manual.

The plates indicating the maximum loads of the machine are illustrated below.

MAXIAL TRACK HOIST may have a maximum of 450 lbs. in the Carrier Basket.



*Figure 7.11*



## 7.6 RESIDUAL RISKS

This paragraph is intended to highlight the residual risks associated with the operations covered in this manual. The major risks can be identified in the particular situations mentioned below:

- risks arising from operating with configurations not provided for by the manufacturer
- risks arising from positioning the machine incorrectly
- shearing risk deriving from the machine proximity to obstacles
- risks arising from transporting the machine
- risks arising from incorrect assembly on the ground
- risks arising from incorrect over ground assembly
- risks arising from functional verification of the machine
- risks arising from the machine's normal operation
- risks arising from handling the machine in the construction site
- risks arising from disassembling the machine

A detailed description is given for each of these situations, indicating the stage of operations, the equipment used, the possible risks and relative prevention and safety measures.

### 7.6.1 Risks arising from operating with configurations not provided for by the manufacturer

The measurements of the machine and its conformation in respect to the building in question must be confirmed in the construction site itself, before commencing the machine's assembly operations. The drafted and executive project plans of the building in question together with the Use and Maintenance Instruction Manual of the machine must be consulted for such verification.

Possible risks:

- differences between the measurements in the plans and the actual measurements of the building
- over ground obstacles
- verification of the machine's anchor positions
- errors in the assembly configuration of the machine

Prevention and safety measures:

- verification of any over ground obstacles in the construction site that prevent the regular assembly of the machine, with particular reference to power and telephone lines anchored to the building. In the case of obstacles being found, a different configuration must be planned for the machine
- the person responsible for the installation process must decide upon the positions of the anchors in accordance with the Instruction Manual. If the standard solutions given in the Instruction Manual cannot be implemented because of particularities in the construction site, a plan will have to be drawn up for every anchorage and signed for by a qualified professional
- the person responsible for the installation process must ensure that the configuration chosen, based on the above mentioned considerations, is actually mounted with no variations or modifications

### 7.6.2 Risks arising from an incorrect positioning of the machine

The position where the machine will be mounted is actually defined and the machine is prepared for this operation.

For this operation, the drafted and executive project plans of the building in question must be consulted, with particular reference to the underground and underlying conformation of the area chosen, together with the Use and Maintenance Instruction Manual of the machine.

Possible risks:

- weak flooring is chosen for the installed base unit to rest on
- underground pipelines or cavities
- difficulties with the power supply

Prevention and safety measures:

- the total load that will weigh on the machine's base unit flooring must be determined before-hand, based upon the indications given in the Instruction Manual. The person responsible for the installation must communicate the total intended loads to the Qualified Technician, who is designated by the Firm or by the Owner. After having carried out the necessary verification calculations, the Technician will issue a written statement certifying approval of the flooring which is to withstand the intended loads
- it must be ascertained that there are no pipelines, sewage systems or any other underground cavities that can result in the base unit giving way and/or sinking, at no point in time during the operational life of the machine
- suitable power supply, which is in accordance with the regulations, is to be organized together with the earthing system

### 7.6.3 Shearing risk deriving from the machine proximity to obstacles

When the machine moves within a safe distance from any obstacles, the risk is present of shearing for people or present on structures adjacent to machine elevation path. By obstacle it is meant any object which is protruding towards the machine elevation path to a safe distance from it.

Possible risks:

- shearing risk / trapping hazard for people moving on buildings or structures adjacent to machine elevation path

Prevention and safety measures:

- wherever possible, install a barrier protecting the machine to any obstacle near its elevation path



#### 7.6.4 Risks arising from transporting the machine

The machine and its accessories are actually unloaded. The material is set according to the position chosen for the assembly operation.

For this operation, all the documents pertaining to the configuration together with the Use and Maintenance Instruction Manual of the machine must be consulted. Moreover, all the necessary means must be employed for lifting and transporting the material in question.

Possible risks:

- breakages or damages to the material
- instability of the material when deposited in piles
- errors in the material or configuration to be installed
- personnel knocking, pinching, or shearing limbs
- personnel suffering from trauma due to exertion

Prevention and safety measures:

- the person responsible for the installation must see to inspecting the components to verify their structural integrity
- the stability of the material piled up must be ascertained to prevent it from giving way or slipping
- the person responsible for the installation must verify that the required components for the configuration to be installed, are prepared accordingly, paying particular attention to components that could create confusion due to their similarity with others
- all loads that are to be mechanically moved must be adequately strapped with adjustable cables, belts or chains. Only one operator must be responsible to signal the required maneuvers to the operator driving the unloading/loading vehicle and he must use regulatory signs. Personnel not involved in this operation will remain at a safe distance. Nobody must pass under or stop beneath suspended loads, and the area in question must be closed off and marked
- the personnel designated to manually move the material, must be informed of the weight of each component and the best way to handle it

#### 7.6.5 Risks arising from incorrect assembly on the ground

The first components of the Ladder Track sections and anchors are assembled.

For this operation, all the documents pertaining to the configuration together with the Use and Maintenance Instruction Manual of the machine must be consulted. Moreover, all the necessary means must be employed for lifting and transporting the material in question.

Possible risks:

- errors in the assembly process
- assembly is not compliant with the authorization given
- falling material or equipment
- errors in the electrical connections

Prevention and safety measures:

- all personnel designated to the assembly process must be qualified and must be perfectly aware of the procedures given in the Instruction Manual of the machine. Particular attention is to be when positioning and fastening each component precisely while carefully following the indications of the Instruction Manual
- during the installation process, exact correspondence must be verified between the work carried out, the assembly layout given with the authorization and that of the Instruction Manual
- personnel involved in the installation operations must constantly wear the safety hard hat, safety shoes and work gloves. Nobody is to be allowed to stop beneath or pass under the machine during the assembly process
- all electrical connections must be carried out exclusively by qualified personnel and their functionality is to be verified before being used

#### 7.6.6 Risks arising from incorrect over ground assembly

The machine's Ladder Track sections are assembled and the relative anchors are implemented with the relative protruding sections, which are necessary for fastening the Ladder Track.

For this operation, all the documents pertaining to the configuration together with the Use and Maintenance Instruction Manual of the machine must be consulted. Moreover, all the necessary means must be employed for mounting the Ladder Track and anchors.

Possible risks:

- errors in the assembly process
- assembly is not compliant with the authorization given
- falling material or equipment
- defects in implementing the anchors
- personnel shearing limbs
- obstructions in the machine's path
- incorrect positioning of the Sliding Head and Top Stop

Prevention and safety measures:

- all personnel designated to the assembly process must be qualified and must be perfectly aware of the procedures given in the Instruction Manual of the machine. Particular attention is to be when positioning and fastening each component precisely while carefully following the indications of the Instruction Manual
- during the installation process, exact correspondence must be verified between the work carried out, the assembly layout given with the authorization and that of the Instruction Manual
- personnel involved in the installation operations must constantly wear the safety hard hat, safety shoes and work gloves. Nobody is to be allowed to stop beneath or pass under the machine during the assembly process
- all the anchors must be implemented in accordance with the instructions given by the person responsible for the installation process. If an anchor seems to be inadequate, the works in progress must be put on hold and the situation is to be reported to the person responsible for the installation process
- only one operator is to handle the movement of the machine. The operator will carry out each maneuver only after having ascertained the position of all the other operators, who must remain in their safe positions. Before putting the machine in motion, all objects placed on the machine must be secured in order to prevent them interfering with the maneuvers or possibly falling
- when the machine is in motion, utmost care must be taken in order to avoid a member of staff from being crushed under the protruding parts
- when the machine is in motion, utmost care must be taken to ensure that the machine's path is not somehow obstructed
- the Sliding Head must be positioned in such a way so as to not be secured to free standing Ladder Track or above the highest Scaff-clamp anchor. A Top Stop must be installed atleast one rung below the Sliding Head to prevent an impact with the Universal Carriage.

#### 7.6.7 Risks arising from functional verification of the machine

Correct functionality of all of the machine's driving and safety devices is verified together with the correct movement of the machine itself.

For this operation, all the documents pertaining to the configuration together with the Use and Maintenance Instruction Manual of the machine must be consulted.

Possible risks:

- errors in the assembly process or in the electrical connection
- falling material or equipment
- incorrect adjustment for the downward motion of the machine

Prevention and safety measures:

- all personnel designated to the assembly process must be qualified and must be perfectly aware of the procedures given in the Instruction Manual of the machine. All the functions of the normal drive must be verified, starting from the simpler operations and proceeding onto the more complex ones

#### 7.6.8 Risks arising from the machine's normal operation

The machine is used for normal operation in the construction site.

For this operation, the Use and Maintenance Instruction Manual of the machine must be consulted.

Possible risks:

- the machine is overloaded
- material or equipment fall when work is being carried out
- the machine stops working due to a power failure
- an anchor loosens
- the machine stops working due to a failure in the unit

Prevention and safety measures:

- all personnel designated to the machine's functionality must be qualified and must be perfectly aware of the procedures given in the Instruction Manual of the machine. The site manager must supervise the loading operations, ensuring not to overload the machine
- if a power failure occurs, the safety manager must be immediately informed and he will see to organizing the necessary interventions to restore the working conditions
- the anchors must be checked periodically, especially after particularly intense weather conditions, under the supervision of the safety manager
- if a failure is verified in the unit, the safety manager must be informed and under his supervision the defect is to be repaired by the maintenance personnel or by BETA MAX Technical Support

#### 7.6.9 Risks arising from handling the machine at the construction site

With the use of lifting equipment, the machine is moved from one area to another, within the same construction site where it has been installed.

For this operation, the Use and Maintenance Instruction Manual of the machine must be consulted. Moreover, all necessary measures must be taken to eliminate the risks arising from the lifting process of the machine.

Possible risks:

- inadequacy of the lifting equipment
- inadequate positioning

Prevention and safety measures:

- always ensure that the lifting equipment used is able to lift the machine within a large margin of safety
- to handle the machine, always position in order not to damage the machine's structure
- always check the adequacy of the supporting surface onto which the machine is to be repositioned and carry out the re-assembly operations of all the service and anchor structure on the building in question, in accordance with all that stipulated in this instruction manual

#### 7.6.10 Risks arising from disassembling the machine

The machine's vertical masts are disassembled together with the relative anchors.

For this operation, the Use and Maintenance Instruction Manual of the machine must be consulted. Moreover, all necessary measures must be taken for the disassembly of the masts and anchors.

Possible risks:

- instability of the disassembled components
- instability of the machine
- personnel, material or equipment fall when work is being carried out

Prevention and safety measures:

- pay particular attention when positioning the disassembled components, always following the indications given in the Instruction Manual, precisely
- disassemble the anchors at the same pace as the Ladder Track components so as not to cause instability to the machine
- everyone must be prohibited from passing under or stopping below the machine and the area must be properly enclosed



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## CHAPTER 8: PREPARATION FOR MACHINE USE

Record of modifications

Revision	Executor	Date	Description of modification



## 8. PREPARATION FOR MACHINE USE

### 8.1 SAFETY REQUIREMENT BEFORE HANDLING THE MACHINE

Once the machine is mounted and the electrical connection is set, it is good practice to carry out a number of verifications to ascertain its functionality.

