

# HI-TECH HOIST, LLC.

## Independence 1000, Liberty 2001 & Freedom 3003

### Rack & Pinion Material Platform Hoists

*Owner's Manual*

**MANUAL FOR REFERENCE ONLY**



#### CONTENTS:

- ELECTRICAL SCHEMATICS
- INSTALLATION PROCEDURES
- OPERATOR'S PROCEDURES
- SPECIAL FEATURES

PLEASE NOTE: THE ILLUSTRATIONS IN THIS MANUAL ARE NOT TO SCALE OR DETAIL AND ARE FOR REFERENCE ONLY



Hi-Tech Hoist, LLC. Melbourne, FL – USA

Ph: (321) 733-3387 Fax: (321) 733-9433 [www.hi-techhoist.com](http://www.hi-techhoist.com) sales@hi-techhoist.com

*This page left intentionally blank.*

## **TABLE OF CONTENTS**

### ***RP-1000/RP-2001/RP-3003 Material Platform Hoist***

#### **1.0 INTRODUCTION**

##### **1.1 General**

#### **2.0 OWNER/OPERATOR RESPONSIBILITY**

##### **2.1 Inspection & Maintenance**

##### **2.2 Removal From Service**

##### **2.3 Repairs**

##### **2.4 Operators**

###### **2.4.1 Before Operation**

###### **2.4.2 During Operation**

##### **2.5 Modifications or Alterations**

##### **2.6 Training**

##### **2.7 Safety**

##### **2.8 Warnings**

##### **2.9 Voltage**

#### **3.0 OPERATING SAFETY**

##### **3.1 Cautions & Warnings During Use**

#### **4.0 DESCRIPTION OF EQUIPMENT**

##### **4.1 Specifications & Dimensions**

##### **4.2 Machine Breakout**

##### **4.3 Platform, Carriage & Enclosures**

##### **4.4 Platform Detail**

##### **4.5 Platform Basket Mounting Systems**

#### **5.0 INSTALLATION INSTRUCTIONS AND DIAGRAMS**

##### **5.1 Base Unit Description**

##### **5.2 Setting Up The Base Unit**

##### **5.3 Tower Sections**

###### **5.3.1 Erecting Tower Sections**

###### **5.3.2 Tower Mounting Brackets**

###### **5.3.3 Anchoring The Tower To The Structure**

###### **5.3.4 Tower Enclosure**

###### **5.3.5 View Of Tower, Bracket & Clamps**

##### **5.4 Motor & Speed Reducer**

###### **5.4.1 Electric Brake**

##### **5.5 Cable Support & Guides**

- 6.0 ELECTRICAL CONTROL CIRCUITS & CONTROLS**
- 7.0 SEQUENCE OF OPERATION**
  - 7.1 In The UP Mode**
  - 7.2 In The DOWN Mode**
  - 7.3 Door Switch Detail**
- 8.0 OPERATING PROCEDURE**
  - 8.1 thru 8.8
  - 8.9 Pivot Platform Feature
- 9.0 DISMANTLING THE TOWER**
  - 9.1 thru 9.5
- 10.0 INSPECTION & MAINTENANCE**
  - 10.1 Daily
  - 10.2 Monthly
  - 10.3 Quarterly (Every 3 Months)
  - 10.4 Semi-Annually (Every 6 Months)
  - 10.5 Annually
  - 10.6 Inspection and Maintenance Log
- 11.0 VARIABLE SPEED DRIVE INSPECTION & MAINTENANCE**
  - 11.1 Regular Inspection
  - 11.2 Periodical Inspection
  - 11.3 Troubleshooting the Variable Speed Drive (VSD)
    - 11.3.1 The VSD Will Not Run
    - 11.3.2 The VSD Trips During Acceleration
- 12.0 ROTARY BRAKE ADJUSTMENT & TEST PROCEDURE**
  - 12.1 To Adjust The Pawl Spring
  - 12.2 Stopping Distance
  - 12.3 Test Procedure
- 13.0 REPLACEMENT PARTS**
- 14.0 LIMITED WARRANTY**

## 1.0 INTRODUCTION

### 1.1 General

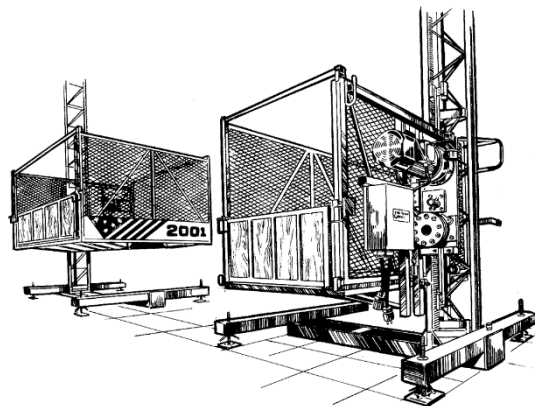
The Hi-Tech Hoist LLC RP-1000/RP-2001/RP-3003 Rack & Pinion Material Platform Hoist provides a safe and efficient means of delivering tools and materials from ground level up to 400 feet on new or existing structures.

The hoist consists of a carriage and platform, a tower, a base section and various attachments and accessory items. The tower is made of 5 foot sections which are easily bolted together to reach the necessary height. The tower is stabilized with brackets and braces attached to the structure. It is important to remember that the tower carries the entire weight of the hoist and load.

The carriage and platform travel up and down the tower under the control of the operator using a push-button pendant control. The operator may be stationed on the ground or at one of the upper levels. Upper and lower travel limit switches prevent the hoist from traveling beyond the limits of the tower.

The RP-1000 platform is 31" (w) x 60" (l) x 48" (h) The RP-2001 platform is 70" (w) x 45" (l) x 48" (h), RP-3003 platform is 70" (w) x 60" (l) x 48" (h) and is enclosed with side panels and drop down ramps. The pivoting platform of the RP-2001 allows the platform to pivot 90 degrees to the side to make it easier to load or unload at the upper levels. In some cases, this feature is required due to the site configuration. An optional Overhead Protection Enclosure can be provided where required, to protect workers while loading or unloading the platform.

The platform can transport wheelbarrows, lumber, block, bagged material, hardware fixtures and equipment. The platform is only used as a work platform while erecting and dismantling the tower. However, during normal use, personnel are prohibited from riding the Rack and Pinion Material Platform Hoist.



## 2.0 OWNER/OPERATOR RESPONSIBILITY

### 2.1 Inspection & Maintenance

The hoist shall be inspected and maintained in proper working order in accordance with the manufacturer's "Operator's Manual & Warranty" and safe operating practices.

### 2.2 Removal from Service

**Any hoist not in safe operating condition shall be removed from service until it is repaired to the original equipment manufacturer's standards.** Unsafe operating conditions include but are not limited to, excessive leakage; missing teeth, rollers, pins or fasteners; bent or cracked structural members; cut or frayed electric wires; damaged or malfunctioning controls or safety devices, etc.

### 2.3 Repairs

All repairs shall be made by qualified personnel in conformance with the manufacturer's instructions.

### 2.4 Operators

Only trained and authorized personnel shall be permitted to operate the hoist.

#### 2.4.1 Before Operation

Before using the hoist, the operator shall have:

- Read and/or have explained and understood the manufacturer's "Operator's Manual & Warranty" which includes operating instructions and safety rules.
- Inspect the hoist for proper operation and condition. Any questionable item shall be carefully examined and a determination made by a qualified person as to whether it creates a hazard. All items not in conformance with the manufacturer's specifications shall be corrected before further use of the hoist.

#### 2.4.2 During Operation

The hoist shall only be used in accordance with the manufacturer's "Operator's Manual & Warranty".

- Do not overload the hoist.
- Ensure that all safety devices are operational and in place.

### 2.5 Modifications or Alterations

Modifications or alterations to this equipment shall be made only with the written permission of the original equipment manufacturer. These changes shall be made in compliance with all applicable provisions of this standard and shall be as safe as the equipment was before modification. These changes shall also satisfy all safety recommendations of the original equipment manufacturer for the particular application of the equipment.