Before handling the machine verify that:

- the base enclosure has been mounted correctly, preventing anyone from stepping into or stopping inside the area where the loading unit descends
- adequate signs, which are easily visible and/or bright, have been set in place
- there is no material nor protruding components in the machine's path, which can hit the workers or hinder the machine's regular movement
- all the machine's mechanical, electromechanical and electrical safety devices work perfectly well
- wire rope and guide rollers are in perfect working condition
- when the Carrier Basket is driven upward or downward, the material onboard is positioned in such a way so as to spread the load in a uniform manner
- the wind speed is less than 35 mph otherwise the Universal Carriage and Carrier Basket must be brought down
- there is no snow or ice on the machine, otherwise it is obligatory to see that this is removed
- the drive direction of the machine is in accordance with the pressed drive button
- after having carried out the trial run, all the upward/downward stopping devices function correctly

After having carried out the verifications described above, the machine is ready for its normal operation in a construction site.





## 8.2 SAFETY REQUIREMENTS DURING MACHINE OPERATION

In order to work safely, always remember the following requirements during machine operation:

- it is strictly forbidden to construct work levels which are higher than the loading unit
- the Carrier Basket is to be brought down to ground level, as soon as possible, in every instance and any kind of failure

### **DANGER:**

When failure occurs during machine operation, take the necessary steps to resolve this before utilizing the machine again.

- at the end of each working day, the Carrier Basket must be brought down to its lowest position and the power supply must be disconnected, storing the power cable separately, in a safe place.

## 8.3 SAFETY VERIFICATION INSTRUCTIONS

The Technicians, who are responsible for the machine's start up and maintenance, are to refer to the instructions given below in order to verify the functionality of the installed safety devices and to ensure that all parts of the machine work perfectly well.

### 8.3.1 General verification of the machine

In order to ensure that the machine's mechanical components are working perfectly well, proceed as described below:

- in case of a storm, tornado, hurricane or earthquake, all essential parts of the machine must be checked by a professional or an authorized inspector, before putting the machine back into operation
- if the machine is installed outdoors, it must not be used if the wind speed exceeds 35 mph
- if the machine is exposed to frost, remove this before operating the machine ensure that no equipment or material is suspended from the machine's structure

### **DANGER:**

It is strictly forbidden to suspend any equipment or material from the machine's lifting structure.

### **ATTENTION:**

A safety inspection must be carried out every day before operating the machine.

### 8.3.2 Electrical verification of the machine

In order to test and ascertain that the electrical command and control devices work perfectly well, proceed as described below:

- check that all the STOP pushbuttons function properly. For this purpose, carry out trial runs with each STOP pushbutton pushed

#### **NOTE:**

Carry out the verification tests with one switch at a time in order to clearly identify any malfunctions.

- perform trial runs in order to verify the functionality of the Overweight System
- perform trial runs in order to verify the functionality of the Slack Rope Assembly

### 8.3.3 Verification of the machine's motion

In order to test the machines motion, proceed as described below:

- visually check the machine's wire rope and ensure that it is free from any damage. Monitor this constantly
- ensure that the load does not exceed the maximum allowed - refer to the information given on the label indicating the load capacity
- press the ENGAGE/START pushbutton to ensure the system is activated
- press the pushbutton to drive the machine in the desired direction and the machine will start-up. At the extreme levels the machine will automatically stop by means of the Overweight System or Slack Rope Assembly

#### 8.3.4 Daily verification prior to operating the machine

Every day, before starting to operate the machine, proceed as described below:

- ensure that no equipment or material is suspended from the machine's structure that can interfere with the machine's path
- ensure that the machine is not covered in ice; if so, remove this before operating the machine
- in case of particularly intense weather conditions, all the essential parts of the machine must be checked
- if the wind exceeds the threshold indicated, prohibit all persons concerned from using the machine
- check the wire rope; this must not be damaged in any way
- ensure that the Carrier Basket is not damaged in any way
- verify the functionality of the STOP pushbutton
- verify the functionality of the Overweight System
- verify the functionality of the Slack Rope Assembly

After having carried out the verifications described, the machine is ready for its normal operation in a construction site.

### **DANGER:**

An approximate assessment of the operation conditions is the greatest and most common cause of accidents, often with a fatal outcome.

## 8.4 OPERATING THE MACHINE

Operators who are appropriately trained can operate the machine.

Once all the verifications have been carried out on the machine by qualified Technicians who are responsible for the construction site, proceed as described below:

- release the STOP pushbutton by rotating the same button in the same direction of the arrows. Press the ENGAGE/START pushbutton to restore the system. This operation prevents the restore of the system from being enabled by mistake which would put the operator at risk.
- to position the Carrier Basket over ground, drive it in the desired direction and once the floor level is reached, press the emergency pushbutton as an additional safety

### ATTENTION:

Before utilizing the machine in any way, all safety procedures must be implemented and maintenance and lubrication procedures must be carried out as stipulated in the relative chapter of this manual.

### DANGER:

It is strictly forbidden to enter the hoistway or stop beneath the machine's path, when this is in operation.

## 8.5 SHUTTING DOWN THE MACHINE AT THE END OF A WORK SHIFT

Once a work shift is over, proceed as described below to shut down the machine:

- drive the Carrier Basket to the ground level or Bottom Stop until the Slack Rope Assembly is activated relieving some of the wire rope tension. Disconnect the machine from the power supply and remove the Handheld Control Pendant. Ensure that nobody has access to the machinery when there is no personnel present who is responsible for the machinery

## 8.6 SHUTTING DOWN THE MACHINE FOR LONG PERIODS

To shutdown the machine for long periods of time, proceed as described below:

- carry out the procedures explained for the end of a work shift. In case of ice, snow or heavy rain, before putting the machine back into operation, ensure that the integrity of the delicate parts has not been altered. Leaving the machine idle for a long period of time can cause some trouble such as, metal parts and gaskets can corrode

## CHAPTER 9: TROUBLESHOOTING

Record of modifications

Revision	Executor	Date	Description of modification



## 9. TROUBLESHOOTING

### 9.1 THE MACHINE DOES NOT START

If the machine does not start-up, the operator responsible for its maintenance must:

- ensure that the main power supply to the machine has not been interrupted
- ensure that the EMERGENCY pushbutton not pressed
- ensure that the Slack Rope Assembly is not engaged
- ensure that the Overweight System is not engaged
- ensure that the safety brake device is not intervened

### 9.2 TROUBLESHOOTING GUIDES

Troubleshooting operations of the electrical system will be carried out with the supply voltage disconnected but some troubleshooting will require the supply voltage to be connected.

Only authorized personnel are to carry out any troubleshooting on the Maxial Track Hoist.

The troubleshooting guides are a step-by-step guide with a question being asked and the answer to the question sending the reader to the next appropriate step to check.

- The Maxial cUL Track Hoist 110 version troubleshooting guide is located in appendix C of this manual.
- The Maxial cUL Track Hoist 220 version troubleshooting guide is located in appendix D of this manual.

## CHAPTER 10: MAINTENANCE AND REPAIR

Record of modifications

Revision	Executor	Date	Description of modification

## 10. MAINTENANCE AND REPAIR

### 10.1 GENERAL MAINTENANCE

Regular maintenance of the mechanical and electrical components prolongs the machine's operational life, ensures best performance and is an important safety factor. Regularly verify the efficacy of the the devices installed on the machine, in accordance with the indictations given in this instruction manual.

Only authorized personnel are to carry out any maintenance or repairs on the Maxial Track Hoist.

The operator responsible for maintenance must remember the following:

- always use individual protection gear (gloves, earmuffs, safety shoes, goggles, etc.) when carrying out maintenance operations on the machine
- never start work on the machine before interrupting all electrical power supplies and ensuring that nobody can reconnect it, even inadvertently
- never to perform maintenance or repairs on the machine under the Universal Carriage unless the Universal Carriage is resting on the Bottom Stop to prevent downward travel
- only original spare parts are to be used whenever maintenance and repairs are carried out on the machine
- if the machine is shut down due to faults or maintenance and repairs this must be made known by means of a warning sign
- after having carried out maintenance operations proper documentation is recorded for the maintenance performed

#### CAUTION

If maintenance is not carried out in accordance with the above mentioned instructions, or not in conformity with what is stipulated in this manual, it will be considered as improper use. BETA MAX disclaims all responsibility if the operator fails to comply with the requirements.

#### CAUTION

For repairs to be carried out, it is recommended to always contact authorized technical support or the Manufacturer of the machine. If maintenance and repairs are carried out incorrectly, without original spare parts or by personnel who are not authorized, the user of the machine bears full responsibility for its proper use.



## 10.2 MAINTENANCE SCHEDULE

Maintenance operations must be preformed with the following timetable:

Maintenance every	Daily
	Monthly
	Annually

Maintenance operations to perform according to the working hours of the machine are described in detail in the following paragraphs.

### **DANGER**

If the machine remains installed for long periods of time, even if it is not used, maintenance operation is to be carried out.



### 10.2.1 General maintenance (Daily)

Perform the maintenance described below daily:

- check the work area near and around the hoist and hoistway is free from obstructions, clutter, and trip hazards
- confirm the power source has not changed
- check that the power cord extensions are properly plugged into the power source
- check that the Control/Electrical Box is properly connected to the Motor Pack
- check that the Handheld Control Pendant is properly connected to the Control/Electrical Box
- confirm the top and bottom motor pack flip retainer locks are locked in place securing the Motor Pack to the ladder track section
- check to make sure the pins securing the Carrier Basket to the Universal Carriage are inserted completely and contain safety pin locks
- confirm the Sliding Head is locked in place secured to the Ladder Track section no higher than the last Scaff-clamp
- check that all guide rollers are present on the Universal Carriage
- visually inspect all guide rollers on the Universal Carriage to notice any uneven wear which may indicate the Universal Carriage is not tracking properly on the Ladder Track and ensure the rollers move freely
- check that all springs are in place on the Emergency Brake on the Universal Carriage
- check that all springs are in place on the Slack Rope Assembly on the Motor Pack
- run the system up to the top and back down visually inspecting the wire rope for any kinks, birdcages, or breakage. **Wire rope should be replaced if damage is found.**
- Check that the wire rope is spooling properly and the wire rope will evenly reeve on the drum
- ensure the STOP pushbutton on the Handheld Control Pendant shuts off the system if pressed
- ensure the system shuts off the UP direction when the Universal Carriage reaches the Top Stop
- ensure the system shuts off the DOWN direction when the Universal Carriage reaches the ground or Bottom Stop
- ensure the system lifts, stops, and holds a full rated load

The General Maintenance (Daily) checklist form is located in appendix E of this manual.



#### 10.2.2 General maintenance (Monthly)

In addition to the controls concerning the daily maintenance, perform the additional maintenance described below:

- check to ensure all Kwik bolts are tightened securing the Ladder Track sections to one another and the base feet
- check to ensure all Scaff-clamps are tightened securing the Ladder Track to scaffolding
- verify that the pulley located in the Sliding Head moves freely
- verify that the Overweight system is calibrated properly

The General Maintenance (Monthly) checklist form is located in appendix F of this manual.

#### 10.2.3 General maintenance (Annually)

In addition to the controls concerning the daily maintenance, perform the additional maintenance described below:

- inspect the transmission gears by a certified Beta Max technician for any signs of missing or broken gear teeth
- inspect wear and tear/usage of the transmission gears by a certified Beta Max technician
- replace transmission seals by certified Beta Max technician
- inspect transmission bearings by certified Beta Max technician
- clean and re-lubricate the transmission

The General Maintenance (Annually) checklist form is located in appendix G of this manual.

### **DANGER**

The yearly maintenance on the Maxial Track Hoist transmission must be performed by a factory trained certified Beta Max technician.



## 10.3 FUNDAMENTAL MAINTENANCE OPERATIONS

The machine's main components of inspection, verification and lubrication, recommended for all the maintenance operations mentioned above, can be carried out correctly by the following the sections given below:

- Track Sections
- Sliding Head
- Universal Carriage
- Wire Rope
- Transmission and Drum
- Motor and Brake
- Slack Rope Limit Switch
- Overweight Limit Switch

The following list of tools will be needed to perform maintenance work on the Maxial Track Hoist. Many of the tools listed are only required by trained technicians working on the hoist.