### 2.6 Training

It is imperative that all customers who purchase an RP-1000/RP-2001/RP-3003 Material Platform Hoist receive training in the proper installation, safety and operation of the hoist. Proper training will save your company time, money and loss of production. Hi-Tech Hoist LLC provides FREE In-House Training at our manufacturing facility in Melbourne, Florida, USA. Hi-Tech Hoist LLC can also provide on-site training at your facility for \$600.00 per day, plus travel and expenses.

## 2.7 Safety

It is the owner/operator's responsibility to establish and enforce safe operating practices as outlined in this manual and also to implement a regularly scheduled inspection and maintenance program.

## 2.8 Warning

**Hi-Tech Hoist LLC's products are designed for material handling only and are not to be used for lifting, supporting or transporting people or lifting loads over people.**



## 2.9 Voltage

**The hoist must be supplied with adequate voltage otherwise it will not perform. This will result in extensive motor damage. A minimum of 220 Volts must be maintained while the hoist is in use.**

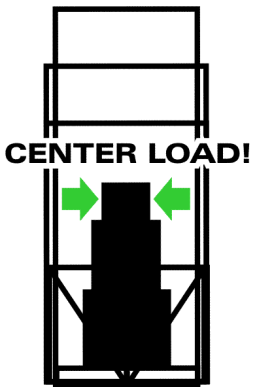
### 3.0 OPERATING SAFETY

#### 3.1 Cautions & Warnings During Use



**WARNING! Failure to obey the safety rules and installation instructions in this manual may result in serious injury or death.**

There are many ways in which the hoist can be installed unsafely or which would create unsafe operating conditions. It is impossible to anticipate all of these in writing this manual.



- 3.1.1 Only authorized personnel, under the direction of the site supervisor, should operate, maintain and use the RP-1000/RP-2001/RP-3003 Rack & Pinion Material Platform Hoist.
- 3.1.2 **DO NOT ALLOW PERSONNEL TO RIDE ON THE PLATFORM** except during erection, dismantling, inspection or maintenance.
- 3.1.3 You must comply with all Local safety and regulatory rules while erecting or operating this equipment.
- 3.1.4 **DO NOT** operate this equipment if any part is damaged, malfunctioning or broken.
- 3.1.5 The RP-1000/RP-2001/RP-3003 must be properly grounded for electrical safety and lightning protection. This is in addition to the ground wire found in the power supply cable.
- 3.1.6 All safety devices must be operational before the equipment is placed into operation.
- 3.1.7 **DO NOT** transport loads that hang over the edges of the platform.
- 3.1.8 Special care must be taken when wet or slippery conditions exist.
- 3.1.9 Ensure that there are no objects protruding or hanging from the hoist anchor structure that could obstruct the movement of the platform.
- 3.1.10 You must also restrain tall materials such that they will not protrude outside of the platform.
- 3.1.11 The area beneath the tower and platform must be enclosed with a fence or paneling to a height of at least 66" (See ANSI A10.5, Paragraph 6.7 – User Responsibility).
- 3.1.12 At the end of each working day, move the platform to its lowest position and deactivate the electrical system. Disconnect the power cord and push-button pendant. Store these items under lock and key.
- 3.1.13 **NEVER OVERLOAD THE EQUIPMENT**. The maximum lifting capacity is clearly marked on the hoist.
- 3.1.14 ANSI A10.5 allows the use of hand signals for hoists that travel up to 50 feet. When the hoist travels above 50 feet, some sort of electrical communication device is required (See ANSI A10.5, Paragraph 19.2).

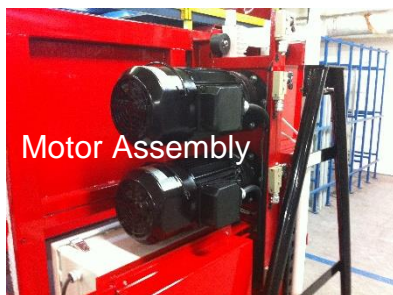
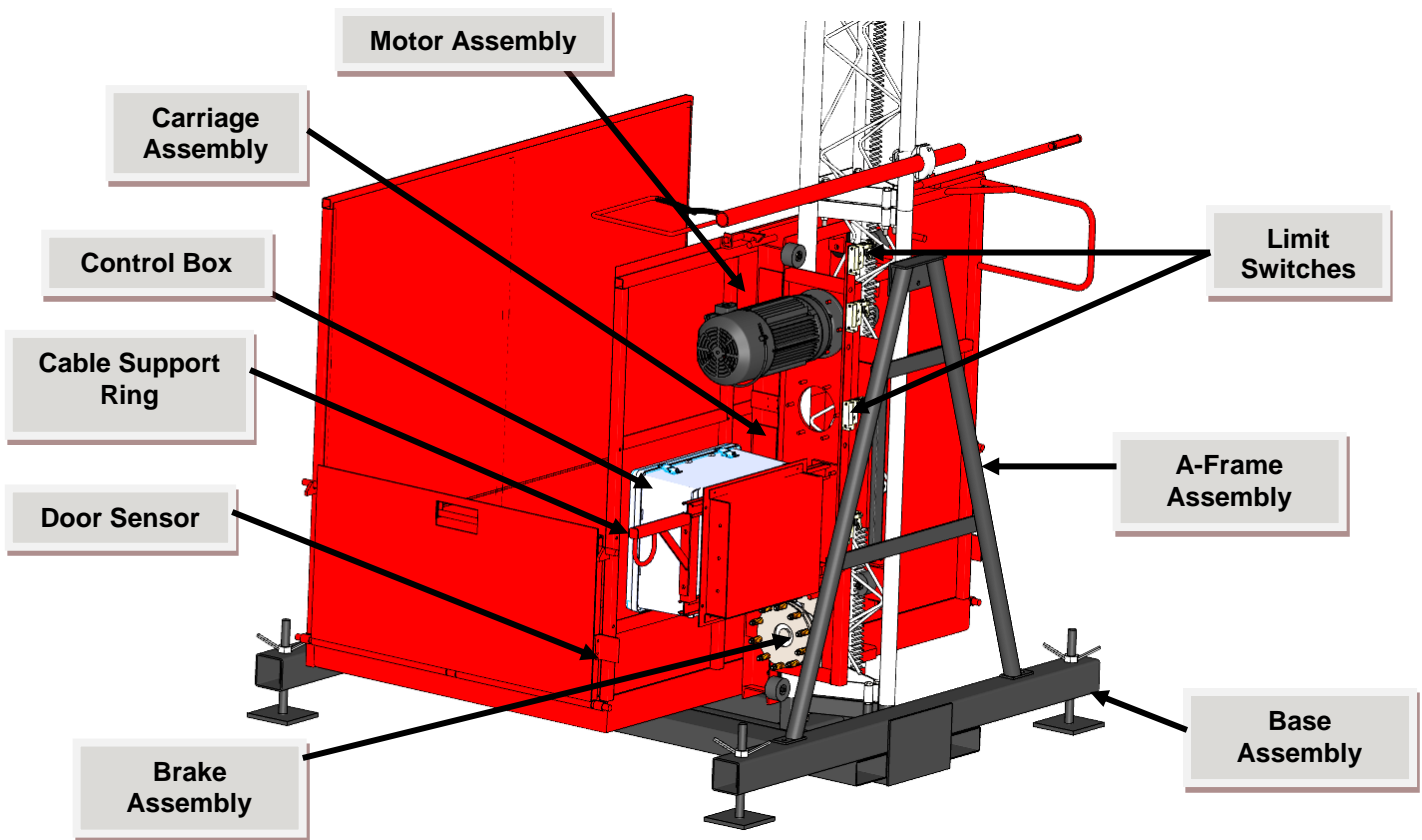