1. Multi-meter (True RMS with AMP Clamp)
2. Adjustable Wrench
3. Socket Set (Metric)
4. Screwdrivers, Flat
5. Screwdrivers, Phillips
6. Allen Wrenches Metric - Small Set
7. Snap-Ring Pliers
8. Feeler Guages

### 10.3.1 Ladder track sections

The Ladder Track sections are built of rugged aluminum, so they are strong but lightweight. Inspection and maintenance of the Ladder Track sections are important to ensure the structural integrity of the machine.

Perform the maintenance described below before use:

- inspect the rails for any breaks, tears, or deformities
- inspect that no rungs are bent or deformed
- inspect the rung welds for any cracks

## **DANGER**

Inspect every Ladder Track section before every installation. If any of the above items are found, dispose of that Ladder Track section and do not use. Failure to inspect the Ladder Track sections can affect the structural integrity of the machine which could lead to damage of the machine, injury of the operator, and/or injury to personnel near the machine.

### 10.3.2 Sliding Head

Some kind of inspection and maintenance on the Sliding Head should be done daily, refer to the specific types of maintenance in the maintenance checklists located in this manual.

Perform the maintenance described below before use:

- inspect the frame (1) for any breaks, tears, or deformities
- inspect the lock bar (2) for any deformities and that the arm moves freely
- ensure that the lock bar spring (3) is intact and able to function properly
- inspect the wire rope pulley (4) shows no sign of deformity and moves freely
- inspect that the wire rope pulley pin (5) shows no signs of damage or excessive wear

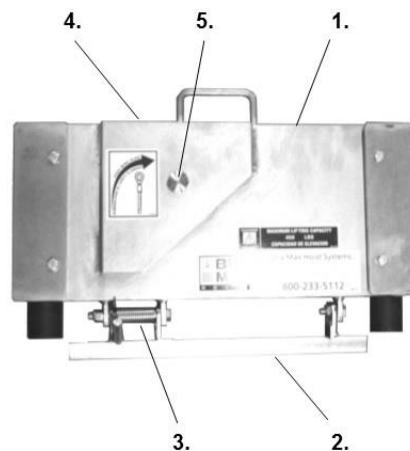


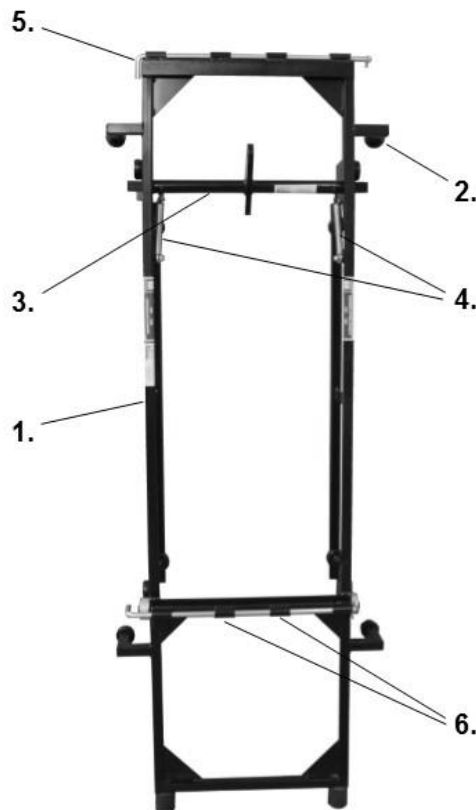
Figure 10.1

### 10.3.3 Universal Carriage

Some kind of inspection and maintenance on the Universal Carriage should be done daily, refer to the specific types of maintenance in the maintenance checklists located in this manual.

Perform the maintenance described below before use:

- inspect the frame (1) for any breaks, tears, or deformities
- inspect the guide rollers (2) for any wear and that the rollers move freely
- inspect the emergency brake (3) for any deformities and that the arm moves freely
- ensure that the emergency brake springs (4) are intact and able to function properly
- inspect the Carrier Basket attachment pins (5) show no sign of deformity
- inspect that the Carrier Basket attachment pin holders (6) show no signs of breaks, cracks, or deformities



*Figure 10.2*



#### 10.3.4 Wire rope cable

Ensure the wire rope cable is not bent, kinked, corroded, knotted, or damaged in any way. If the wire rope shows any of these conditions, immediately replace the wire rope.

### **DANGER**

Always wear heavy gloves when handling the wire rope cable to prevent possible hand injury.

#### 10.3.4.1 *Removing the wire rope cable*

1. Remove the wire rope guard
2. Connect the hoist to the correct power source
3. Press the DOWN button on the handheld control pendant to begin to spool out the wire rope from the drum. During the unspooling process maintain a pulling force on the cable so that the cable does not build up in the drum housing. Continue unspooling the cable until the end that is attached to the drum is reached.
4. Align the hole in the side of the drum housing with the two bolt heads located through the hole on the drum.
5. Disconnect the power source for safety
6. Release the wedge plate clamping the rope to the drum by loosening the two bolts through the side of the drum. Do not remove bolts.
7. Remove the wire rope cable.
8. Reinstall the wire rope guard

#### 10.3.4.2 *Installing wire rope cable*

1. Remove the wire rope guard
2. Connect the hoist to the correct power source
3. Align the hole in the side of the drum housing with the two bolt heads located through the hole on the drum housing.
4. Disconnect the power source for safety
5. Release the wedge plate clamping the rope to the drum by loosening the two bolts through the side of the drum. Do not remove bolts.
6. Insert the new wire rope through the top of hoist and into the space between the wedge plate and drum
7. Apply pressure with the wedge plate on the wire rope by tightening the two bolts through the side of the drum. Tighten the bolts evenly.
8. Connect the hoist to the correct power source
9. Press the UP button on the handheld control pendant to begin spooling the wire rope onto the drum. During the spooling process maintain a pulling force on the cable so that the cable creates tight wraps onto the drum.
10. Reinstall the wire rope guard.

### 10.3.5 Transmission and drum

The Maxial Track Hoist transmission is a grease filled gearbox. It contains steel gears incased in a cast aluminum housing. The transmission seals should be inspected routinely, externally of the transmission for any leaks as the grease begins to breakdown. Once a year the transmission is to be opened and inspected by a factory trained certified Beta Max technician.

## **DANGER**

The yearly maintenance on the Maxial Track Hoist transmission must be performed by a factory trained certified Beta Max technician.

#### 10.3.5.1 *Transmission annual inspection*

1. Remove old grease and clean all components internal of the transmission
2. Inspect the gears for any signs of missing or broken teeth
  - If the teeth are worn down beyond 1mm, the gear is to be replaced.

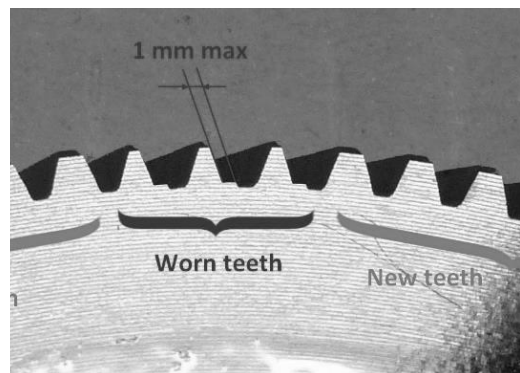


Figure 10.3

3. Replace all transmission seals
4. Inspect the bearings and replace any worn bearings as needed
5. Re-lubricate the transmission using Exxon Beacon EP2 or equivalent





### 10.3.6 Motor and brake

The Maxial Track Hoist utilizes a conical braking system. The conical braking system is a fail safe system that provides safe load handling at any lifting position and securely holds the load even when electrical power is lost. This system operates from the inductive forces in the rotor created by the AC current through the stator wires.

When voltage is applied to the rotor, the induced magnetic force compresses the tension spring and pulls the brake free from the motor end cap this allows the hoist motor to turn. Conversely, when the magnetic force is absent, the brake is pushed back into the brake end cap by the force of the tension spring and holds the workload securely. Brake load holding force is the force applied between the brake surface and the motor end cap, which is the result of the amount of tension on the tension spring. This prevents the load from free-falling or slipping when the hoist is not lifting or lowering.

Through normal hoist operation and wear, the brake may occasionally need adjustment. The reasons for performing adjustment are listed below.

- Hoist will not lift the load from a stopped, suspended position.
- Hoist will operate in the up direction without a load, but will not lift a normal-rated load.
- Without a load attached, hoist will not respond to either the UP or DOWN push buttons when they are released.
- A normal-rated load slips downward when the hoist is stopped.

## DANGER

Brakes should only be adjusted by a factory trained certified Beta Max technician.

If the brake needs adjustment, there are only two adjustments available. One is the tension spring adjustment (brake tension) and the other is the air gap adjustment (brake air gap). The tension spring adjustment controls the amount of force applied to press the brake into the brake end cap and provides load-holding ability. The air gap adjustment sets the distance between the rotor and the motor end cap. The correct air gap setting is important because it has a direct influence on the magnetic force required to pull the brake away from the motor brake end cap. If the gap is too great, the magnetic force will be too weak to disengage the brake and the load will not move. If the gap is too little, the magnetic force will be too strong and the load may not stay in place when the hoist is stopped.

Air gap and tension are two separate adjustments, yet interrelated. This means a change in one will affect the other. As an example, if the air gap is over 0.30 inches (7.62mm) and the tension adjustment locknut is excessively tightened, the magnetic force cannot overcome the tension across the air gap, and the brake will not release.



#### 10.3.6.1 *Adjusting Brake tension*

The tension spring adjustment (brake tension) can be adjusted external of the hoist motor. The tension spring is adjusted by increasing or decreasing the spring tension against the tension locknut located on the tension shaft. There needs to be a full load hanging from the wire rope to properly adjust the brake tension. This can be easily accomplished by the set up of the unit with two 9'-9" track sections with the Unisversal Carriage and a basket carrier with full-rated load (450lbs) attached to the end of the wire rope. Beta Max recommends a test distance of wire rope be used for this process instead of a full drum of wire rope to reduce the risk of damage to wire rope.

### NOTE

The brake tension is to be tested with a full rated load.

### CAUTION

It is recommended to use a test piece of wire rope cable to test the brake tension and perform the tension spring adjustment.

To access the brake tension locknut a few items will need to be removed from the motor pack.

1. Remove the end of motor access panel on the shroud
2. Remove the motor fan cover
3. Remove the rotor plug protecting the tension adjustment locknut

### CAUTION

The brake tension nut is left handed threads.

- To increase the spring tension, turn the tension adjustment locknut counterclockwise
- To decrease the spring tension, turn the tension adjustment locknut clockwise



### 10.3.6.2 *Adjusting the Air Gap*

The nominal recommended air gap is 0.025 inches (0.635 mm). The air gap is measured between the rotor and the end of brake pad assembly. When adjusting the air gap; the rotor, rear rotor bearing, and bearing locknut move in or out as the adjustment is being made. However; the tension pin, tension spring, tension shaft, washer, tension adjustment locknut, and brake, all remain fixed in reference to the motor end cap. After the air gap is adjusted the brake tension will need to be re-adjusted.

#### **CAUTION**

To adjust the brake air gap the rotor will need to be removed from the motor.

#### **CAUTION**

The brake tension needs to be re-adjusted after the brake air gap is adjusted.

Check the air gap by measuring with a feeler gauge between the rotor and brake assembly.