## 4.0 DESCRIPTION OF EQUIPMENT

### 4.1 Specifications & Dimensions

Specifications	RP-3003	RP-1000 & RP-2001
<i>Lifting Capacity</i>	3000 lbs.	2000 lbs RP-2001 1000 lbs RP-1000
<i>Lifting Height</i>	350'	400'
<i>Operating Speed</i>	70 fpm	RP-2001: 70 fpm RP- 1000: 90 fpm
<i>Platform Basket (Clear Inside Dimensions)</i>	70" (w) x 57.5" (d) x 48" (h)	69" (l) x 42.5" (w) x 48" (h) RP-2001 60' (l) x 31" (w) x 48" (h) RP-1000
<i>Base Footprint</i>	72" (w) x 72" (d)	72" (w) x 72" (d)
<i>Enclosures</i>	48"	48" Standard / 79" Optional ANSI
<i>Power Requirements</i>	220-240 volt, 60 Hertz AC Nominal Power 3-Phase @ 30 Amps (Capacity Decrease With Lower Voltages)	RP-2001/RP-1000 220 – 240 Volt, 60 Hertz AC Nominal Single Phase @ 30 Amps (Capacity Decreases With Lower Voltages)
<i>Motor</i>	(2) 5 HP Motors With Fail Safe Brakes	RP-1000/RP-2001: 5 HP With Fail Safe Brake
<i>Safety</i>	Overspeed Brake Over Travel Shut Off	Overspeed Brake Over Travel Shut Off
<i>Base Unit RP-2001 Base Unit RP-2010</i>	1600 Lbs.	1400 Lbs 1550 Lbs
<i>Towers</i>	5 Ft Section / 95 Lbs. each	5 Ft Sections / 95 Lbs Per Section
<i>Tower Tie-In Intervals</i>	10-12 Ft.	10 – 12 Ft Recommended / 15 Ft Maximum
<i>Concrete Slab Size</i>	7' x 8' (Recommended)	7' x 8' (Recommended)
<b>WARNINGS:</b>		
<p><b><i>For Towers above 200 Feet, consult a structural engineer for bracing requirements. Additional bracing may be required at the lower levels for higher towers.</i></b></p>		
<p><b><i>This Lift requires 220 – 240 constant voltage for proper operation.</i></b></p>		