— To decrease the air gap

1. Remove the motor cooling fan
2. Loosen the three hex head capscrews on the back of the motor end cap (do not remove the three hex head capscrews). Loosen them evenly a ½ turn by turning counterclockwise to control the inner air gap adjustment ring.
3. Loosen the outer air gap adjustment ring counterclockwise the amount of distance wanting to be removed from the air gap
4. Tighten the three hex head capscrews by turning them evenly clockwise to control the inner air gap adjustment ring and move the rotor bearing to the outer air gap adjustment ring. This process will move the rotor closer to the brake assembly to achieve the proper air gap measurement.
5. Ensure the outer air gap adjustment ring can not be tightened against the end rotor bearing. Tighten the three hex head capscrews clockwise evenly until snug. Once all three are snug, turn each hex head capscrew 1/2 turn to lock in the air gap adjustment.
6. Re-install the motor end cap
7. Perform a brake tension test



— To increase the air gap

1. Remove the motor cooling fan
2. Loosen the three hex head capscrews on the back of the motor end cap (do not remove the three hex head capscrews). Loosen them evenly the amount of distance wanting to be added to the air gap by turning them counterclockwise to control the inner air gap adjustment ring.
3. Tighten the outer air gap adjustment ring clockwise to move the rotor bearing to the inner air gap adjustment ring. This process will move the rotor farther away from the brake assembly to achieve the proper air gap measurement.
4. Tighten the three hex head capscrews clockwise evenly until snug. Once all three are snug, turn each hex head capscrew 1/2 turn to lock in the air gap adjustment.
5. Re-install the motor end cap
6. Perform a brake tension test

### 10.3.7 Slack Rope Assembly

Some kind of inspection and maintenance on the Slack Rope Assembly should be done daily, refer to the specific types of maintenance in the maintenance checklists located in this manual.

Perform the maintenance described below before use:

- inspect the frame (1) for any breaks or deformities
- inspect the tensioner bar (2) for any deformities and that the arm moves freely
- inspect the tensioner roller (3) for any deformities and that the roller moves freely
- ensure that the tensioner arm springs (4) are intact and able to function properly
- inspect the limit switch (5) shows no sign of damage
- inspect that the limit switch plunger moves in and out freely



*Figure 10.4*



### 10.3.8 Overweight limit switch

The Maxial Track Hoist is equipped with an overweight limit switch to protect the system from transporting more than the designed rated-load. The Maxial motor pack is designed to float inbetween any two rung locations on the ladder track. The system works like a balancing scale; the end of the wire rope is attached to the universal carriage with a carrier basket attached to it, the wire rope travels up around a pulley in the sliding head that is at the top of the ladder track, the wire rope then travels back down to the wire rope drum of the motor pack. When a load is placed at the end of the wire rope at the carrier basket a downward force is created at the same time an upward force is created on the motor pack side of the wire rope. The upward force lifts the motor pack up onto two spring tensioned bolts that strike against the lower rung of the ladder track that the motor pack floats between. If the downward force at the carrier basket created by the amount of load at the end of the wire rope creates enough upward force at the motor pack to compress the Tension Adjustment Bolts then the overweight limit switch will strike the lower rung and not allow the up function to work on the hoist. The spring tension applied on the Tension Adjustment Bolts govern if the unit is operating within the machine's designed rated-load range.

The Overweight system will need to be inspected through periodic maintenance to ensure the safety of the Maxial Track Hoist design and occasionally may need adjustment.

#### 10.3.8.1 Adjusting the Overweight Limit Switch

The overweight limit switch can be adjusted external of the motor pack. It is adjusted by increasing or decreasing the spring tension of the Tension Adjustment Bolts located at the bottom of the motor pack. This can be easily accomplished by the set up of the unit with two 9'-9" track sections with the Universal Carriage and a basket carrier.

### CAUTION

It is recommended to use a test piece of wire rope cable to perform the Overweight Limit Switch Adjustment and ensure the wire rope cable is positioned in the center of the drum when the upward force from the load is created on the motor pack. If a test piece of wire rope cable can not be used, ensure the wire rope cable is positioned in the center of the drum.



To perform the Overweight Limit Switch Adjustment, follow the procedure below:

1. Add approximately 350 lbs of weight onto the carrier basket and lift the load up approximately 6-8 ft
2. Install the Bottom Stop in the track above the Maxial motor pack unit for safety
3. With the weight hanging measure the gap between the shroud and the top ladder track rung that the motor pack floats between at the top left and the top right.
4. Adjust the Tension Adjustment Bolts, located at the bottom of the motor pack, accordingly to balance the gap on both sides (if the unit can not be balanced inspect the placement of the motor pack to the rungs – the motor pack should be completely against the ladder track rung – adjustments to the flipper locks may need to be done)
5. Remove the Bottom Stop and add 450 lbs of weight onto the carrier basket
6. Raise the load approximately 6-8 ft
7. Ensure the overweight limit switch will strike the bottom ladder track rung in the center
  - If the unit does not raise the load, increase the tension on the Tension Adjustment Bolts evenly in half a turn increments until the unit lifts the load
  - If the unit picks up the load release the tension on the Tension Adjustment Bolts evenly in a half turn increment until it will no longer lift the load, then tighten one half revolution on the Tension Adjustment Bolts
8. Lower the weight to the ground and increase the weight to 500 lbs in the carrier basket
  - If the unit lifts the load decrease tension on the Tension Adjustment Bolts evenly in quarter turn increments until the unit will not pick up the load
  - If the unit does not pick the load all adjustments are final
9. Lower and remove the weight
10. The unit is now ready to be placed back into service.

## 10.4 ELECTRICAL SYSTEM MAINTENANCE

Inspection and maintenance operations of the electrical system will be carried out with the supply voltage disconnected but some troubleshooting will require the supply voltage to be connected.

A copy of the wiring diagram of the safety circuits must be kept with the electrical control panel.

### **DANGER:**

**Before accessing the internal part of the electrical control panel, wait 15 minutes after it has been disconnected so that all circuits can dispel their residual energy.**

#### 10.4.1 Location of limit switches

1. Slack Rope Limit Switch
2. Overweight Limit Switch

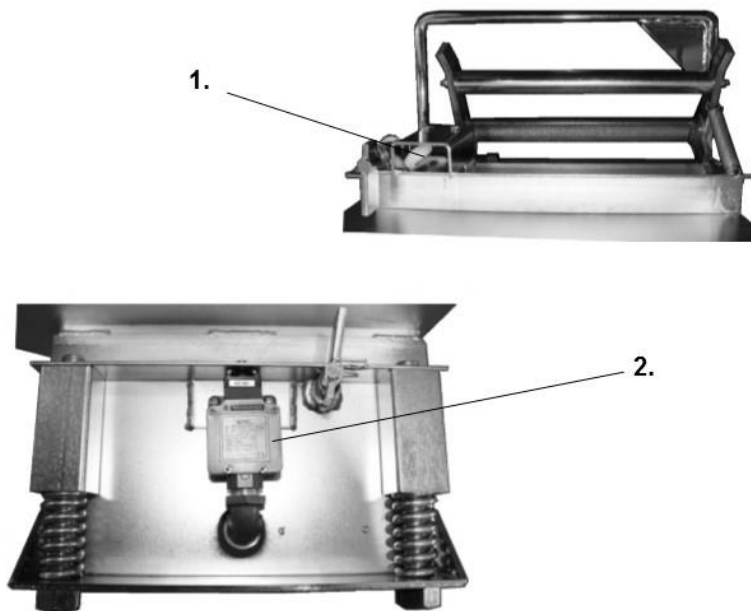


Figure 10.5





## 10.5 TECHNICAL SUPPORT

Technical support for the machine is provided directly by the BETA MAX Company by calling or sending a fax to the numbers below:

**Ph. 321-727-3737**

**TF. 800-233-5112**

**Fax 321-768-9517**



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## CHAPTER 11: WARRANTY

Record of modifications

Revision	Executor	Date	Description of modification



## 11. WARRANTY

### 11.1 WARRANTY

Beta Max, Incorporated warrants all MAXIAL TRACK HOIST SYSTEMS to be free from defects in material and workmanship under normal use and service provided it has been maintained as specified in the owner's manual.

Beta Max, Incorporated will provide to the original purchaser\*\* a 12 month limited warranty on all parts excluding those parts whose warranty schedule is listed below. 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, Incorporated through an authorized distributor. The warranty period below is from the date that the equipment is sold to the original purchaser\*\*. All return shipments must be prepaid by the customer.

<b><u>High Wear Items:</u></b>	
Pulleys, hooks, shackles	30 days or 1 month
<b><u>Electrical:</u></b>	
Pendant switches, electrical plugs and cables	90 days or 3 months
<b><u>Mechanical:</u></b>	
Motor, brake, wire rope drum	1 year
<b><u>Gears:</u></b>	
Gear reduction drive assembly	5 years

\*For **rental** machines, the Dealer is defined as the Original Purchaser

\*For **resale** machines, the First User is defined as the Original Purchaser



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

The manufacturer reserves the right to have the warranty serviced by the distributor from whom the unit was purchased. The distributor will make arrangements with the factory for repairs or replacement of parts within the terms of this warranty. Distributors must get a return authorization number from Beta Max before any item is returned for repairs or replacement.

Beta Max, Incorporated'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 any 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.



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## Appendix A

Installation Data Sheet Form (Section 5.2)



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## BetaMax Hoists, Inc.

P.O. Box 2750

Melbourne, FL 32902-2750

Ph. 800-233-5112 Fx: 321-768-9517

www.betamaxhoist.com

# MAXIAL TRACK HOIST

Site Manager: \_\_\_\_\_

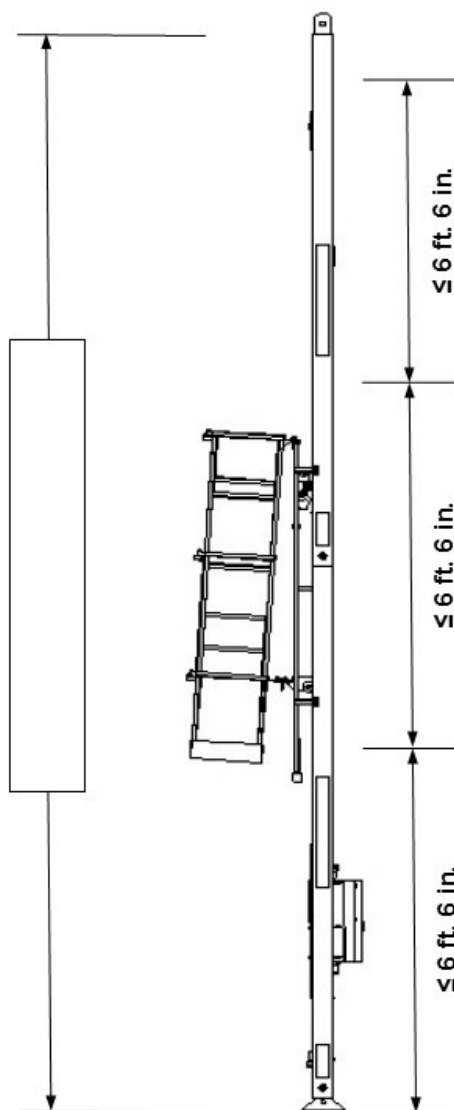
Machine Installation Type: MATERIAL HOIST

Serial Number: \_\_\_\_\_

Unit Weight: \_\_\_\_\_

Max Height: \_\_\_\_\_

Max. Load: **450 LBS.**



Anchorage Placement





## Appendix B

Verification and Test Data Sheet Form (Section 5.5)



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## BetaMax Hoists, Inc.

P.O. Box 2750

Melbourne, FL 32902-2750

Ph. 800-233-5112      Fx: 321-768-9517

www.betamaxhoist.com

# Verification and Test Data Sheet MAXIAL TRACK HOIST

## SECTION I. - VERIFICATION OF DAMAGE DUE TO TRANSPORTATION

(If any item is marked DAMAGED write comments in the note section)

	OK	DAMAGED	N/A
1) LADDER TRACK SECTIONS.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) UNIVERSAL CARRIAGE.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) CARRIER BASKET.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) MOTOR PACK.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) CONTROL/ELECTRICAL BOX.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) CONTROL AND POWER ELECTRICAL CABLES.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) HANDHELD CONTROL PENDANT.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) SLIDING HEAD.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) MOVABLE STOPS (TOP & BOTTOM STOPS).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## SECTION II. - VERIFICATION OF MACHINE MISSING COMPONENTS

(If any item is marked MISSING write comments in the note section)

	OK	MISSING	N/A
1) LADDER MAST SECTIONS.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) BASE FEET.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) KWIK BOLTS.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) SCAFF-CLAMPS.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) MOVABLE STOPS (TOP & BOTTOM STOPS).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) CONTROL AND POWER ELECTRICAL CABLES.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### SECTION III. - VERIFICATION OF SAFETY EQUIPMENT

(If any item is marked FAILED write comments in the note section)

	PASS	FAIL	N/A
1) WEAR AND TEAR/USAGE OF THE LADDER TRACK SECTIONS .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) WEAR AND TEAR/USAGE OF THE SCAFF-CLAMPS .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) SCAFF-CLAMPS ARE INSTALLED NO FURTHER THAN 6 FEET 6 INCHES APART .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) WEAR AND TEAR/USAGE OF THE KWIK BOLTS .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) WEAR AND TEAR/USAGE OF THE SLIDING HEAD .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) WEAR AND TEAR/USAGE OF THE TOP STOP .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) WEAR AND TEAR/USAGE OF THE UNIVERSAL CARRIAGE FRAME .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) WEAR AND TEAR/USAGE OF THE UNIVERSAL CARRIAGE GUIDE ROLLERS .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) WEAR AND TEAR/USAGE OF THE UNIVERSAL CARRIAGE PAWL STYLE SAFETY DEVICE AND SPRINGS .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) WEAR AND TEAR/USAGE OF THE CARRIER BASKET MOUNTING PINS AND SAFETY PINS .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) WEAR AND TEAR/USAGE OF THE CARRIER BASKET FRAME AND LOAD RETAINERS .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12) WEAR AND TEAR/USAGE OF THE MOTOR PACK FLIP RETAINER LOCKS .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13) WEAR AND TEAR/USAGE OF THE WIRE ROPE AND RIGGING .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14) WEAR AND TEAR/USAGE OF THE SLACK ROPE ASSEMBLY AND SPRINGS .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15) EMERGENCY PUSHBUTTON .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16) SLACK ROPE ACTIVATION .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17) OVERWEIGHT SYSTEM ACTIVATION .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### SECTION IV. - VERIFICATION OF MACHINE CONTROLS

(If any item is marked FAILED write comments in the note section)

	PASS	FAIL	N/A
1) ENGAGE/START PUSHBUTTON .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) UP PUSHBUTTON .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) DOWN PUSHBUTTON .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) DOWN PUSHBUTTON .....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**NOTES SECTION:**

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**COMPANY:** \_\_\_\_\_

**JOBSITE ADDRESS:**

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**SERIAL NUMBER:** \_\_\_\_\_

**YEAR OF MANUFACTURE:** \_\_\_\_\_

**TECHNICIAN NAME:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**TECHNICIAN SIGNATURE:** \_\_\_\_\_







## Appendix C

Maxial cUL Track Hoist 110 version Troubleshooting Guide (Section 9.2)



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## **Maxial cUL Track System Hoist 110 Version Troubleshooting Guide**

1. Does the hoist do anything?  
YES – 2  
NO - 35
2. What does the hoist do?  
Goes down not up - 3  
Goes up not down - 16  
Does not move but hums - 29  
Runs but will not lift a load - 31  
Runs but will not hold a load - 34
3. Open the Enclosure Box. Locate the UP relay (KA4). Press the UP button on the Control Pendant. Does the UP relay (KA4) close?  
YES – 4  
NO – 7
4. Press the UP button on the Control Pendant again. Does the UP contactor (KM4) close?  
YES – 5  
NO – 10
5. Check the supply voltage with a multi-meter set to AC voltage on the input side of the UP contactor (KM4). Are both lines of supply voltage present?  
YES – 6  
NO – Check wire connections feeding the input side of the UP contactor (KM4)
6. Check the supply voltage with a multi-meter set to AC voltage on the output side of UP contactor (KM4) while the UP contactor (KM4) is closed by pressing the UP button on the Control Pendant. Are both lines of supply voltage present?  
YES – Check the wires and connections feeding the motor  
NO – Replace the UP contactor (KM4) (bad main contacts)
7. Locate the UP relay (KA4) coil inputs "A1" and "A2". With a multi-meter set to AC voltage, test the control voltage between "A1" and "A2" while pressing the UP button on the Control Pendant. Is the control voltage present while pressing the UP button?  
YES – Replace the UP relay (KA4) (bad relay coil)  
NO – 8



8. With a multi-meter set to AC voltage, check the control voltage at the UP relay (KA4) coil input "A2" and terminal "95" of the Motor Overload (OL1). Is the control voltage present?  
YES – 9  
NO – Check the wiring that feeds UP relay (KA4) coil input "A2"
9. Open the back cover of the Control Pendant. With a multi-meter set to AC voltage, check the control voltage between the UP relay (KA4) coil input "A2" and both terminal sides of the UP button while pressing the UP button. Is the control voltage present?  
Control voltage IS present on both sides – Check the wiring connections between the UP button and UP relay (KA4) coil input "A1"  
Control voltage ONLY present on one side – Replace UP button on Control Pendant  
Control voltage NOT present on both sides – Check the wiring connections of the "Common" wire in the Control Pendant
10. Locate the UP contactor (KM4) coil inputs "A1" and "A2". With a multi-set to AC voltage, test the control voltage between "A1" and "A2" while pressing the UP button on the Control Pendant. Is the control voltage present while pressing the UP button?  
YES – Replace the UP contactor (KM4) (bad contactor coil)  
NO – 11
11. With a multi-meter set to AC voltage, check the control voltage at the UP contactor (KM4) coil input "A2" and terminal "95" of the Motor Overload (OL1). Is the control voltage present?  
YES – 12  
NO – Check the wiring that feeds UP contactor (KM4) coil input "A2"
12. With a multi-meter set to AC voltage, check the control voltage between UP contactor (KM4) coil input "A2" and UP relay (KA4) terminal "5" while pressing the UP button on the Control Pendant. Is the control voltage present?  
YES – Check the wiring that feeds UP contactor (KM4) coil input "A1"  
NO – 13
13. With a multi-meter set to AC voltage, check the control voltage between UP contactor (KM4) coil input "A2" and UP relay (KA4) terminal "9". Is the control voltage present?  
YES – Replace the UP relay (KA4) (bad relay contact)  
NO – 14



14. Inspect the Over Weight limit switch with an empty load in the basket. Is the Over Weight limit switch compressed against the rung of the mast?  
YES – Adjust the Over Weight limit switch  
NO – 15
15. Open the back cover of the Over Weight limit switch. With a multi-meter set to AC voltage, check the control voltage between the UP contactor (KM4) coil input “A2” and both terminal sides of the NC circuit of the Over Weight limit switch. Is the control voltage present?  
Control voltage IS present on both sides – Check the wiring that feeds the UP relay coil (KA4) terminal “9” from the Over Weight limit switch  
Control voltage ONLY present on one side – Replace the Over Weight limit switch  
Control voltage NOT present on both sides – Check the wiring connections of the “Common” wire in that feeds the Over Weight limit switch
16. Open the Enclosure Box. Locate the DOWN relay (KA5). Press the DOWN button on the Control Pendant. Does the DOWN relay (KA5) close?  
YES – 17  
NO – 20
17. Press the DOWN button on the Control Pendant again. Does the DOWN contactor (KM5) close?  
YES – 18  
NO – 23
18. Check the supply voltage with a multi-meter set to AC voltage on the input side of the DOWN contactor (KM5). Are both lines of supply voltage present?  
YES – 19  
NO – Check wire connections feeding the input side of the DOWN contactor (KM5)
19. Check the supply voltage with a multi-meter set to AC voltage on the output side of DOWN contactor (KM5) while the DOWN contactor (KM5) is closed by pressing the DOWN button on the Control Pendant. Are both lines of supply voltage present?  
YES – Check the wires and connections feeding the motor  
NO – Replace the DOWN contactor (KM5) (bad main contacts)



20. Locate the DOWN relay (KA5) coil inputs "A1" and "A2". With a multi-set to AC voltage, test the control voltage between "A1" and "A2" while pressing the DOWN button on the Control Pendant. Is the control voltage present while pressing the DOWN button?
- YES – Replace the DOWN relay (KA5) (bad relay coil)
- NO – 21
21. With a multi-meter set to AC voltage, check the control voltage at the DOWN relay (KA5) coil input "A2" and terminal "95" of the Motor Overload (OL1). Is the control voltage present?
- YES – 22
- NO – Check the wiring that feeds DOWN relay (KA5) coil input "A2"
22. Open the back cover of the Control Pendant. With a multi-meter set to AC voltage, check the control voltage between the DOWN relay (KA5) coil input "A2" and both terminal sides of the DOWN button while pressing the DOWN button. Is the control voltage present?
- Control voltage **IS** present on both sides – Check the wiring connections between the DOWN button and DOWN relay coil (KA5) input "A1"
- Control voltage **ONLY** present on one side – Replace DOWN button on Control Pendant
- Control voltage **NOT** present on both sides – Check the wiring connections of the "Common" wire in the Control Pendant
23. Locate the DOWN contactor (KM5) coil inputs "A1" and "A2". With a multi-set to AC voltage, test the control voltage between "A1" and "A2" while pressing the DOWN button on the Control Pendant. Is the control voltage present while pressing the DOWN button?
- YES – Replace the DOWN contactor (KM5) (bad contactor coil)
- NO – 24
24. With a multi-meter set to AC voltage, check the control voltage at the DOWN contactor (KM5) coil input "A2" and terminal "95" of the Motor Overload (OL1). Is the control voltage present?
- YES – 25
- NO – Check the wiring that feeds DOWN contactor (KM5) coil input "A2"
25. With a multi-meter set to AC voltage, check the control voltage between DOWN contactor (KM5) coil input "A2" and DOWN relay (KA5) terminal "5" while pressing the DOWN button on the Control Pendant. Is the control voltage present?
- YES – Check the wiring that feeds DOWN contactor (KM5) coil input "A1"
- NO – 26



26. With a multi-meter set to AC voltage, check the control voltage between DOWN contactor (KM5) coil input "A2" and DOWN relay (KA5) terminal "9". Is the control voltage present?
- YES – Replace the DOWN relay (KA5) (bad relay contact)
  - NO – 27
27. Inspect the Slack Rope limit switch with the wire rope tight with tension. Is the wire rope tension roller up against the Slack Rope limit switch?
- YES – Wire rope is on the wrong side of the roller
  - NO – 28
28. With a multi-meter set to Ohms ( $\Omega$ ), check the continuity between pin #4 and pin #6 of the motor plug on the Motor pack. Is there continuity through the circuit?
- YES – Check the wiring that feeds the DOWN relay (KA5) coil terminal "9" from the Slack Rope limit switch
  - NO – Replace the Slack Rope limit switch
29. Do you hear a distinctive metallic click in the motor when pressing the UP or DOWN button on the Control Pendant?
- YES – 30
  - NO – 31
30. Check the Capacitors and the capacitor connections through to the UP contactor (KM4) and DOWN contactor (KM5). Do the Capacitors and connections look ok?
- YES – Check all Motor connections and the continuity of the motor windings
  - NO – Repair connections or replace Capacitors
31. Ensure that the Control Box is connected to the proper power, taking into factor the length of the supply cable and size of cable to limit voltage drop. Is the power fed correct?
- YES – 32
  - NO – Correct the power feed
32. Ensure that the motor power wires have a good connection from the power plug all the way to the motor, including the motor plug connection. Are the connections good?
- YES – 33
  - NO – Correct the connections