## 4.2 Machine Breakout



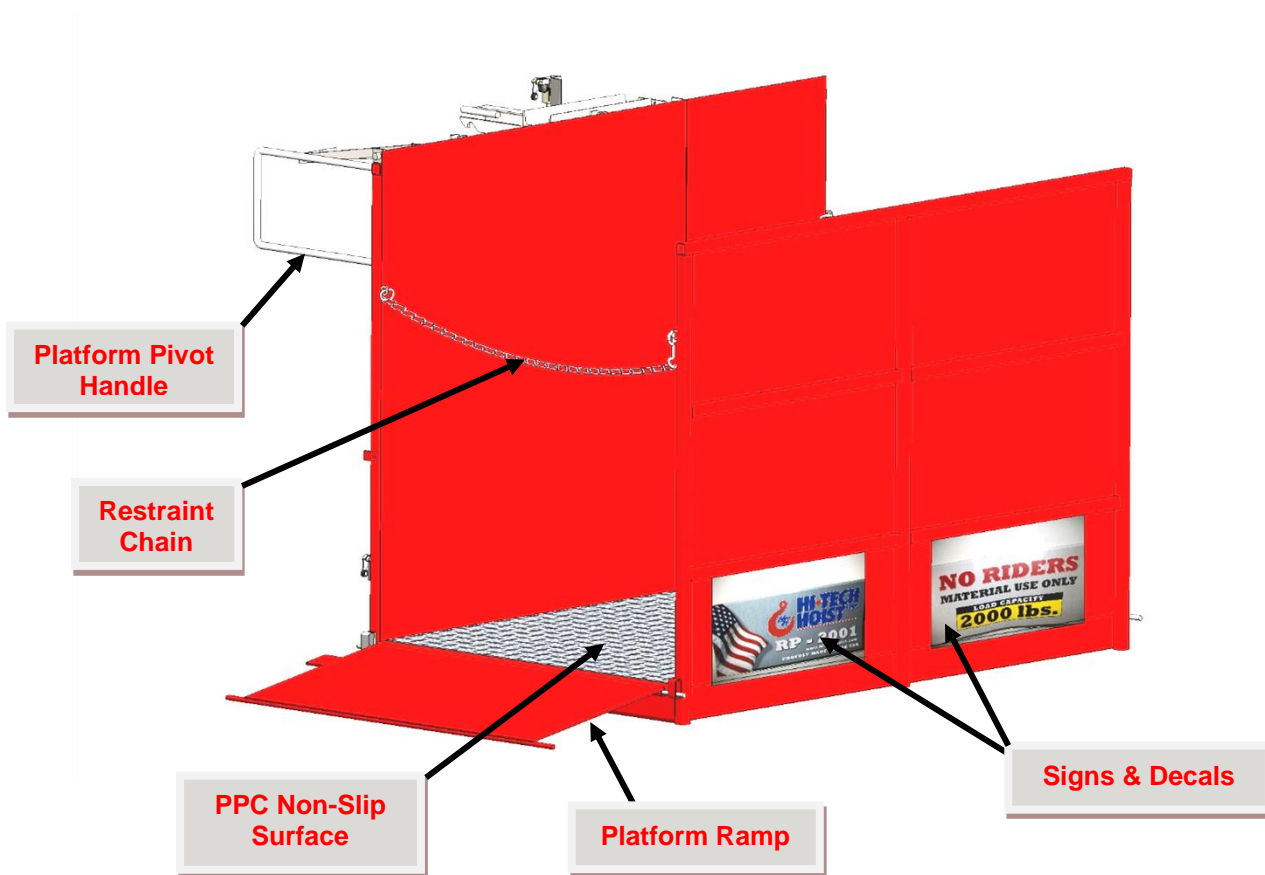
### 4.3 Platform, Carriage & Enclosures

The main moving portion of the hoist consists of the carriage, platform and the enclosures.

The carriage is a square, tubular structure which carries and supports the motor, speed reducer, brake, all alignment rollers and the various types of platforms.

The enclosures for the platform are designed to provide access for loading and unloading the platform and to prevent any material from falling off of the platform during operation.