33. While trying to lift a load does the hoist bounce up and shuts off and then bounces down and starts up again?  
YES – Adjust the Over Weight limit switch  
NO – 34
34. Follow the “Maxial Brake Replacement and Adjustment Procedure”
35. Check all cable connections. Is the Control Pendant connected to the Control Box and the Power Cord plugged into power?  
YES – 36  
NO – Repair connections
36. Ensure that the Control Box is connected to the proper power, taking into factor the length of the supply cable and size of cable to limit voltage drop. Is the power fed correct?  
YES – 37  
NO – Correct the power feed
37. Check the supply voltage with a multi-meter set to AC voltage on the input side of the Motor Overload (OL1) terminals “2” and “6”. Are both lines of supply voltage present?  
YES – 38  
NO – Check wire connections from the Power Plug to the Motor Overload (OL1)
38. Check the supply voltage with a multi-meter set to AC voltage on the input side of the Main Contactor (KM1) terminals “2” and “6”. Are both lines of supply voltage present?  
YES – 39  
NO – Check the connections from the Motor Overload (OL1) and MAIN contactor (KM1)
39. Press the ENGAGE button on the Control Pendant. What does the MAIN contactor (KM1) do?  
Closes and stays engaged – 40  
Closes and then opens back up – 49  
Does nothing – 41
40. Check the supply voltage with a multi-meter set to AC voltage on the output side of the MAIN contactor (KM1) terminals “1” and “5”. Are both lines of supply voltage present?  
YES – Check wire connections between MAIN contactor (KM1), UP contactor (KM4) and DOWN contactor (KM5)  
NO – Replace the MAIN contactor (KM1) (bad contactor contacts)





41. With a multi-meter set to AC voltage, check the control voltage between the MAIN contactor coil input "A2" and both terminal sides of the Control Transformer secondary side fuse (FU5). Is the control voltage present?
- Control voltage **IS** present on both sides – 45
  - Control voltage **ONLY** present on one side – Replace the fuse
  - Control voltage **NOT** present on both sides – 42
42. With a multi-meter set to AC voltage, check the control voltage between the Control Transformer (TR2) terminal "6" and terminal "10". Is the control voltage present?
- YES – Check wire connections between MAIN contactor (KM1) coil input "A2" and Control Transformer (TR2) terminal "10"
  - NO – 43
43. With a multi-meter set to AC voltage, check the supply voltage between the Motor Overload (OL1) terminal "6" and both terminal sides of the Control Transformer primary side fuse (FU4). Is the supply voltage present?
- Supply voltage **IS** present on both sides – 44
  - Supply voltage **ONLY** present on one side – Replace the fuse
  - Supply voltage **NOT** present on both sides – Check wire connection feeding the Control Transformer primary side fuse (FU4)
44. With a multi-meter set to AC voltage, check the supply voltage between the Control Transformer (TR2) terminal "1" and terminal "5". Is the supply voltage present?
- YES – Replace the Control Transformer (TR2)
  - NO – Check the wire connection feeding from the Control Transformer primary side fuse (FU4) to the Control Transformer (TR2)
45. With a multi-meter set to AC voltage, check the control voltage between the MAIN contactor (KM1) coil input "A2" and terminal "96" of the Motor Overload (OL1). Is the control voltage present?
- YES – 46
  - NO – Check the wire connection from the Control Transformer secondary fuse (FU5)
46. With a multi-meter set to AC voltage, check the control voltage between the MAIN contactor (KM1) coil input "A2" and terminal "95" of the Motor Overload (OL1). Is the control voltage present?
- YES – 47
  - NO – Let the motor cool for 30 minutes and recheck Step 46, if problem continues contact BetaMax Technical Support



47. Is the RED STOP button pressed in on the Control Pendant?  
YES – Release the RED STOP button  
NO – 48
48. Open the back cover of the Control Pendant. With a multi-meter set to AC voltage, check the control voltage between the Main Contactor (KM1) coil input “A2” and both terminal sides of the RED STOP button. Is the control voltage present?  
Control voltage **IS** present on both sides – 49  
Control voltage **ONLY** present on one side – Replace RED STOP button on Control Pendant  
Control voltage **NOT** present on both sides – Check the wiring connections from Motor Overload (OL1) terminal “95” the RED STOP button
49. With a multi-meter set to AC voltage, check the control voltage between the Main Contactor (KM1) coil input “A2” and terminal “4” of the Main Contactor (KM1). Is the control voltage present?  
YES – 50  
NO – Check the wire connection from the RED STOP button
50. With a multi-meter set to AC voltage, check the control voltage between the MAIN contactor (KM1) coil input “A2” and both terminal sides of the ENGAGE button on the Control Pendant while pressing the ENGAGE button. Is the control voltage present?  
Control voltage **IS** present on both sides – 51  
Control voltage **ONLY** present on one side – Replace the ENGAGE button on the Control Pendant  
Control voltage **NOT** present on both sides – Check the wiring connections from the RED STOP button
51. With a multi-meter set to AC voltage, check the control voltage between the MAIN contactor (KM1) coil input “A2” and “A1” while pressing the ENGAGE button. Is the control voltage present?  
YES – Replace MAIN contactor (KM1) (bad contactor coil)  
NO – Check the wire connection from the ENGAGE button



## Appendix D

Maxial cUL Track Hoist 220 version Troubleshooting Guide (Section 9.2)



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## **Maxial cUL Track System Hoist 220 Version Troubleshooting Guide**

1. Does the hoist do anything?  
YES – 2  
NO - 35
2. What does the hoist do?  
Goes down not up - 3  
Goes up not down - 16  
Does not move but hums - 29  
Runs but will not lift a load - 31  
Runs but will not hold a load - 34
3. Open the Enclosure Box. Locate the UP relay (KA4). Press the UP button on the Control Pendant. Does the UP relay (KA4) close?  
YES – 4  
NO – 7
4. Press the UP button on the Control Pendant again. Does the UP contactor (KM4) close?  
YES – 5  
NO – 10
5. Check the supply voltage with a multi-meter set to AC voltage on the input side of the UP contactor (KM4). Are both lines of supply voltage present?  
YES – 6  
NO – Check wire connections feeding the input side of the UP contactor (KM4)
6. Check the supply voltage with a multi-meter set to AC voltage on the output side of UP contactor (KM4) while the UP contactor (KM4) is closed by pressing the UP button on the Control Pendant. Are both lines of supply voltage present?  
YES – Check the wires and connections feeding the motor  
NO – Replace the UP contactor (KM4) (bad main contacts)
7. Locate the UP relay (KA4) coil inputs "A1" and "A2". With a multi-meter set to AC voltage, test the control voltage between "A1" and "A2" while pressing the UP button on the Control Pendant. Is the control voltage present while pressing the UP button?  
YES – Replace the UP relay (KA4) (bad relay coil)  
NO – 8



8. With a multi-meter set to AC voltage, check the control voltage at the UP relay (KA4) coil input "A2" and terminal "95" of the Motor Overload (OL1). Is the control voltage present?  
YES – 9  
NO – Check the wiring that feeds UP relay (KA4) coil input "A2"
9. Open the back cover of the Control Pendant. With a multi-meter set to AC voltage, check the control voltage between the UP relay (KA4) coil input "A2" and both terminal sides of the UP button while pressing the UP button. Is the control voltage present?  
Control voltage IS present on both sides – Check the wiring connections between the UP button and UP relay (KA4) coil input "A1"  
Control voltage ONLY present on one side – Replace UP button on Control Pendant  
Control voltage NOT present on both sides – Check the wiring connections of the "Common" wire in the Control Pendant
10. Locate the UP contactor (KM4) coil inputs "A1" and "A2". With a multi-set to AC voltage, test the control voltage between "A1" and "A2" while pressing the UP button on the Control Pendant. Is the control voltage present while pressing the UP button?  
YES – Replace the UP contactor (KM4) (bad contactor coil)  
NO – 11
11. With a multi-meter set to AC voltage, check the control voltage at the UP contactor (KM4) coil input "A2" and terminal "95" of the Motor Overload (OL1). Is the control voltage present?  
YES – 12  
NO – Check the wiring that feeds UP contactor (KM4) coil input "A2"
12. With a multi-meter set to AC voltage, check the control voltage between UP contactor (KM4) coil input "A2" and UP relay (KA4) terminal "5" while pressing the UP button on the Control Pendant. Is the control voltage present?  
YES – Check the wiring that feeds UP contactor (KM4) coil input "A1"  
NO – 13
13. With a multi-meter set to AC voltage, check the control voltage between UP contactor (KM4) coil input "A2" and UP relay (KA4) terminal "9". Is the control voltage present?  
YES – Replace the UP relay (KA4) (bad relay contact)  
NO – 14



14. Inspect the Over Weight limit switch with an empty load in the basket. Is the Over Weight limit switch compressed against the rung of the mast?  
YES – Adjust the Over Weight limit switch  
NO – 15
15. Open the back cover of the Over Weight limit switch. With a multi-meter set to AC voltage, check the control voltage between the UP contactor (KM4) coil input “A2” and both terminal sides of the NC circuit of the Over Weight limit switch. Is the control voltage present?  
Control voltage IS present on both sides – Check the wiring that feeds the UP relay coil (KA4) terminal “9” from the Over Weight limit switch  
Control voltage ONLY present on one side – Replace the Over Weight limit switch  
Control voltage NOT present on both sides – Check the wiring connections of the “Common” wire in that feeds the Over Weight limit switch
16. Open the Enclosure Box. Locate the DOWN relay (KA5). Press the DOWN button on the Control Pendant. Does the DOWN relay (KA5) close?  
YES – 17  
NO – 20
17. Press the DOWN button on the Control Pendant again. Does the DOWN contactor (KM5) close?  
YES – 18  
NO – 23
18. Check the supply voltage with a multi-meter set to AC voltage on the input side of the DOWN contactor (KM5). Are both lines of supply voltage present?  
YES – 19  
NO – Check wire connections feeding the input side of the DOWN contactor (KM5)
19. Check the supply voltage with a multi-meter set to AC voltage on the output side of DOWN contactor (KM5) while the DOWN contactor (KM5) is closed by pressing the DOWN button on the Control Pendant. Are both lines of supply voltage present?  
YES – Check the wires and connections feeding the motor  
NO – Replace the DOWN contactor (KM5) (bad main contacts)



20. Locate the DOWN relay (KA5) coil inputs "A1" and "A2". With a multi-set to AC voltage, test the control voltage between "A1" and "A2" while pressing the DOWN button on the Control Pendant. Is the control voltage present while pressing the DOWN button?  
YES – Replace the DOWN relay (KA5) (bad relay coil)  
NO – 21
21. With a multi-meter set to AC voltage, check the control voltage at the DOWN relay (KA5) coil input "A2" and terminal "95" of the Motor Overload (OL1). Is the control voltage present?  
YES – 22  
NO – Check the wiring that feeds DOWN relay (KA5) coil input "A2"
22. Open the back cover of the Control Pendant. With a multi-meter set to AC voltage, check the control voltage between the DOWN relay (KA5) coil input "A2" and both terminal sides of the DOWN button while pressing the DOWN button. Is the control voltage present?  
Control voltage **IS** present on both sides – Check the wiring connections between the DOWN button and DOWN relay coil (KA5) input "A1"  
Control voltage **ONLY** present on one side – Replace DOWN button on Control Pendant  
Control voltage **NOT** present on both sides – Check the wiring connections of the "Common" wire in the Control Pendant
23. Locate the DOWN contactor (KM5) coil inputs "A1" and "A2". With a multi-set to AC voltage, test the control voltage between "A1" and "A2" while pressing the DOWN button on the Control Pendant. Is the control voltage present while pressing the DOWN button?  
YES – Replace the DOWN contactor (KM5) (bad contactor coil)  
NO – 24
24. With a multi-meter set to AC voltage, check the control voltage at the DOWN contactor (KM5) coil input "A2" and terminal "95" of the Motor Overload (OL1). Is the control voltage present?  
YES – 25  
NO – Check the wiring that feeds DOWN contactor (KM5) coil input "A2"
25. With a multi-meter set to AC voltage, check the control voltage between DOWN contactor (KM5) coil input "A2" and DOWN relay (KA5) terminal "5" while pressing the DOWN button on the Control Pendant. Is the control voltage present?  
YES – Check the wiring that feeds DOWN contactor (KM5) coil input "A1"  
NO – 26





26. With a multi-meter set to AC voltage, check the control voltage between DOWN contactor (KM5) coil input "A2" and DOWN relay (KA5) terminal "9". Is the control voltage present?
- YES – Replace the DOWN relay (KA5) (bad relay contact)
  - NO – 27
27. Inspect the Slack Rope limit switch with the wire rope tight with tension. Is the wire rope tension roller up against the Slack Rope limit switch?
- YES – Wire rope is on the wrong side of the roller
  - NO – 28
28. With a multi-meter set to Ohms ( $\Omega$ ), check the continuity between pin #4 and pin #6 of the motor plug on the Motor pack. Is there continuity through the circuit?
- YES – Check the wiring that feeds the DOWN relay (KA5) coil terminal "9" from the Slack Rope limit switch
  - NO – Replace the Slack Rope limit switch
29. Do you hear a distinctive metallic click in the motor when pressing the UP or DOWN button on the Control Pendant?
- YES – 30
  - NO – 31
30. Check the Capacitors and the capacitor connections through to the UP contactor (KM4) and DOWN contactor (KM5). Do the Capacitors and connections look ok?
- YES – Check all Motor connections and the continuity of the motor windings
  - NO – Repair connections or replace Capacitors
31. Ensure that the Control Box is connected to the proper power, taking into factor the length of the supply cable and size of cable to limit voltage drop. Is the power fed correct?
- YES – 32
  - NO – Correct the power feed
32. Ensure that the motor power wires have a good connection from the power plug all the way to the motor, including the motor plug connection. Are the connections good?
- YES – 33
  - NO – Correct the connections



33. While trying to lift a load does the hoist bounce up and shuts off and then bounces down and starts up again?  
YES – Adjust the Over Weight limit switch  
NO – 34
34. Follow the "Maxial Brake Replacement and Adjustment Procedure"
35. Check all cable connections. Is the Control Pendant connected to the Control Box and the Power Cord plugged into power?  
YES – 36  
NO – Repair connections
36. Ensure that the Control Box is connected to the proper power, taking into factor the length of the supply cable and size of cable to limit voltage drop. Is the power fed correct?  
YES – 37  
NO – Correct the power feed
37. Check the supply voltage with a multi-meter set to AC voltage on the input side of the Motor Overload (OL1) terminals "2" and "6". Are both lines of supply voltage present?  
YES – 38  
NO – Check wire connections from the Power Plug to the Motor Overload (OL1)
38. Check the supply voltage with a multi-meter set to AC voltage on the input side of the Main Contactor (KM1) terminals "2" and "6". Are both lines of supply voltage present?  
YES – 39  
NO – Check the connections from the Motor Overload (OL1) and MAIN contactor (KM1)
39. Press the ENGAGE button on the Control Pendant. What does the MAIN contactor (KM1) do?  
Closes and stays engaged – 40  
Closes and then opens back up – 49  
Does nothing – 41
40. Check the supply voltage with a multi-meter set to AC voltage on the output side of the MAIN contactor (KM1) terminals "1" and "5". Are both lines of supply voltage present?  
YES – Check wire connections between MAIN contactor (KM1), UP contactor (KM4) and DOWN contactor (KM5)  
NO – Replace the MAIN contactor (KM1) (bad contactor contacts)



41. With a multi-meter set to AC voltage, check the control voltage between the MAIN contactor coil (KM1) input "A2" and both terminal sides of the Control Transformer secondary side fuse (FU5). Is the control voltage present?
- Control voltage **IS** present on both sides – 46
  - Control voltage **ONLY** present on one side – Replace the fuse
  - Control voltage **NOT** present on both sides – 42
42. With a multi-meter set to AC voltage, check the control voltage between the Control Transformer (TR2) terminal "6" and terminal "10". Is the control voltage present?
- YES – Check wire connections between MAIN contactor (KM1) coil input "A2" and Control Transformer (TR2) terminal "10"
  - NO – 43
43. With a multi-meter set to AC voltage, check the supply voltage between the Motor Overload (OL1) terminal "6" and both terminal sides of half of the Control Transformer primary side fuse (FU4-1). Is the supply voltage present?
- Supply voltage **IS** present on both sides – 44
  - Supply voltage **ONLY** present on one side – Replace the fuse
  - Supply voltage **NOT** present on both sides – Check wire connection feeding that half of the Control Transformer primary side fuse (FU4-1)
44. With a multi-meter set to AC voltage, check the supply voltage between the Motor Overload (OL1) terminal "2" and both terminal sides of half of the Control Transformer primary side fuse (FU4-2). Is the supply voltage present?
- Supply voltage **IS** present on both sides – 45
  - Supply voltage **ONLY** present on one side – Replace the fuse
  - Supply voltage **NOT** present on both sides – Check wire connection feeding that half of the Control Transformer primary side fuse (FU4-2)
45. With a multi-meter set to AC voltage, check the supply voltage between the Control Transformer (TR2) terminal "1" and terminal "5". Is the supply voltage present?
- YES – Replace the Control Transformer (TR2)
  - NO – Check the wire connection feeding from the Control Transformer primary side fuses (FU4-1) and (FU4-2) to the Control Transformer (TR2)



46. With a multi-meter set to AC voltage, check the control voltage between the MAIN contactor (KM1) coil input "A2" and terminal "96" of the Motor Overload (OL1). Is the control voltage present?
- YES – 47
  - NO – Check the wire connection from the Control Transformer secondary fuse (FU5)
47. With a multi-meter set to AC voltage, check the control voltage between the MAIN contactor (KM1) coil input "A2" and terminal "95" of the Motor Overload (OL1). Is the control voltage present?
- YES – 48
  - NO – Let the motor cool for 30 minutes and recheck Step 46, if problem continues contact BetaMax Technical Support
48. Is the RED STOP button pressed in on the Control Pendant?
- YES – Release the RED STOP button
  - NO – 49
49. Open the back cover of the Control Pendant. With a multi-meter set to AC voltage, check the control voltage between the Main Contactor (KM1) coil input "A2" and both terminal sides of the RED STOP button. Is the control voltage present?
- Control voltage **IS** present on both sides – 50
  - Control voltage **ONLY** present on one side – Replace RED STOP button on Control Pendant
  - Control voltage **NOT** present on both sides – Check the wiring connections from Motor Overload (OL1) terminal "95" the RED STOP button
50. With a multi-meter set to AC voltage, check the control voltage between the Main Contactor (KM1) coil input "A2" and terminal "4" of the Main Contactor (KM1). Is the control voltage present?
- YES – 51
  - NO – Check the wire connection from the RED STOP button



51. With a multi-meter set to AC voltage, check the control voltage between the MAIN contactor (KM1) coil input "A2" and both terminal sides of the ENGAGE button on the Control Pendant while pressing the ENGAGE button. Is the control voltage present?
- Control voltage IS present on both sides – 52
  - Control voltage ONLY present on one side – Replace the ENGAGE button on the Control Pendant
  - Control voltage NOT present on both sides – Check the wiring connections from the RED STOP button
52. With a multi-meter set to AC voltage, check the control voltage between the MAIN contactor (KM1) coil input "A2" and "A1" while pressing the ENGAGE button. Is the control voltage present?
- YES – Replace MAIN contactor (KM1) (bad contactor coil)
  - NO – Check the wire connection from the ENGAGE button





## Appendix E

General Maintenance (Daily) Checklist Form (Section 10.2.1)



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## BetaMax Hoists, Inc.

P.O. Box 2750

Melbourne, FL 32902-2750

Ph. 800-233-5112 Fx: 321-768-9517

www.betamaxhoist.com

# Operators Daily Checklist MAXIAL TRACK HOIST

OPERATOR: \_\_\_\_\_

DATE: \_\_\_\_\_

SERIAL NUMBER: \_\_\_\_\_

TIME: \_\_\_\_\_

(If any item is marked FAILED write comments in the note section)

	PASS	FAIL	N/A
1) CHECK THE WORK AREA NEAR AND AROUND THE HOIST AND HOISTWAY IS FREE FROM OBSTRUCTIONS, CLUTTER, AND TRIP HAZARDS.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2) CONFIRM THE POWER SOURCE HAS NOT CHANGED.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3) CHECK THAT THE POWER CORD EXTENSIONS ARE PROPERLY PLUGGED INTO THE POWER SOURCE.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4) CHECK THAT THE CONTROL/ELECTRICAL BOX IS PROPERLY CONNECTED TO THE MOTOR PACK.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5) CHECK THAT THE HANDHELD CONTROL PENDANT IS PROPERLY CONNECTED TO THE CONTROL/ELECTRICAL BOX.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6) CONFIRM THE TOP AND BOTTOM MOTOR PACK FLIP RETAINER LOCKS ARE LOCKED IN PLACE SECURING THE MOTOR PACK TO THE LADDER TRACK SECTION.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7) CHECK TO MAKE SURE THE PINS SECURING THE CARRIER BASKET TO THE UNIVERSAL CARRIAGE ARE INSERTED COMPLETELY AND CONTAIN SAFETY PIN LOCKS.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8) CONFIRM THE SLIDING HEAD IS LOCKED IN PLACE SECURED TO THE LADDER TRACK SECTION AND NO HIGHER THAN THE LAST SCAFF-CLAMP.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9) CHECK THAT ALL GUIDE ROLLERS ARE PRESENT ON THE UNIVERSAL CARRIAGE.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10) VISUALLY INSPECT ALL GUIDE ROLLERS ON THE UNIVERSAL CARRIAGE TO NOTICE ANY UNEVEN WEAR WHICH MAY INDICATE THE UNIVERSAL CARRIAGE IS NOT TRACKING PROPERLY ON THE LADDER TRACK AND ENSURE THE ROLLERS MOVE FREELY.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11) CHECK THAT ALL SPRINGS ARE IN PLACE ON THE EMERGENCY BRAKE ON THE UNIVERSAL CARRIAGE.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12) CHECK THAT ALL SPRINGS ARE IN PLACE ON THE SLACK ROPE ASSEMBLY ON THE MOTOR PACK.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(If any item is marked FAILED write comments in the note section)

PASS    FAIL    N/A

- 13) RUN THE SYSTEM UP TO THE TOP AND BACK DOWN VISUALLY INSPECTING THE WIRE ROPE FOR ANY KINKS, BIRDCAGES, OR BREAKAGE.  
**WIRE ROPE SHOULD BE REPLACED IF DAMAGE IS FOUND** ..... ☐ ☐ ☐
- 14) CHECK THAT THE WIRE ROPE IS SPOOLING PROPERLY AND THE WIRE ROPE WILL EVENLY REEVE ON THE DRUM ..... ☐ ☐ ☐
- 15) ENSURE THE STOP PUSHBUTTON ON THE HANDHELD CONTROL PENDANT SHUTS OFF THE SYSTEM IF PRESSED ..... ☐ ☐ ☐
- 16) ENSURE THE SYSTEM SHUTS OFF THE UP DIRECTION WHEN THE UNIVERSAL CARRIAGE REACHES THE TOP STOP ..... ☐ ☐ ☐
- 17) ENSURE THE SYSTEM SHUTS OFF THE DOWN DIRECTION WHEN THE UNIVERSAL CARRIAGE REACHES THE GROUND OR THE BOTTOM STOP ..... ☐ ☐ ☐
- 18) ENSURE THE SYSTEM LIFTS, STOPS, AND HOLDS A FULL RATED LOAD ..... ☐ ☐ ☐

**NOTES SECTION:**

LINE	ITEM	COMMENT
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

SIGNATURE: \_\_\_\_\_



## Appendix F

General Maintenance (Monthly) Checklist Form (Section 10.2.2)



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## BetaMax Hoists, Inc.

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Ph. 800-233-5112 Fx: 321-768-9517

www.betamaxhoist.com

# General Maintenance (Monthly) MAXIAL TRACK HOIST

(If any item is marked FAILED write comments in the note section)

PASS FAIL N/A

- 1) CHECK THE WORK AREA NEAR AND AROUND THE HOIST AND HOISTWAY IS FREE FROM OBSTRUCTIONS, CLUTTER, AND TRIP HAZARDS..... ☐ ☐ ☐
- 2) CONFIRM THE POWER SOURCE HAS NOT CHANGED..... ☐ ☐ ☐
- 3) CHECK THAT THE POWER CORD EXTENSIONS ARE PROPERLY PLUGGED INTO THE POWER SOURCE..... ☐ ☐ ☐
- 4) CHECK THAT THE CONTROL/ELECTRICAL BOX IS PROPERLY CONNECTED TO THE MOTOR PACK..... ☐ ☐ ☐
- 5) CHECK THAT THE HANDHELD CONTROL PENDANT IS PROPERLY CONNECTED TO THE CONTROL/ELECTRICAL BOX..... ☐ ☐ ☐
- 6) CONFIRM THE TOP AND BOTTOM MOTOR PACK FLIP RETAINER LOCKS ARE LOCKED IN PLACE SECURING THE MOTOR PACK TO THE LADDER TRACK SECTION..... ☐ ☐ ☐
- 7) CHECK TO MAKE SURE THE PINS SECURING THE CARRIER BASKET TO THE UNIVERSAL CARRIAGE ARE INSERTED COMPLETELY AND CONTAIN SAFETY PIN LOCKS..... ☐ ☐ ☐
- 8) CONFIRM THE SLIDING HEAD IS LOCKED IN PLACE SECURED TO THE LADDER TRACK SECTION AND NO HIGHER THAN THE LAST SCAFF-CLAMP..... ☐ ☐ ☐
- 9) CHECK THAT ALL GUIDE ROLLERS ARE PRESENT ON THE UNIVERSAL CARRIAGE..... ☐ ☐ ☐
- 10) VISUALLY INSPECT ALL GUIDE ROLLERS ON THE UNIVERSAL CARRIAGE TO NOTICE ANY UNEVEN WEAR WHICH MAY INDICATE THE UNIVERSAL CARRIAGE IS NOT TRACKING PROPERLY ON THE LADDER TRACK AND ENSURE THE ROLLERS MOVE FREELY..... ☐ ☐ ☐
- 11) CHECK THAT ALL SPRINGS ARE IN PLACE ON THE EMERGENCY BRAKE ON THE UNIVERSAL CARRIAGE..... ☐ ☐ ☐
- 12) CHECK THAT ALL SPRINGS ARE IN PLACE ON THE SLACK ROPE ASSEMBLY ON THE MOTOR PACK..... ☐ ☐ ☐
- 13) RUN THE SYSTEM UP TO THE TOP AND BACK DOWN VISUALLY INSPECTING THE WIRE ROPE FOR ANY KINKS, BIRDCAGES, OR BREAKAGE.  
WIRE ROPE SHOULD BE REPLACED IF DAMAGE IS FOUND..... ☐ ☐ ☐

(If any item is marked FAILED write comments in the note section)

PASS      FAIL      N/A

- |  |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|
| 14) CHECK THAT THE WIRE ROPE IS SPOOLING PROPERLY AND THE WIRE ROPE WILL<br>EVENLY REEVE ON THE DRUM.....                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15) ENSURE THE STOP PUSHBUTTON ON THE HANDHELD CONTROL PENDANT SHUTS<br>OFF THE SYSTEM IF PRESSED.....                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16) ENSURE THE SYSTEM SHUTS OFF THE UP DIRECTION WHEN THE UNIVERSAL<br>CARRIAGE REACHES THE TOP STOP.....                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17) ENSURE THE SYSTEM SHUTS OFF THE DOWN DIRECTION WHEN THE UNIVERSAL<br>CARRIAGE REACHES THE GROUND OR THE BOTTOM STOP..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18) ENSURE THE SYSTEM LIFTS, STOPS, AND HOLDS A FULL RATED LOAD.....   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19) CHECK TO ENSURE ALL KWIK BOLTS ARE TIGHTENED SECURING THE LADDER TRACK<br>SECTIONS TO ONE ANOTHER AND THE BASE FEET..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20) CHECK TO ENSURE ALL SCAFF-CLAMPS ARE TIGHTENED SECURING THE LADDER<br>TRACK TO SCAFFOLDING.....                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21) VERIFY THAT THE PULLEY LOCATED IN THE SLIDING HEAD MOVES FREELY.....   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 22) VERIFY THAT THE OVERWEIGHT SYSTEM IS CALIBRATED PROPERLY.....  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**NOTES SECTION:**

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COMPANY: \_\_\_\_\_

JOB SITE ADDRESS:

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SERIAL NUMBER: \_\_\_\_\_

YEAR OF MANUFACTURE: \_\_\_\_\_

TECHNICIAN NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

TECHNICIAN SIGNATURE: \_\_\_\_\_



## Appendix G

General Maintenance (Annually) Checklist Form (Section 10.2.3)



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## BetaMax Hoists, Inc.

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www.betamaxhoist.com

# General Maintenance (Annually) MAXIAL TRACK HOIST

(If any item is marked FAILED write comments in the note section)

PASS FAIL N/A

- 1) CHECK THE WORK AREA NEAR AND AROUND THE HOIST AND HOISTWAY IS FREE FROM OBSTRUCTIONS, CLUTTER, AND TRIP HAZARDS..... ☐ ☐ ☐
- 2) CONFIRM THE POWER SOURCE HAS NOT CHANGED..... ☐ ☐ ☐
- 3) CHECK THAT THE POWER CORD EXTENSIONS ARE PROPERLY PLUGGED INTO THE POWER SOURCE..... ☐ ☐ ☐
- 4) CHECK THAT THE CONTROL/ELECTRICAL BOX IS PROPERLY CONNECTED TO THE MOTOR PACK..... ☐ ☐ ☐
- 5) CHECK THAT THE HANDHELD CONTROL PENDANT IS PROPERLY CONNECTED TO THE CONTROL/ELECTRICAL BOX..... ☐ ☐ ☐
- 6) CONFIRM THE TOP AND BOTTOM MOTOR PACK FLIP RETAINER LOCKS ARE LOCKED IN PLACE SECURING THE MOTOR PACK TO THE LADDER TRACK SECTION..... ☐ ☐ ☐
- 7) CHECK TO MAKE SURE THE PINS SECURING THE CARRIER BASKET TO THE UNIVERSAL CARRIAGE ARE INSERTED COMPLETELY AND CONTAIN SAFETY PIN LOCKS..... ☐ ☐ ☐
- 8) CONFIRM THE SLIDING HEAD IS LOCKED IN PLACE SECURED TO THE LADDER TRACK SECTION AND NO HIGHER THAN THE LAST SCAFF-CLAMP..... ☐ ☐ ☐
- 9) CHECK THAT ALL GUIDE ROLLERS ARE PRESENT ON THE UNIVERSAL CARRIAGE..... ☐ ☐ ☐
- 10) VISUALLY INSPECT ALL GUIDE ROLLERS ON THE UNIVERSAL CARRIAGE TO NOTICE ANY UNEVEN WEAR WHICH MAY INDICATE THE UNIVERSAL CARRIAGE IS NOT TRACKING PROPERLY ON THE LADDER TRACK AND ENSURE THE ROLLERS MOVE FREELY..... ☐ ☐ ☐
- 11) CHECK THAT ALL SPRINGS ARE IN PLACE ON THE EMERGENCY BRAKE ON THE UNIVERSAL CARRIAGE..... ☐ ☐ ☐
- 12) CHECK THAT ALL SPRINGS ARE IN PLACE ON THE SLACK ROPE ASSEMBLY ON THE MOTOR PACK..... ☐ ☐ ☐
- 13) RUN THE SYSTEM UP TO THE TOP AND BACK DOWN VISUALLY INSPECTING THE WIRE ROPE FOR ANY KINKS, BIRDCAGES, OR BREAKAGE.  
WIRE ROPE SHOULD BE REPLACED IF DAMAGE IS FOUND..... ☐ ☐ ☐

(If any item is marked FAILED write comments in the note section)

	PASS	FAIL	N/A
14) CHECK THAT THE WIRE ROPE IS SPOOLING PROPERLY AND THE WIRE ROPE WILL EVENLY REEVE ON THE DRUM.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15) ENSURE THE STOP PUSHBUTTON ON THE HANDHELD CONTROL PENDANT SHUTS OFF THE SYSTEM IF PRESSED.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16) ENSURE THE SYSTEM SHUTS OFF THE UP DIRECTION WHEN THE UNIVERSAL CARRIAGE REACHES THE TOP STOP.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17) ENSURE THE SYSTEM SHUTS OFF THE DOWN DIRECTION WHEN THE UNIVERSAL CARRIAGE REACHES THE GROUND OR THE BOTTOM STOP.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18) ENSURE THE SYSTEM LIFTS, STOPS, AND HOLDS A FULL RATED LOAD.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19) CHECK TO ENSURE ALL KWIK BOLTS ARE TIGHTENED SECURING THE LADDER TRACK SECTIONS TO ONE ANOTHER AND THE BASE FEET.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20) CHECK TO ENSURE ALL SCAFF-CLAMPS ARE TIGHTENED SECURING THE LADDER TRACK TO SCAFFOLDING.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21) VERIFY THAT THE PULLEY LOCATED IN THE SLIDING HEAD MOVES FREELY.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22) VERIFY THAT THE OVERWEIGHT SYSTEM IS CALIBRATED PROPERLY.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23) INSPECT THE TRANSMISSION GEARS BY A CERTIFIED BETAMAX TECHNICIAN FOR ANY SIGNS OF MISSING OR BROKEN GEAR TEETH.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24) INSPECT WEAR AND TEAR/USAGE OF THE TRANSMISSION GEARS BY A CERTIFIED BETAMAX TECHNICIAN.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25) REPLACE TRANSMISSION SEALS BY CERTIFIED BETAMAX TECHNICIAN.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26) INSPECT TRANSMISSION BEARINGS BY CERTIFIED BETAMAX TECHNICIAN.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27) CLEAN AND RELUBRICATE THE TRANSMISSION.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**NOTES SECTION:**

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

COMPANY: \_\_\_\_\_

**JOB SITE ADDRESS:**

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SERIAL NUMBER: \_\_\_\_\_

YEAR OF MANUFACTURE: \_\_\_\_\_

TECHNICIAN NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

TECHNICIAN SIGNATURE: \_\_\_\_\_