### 4.4 Platform Details





**Independence 1000**



**Liberty 2001**  
(Available with Pivot Feature)

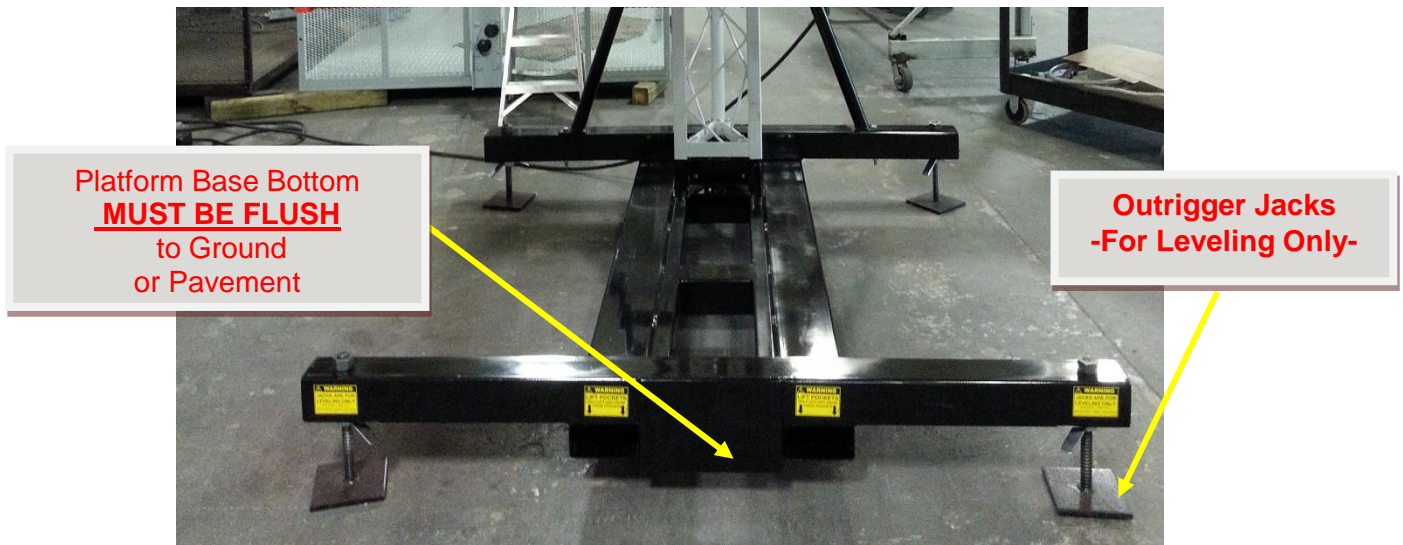


**Freedom 3003**

## 5.0 INSTALLATION INSTRUCTIONS AND DIAGRAMS

### 5.1 Base Unit Description

The base of the RP-1000/RP-2001/RP-3003 Material Platform Hoist consists of an “H” shaped steel structure that incorporates the lower tower section and an “A” frame tower brace. The base unit is constructed of steel structural members that are MIG welded together and painted with industrial quality paint.



**Platform Base**

#### **ATTENTION:**

***The jack screws are intended to provide stability and alignment. They are not intended to support the weight of the erected tower and associated loads.***

When set up for erection, the bottom of the center beams of the base unit must be supported against suitable foundation material.

#### **ATTENTION:**

***When the platform is in its lowest position, it will be between 6" and 8" above the ground level. It is advisable to construct a suitable ramp or landing to facilitate loading or unloading at the ground level.***

### 5.2 Setting Up The Base Unit

Position the base on a firm, flat surface. On unpaved areas, a load bearing, load-spreading pad must be prepared. Depending on the load bearing characteristics of the ground, an array of sleepers is recommended.

Generally, a double layer of 2" x 12" planks laid at right angles will suffice. Nearly the entire weights of the tower, carriage, base and load are concentrated on a



small area directly under the tower. A fully loaded hoist with 100 feet of tower will weigh approximately 2.5 tons.

Align the base so that it is square with the building and at an appropriate distance so that the platform in the loading and unloading position at the upper levels will be approximately 6" from the landing. The positioning of the hoist must be planned carefully, be sure there are NO overhangs or setbacks.

Once the hoist is in position, retract all four leveling jacks until the base is solidly positioned on the ground or on suitable sleepers.

At this point, retract the outrigger jacks on the platform side of the base and use the two jacks adjacent to the tower to plumb the tower in a left—right direction (facing the tower from the platform). When the tower is plumb in this direction, use the other two jacks in unison to plumb the tower in the fore and aft direction. Once the tower is plumb, check again to assure that the area under the tower is positioned solidly on firm support. Use shims or other means if you do not have solid support.

**ATTENTION:**

***All four (4) corner jacks should be snug against the ground, but NOT supporting any significant weight.***

Adjust the jacks assuring that the base remains level and supports the main load. The outrigger jacks were designed to provide adjustment for leveling and stability. No significant weight should rest on the outriggers.



### 5.3 Tower Sections

The tower for the RP-1000/RP-2001/RP-3003 consists of 5 foot sections which are assembled one on top of the other until the required working height is reached. Each tower can be handled easily by two (2) people. The tower sections are secured together with four (4) ½" bolts, nuts and lock washers which are installed as the tower is erected. The ends of the tower sections are ground

flat with a special tool to ensure that tower alignment will be maintained. No shimming or adjustment is required in the field.



**Tower Section / Part # 262040**

The tower structure consists of three (3) parallel steel tubes interconnected with steel zig-zag lattice work. The ends of the tubes are held in alignment with 2" wide steel plates which also secure the mounting sleeves for the tie bolts. The two (2) square tubes on the face of the tower provide a number of functions. Primarily, they carry the principle compression loads of the tower. Secondly, they provide the flat surfaces for the various alignment and stability rollers on the hoist carriage. The right side tube also serves as the mounting structure for the continuous rack which is welded to the back side of this tube. The third tube of the tower section is at the back and is a 1.9" OD round tube which is compatible with common scaffold hardware (clamps and brackets). All tower brackets are attached to this tube.

**ATTENTION:**

***Care should be taken when handling the tower sections. Damage to the tube surfaces, ends, alignment loops or rack teeth may make the tower section unserviceable.***

Position the second tower section onto the base tower section locking it with the four (4) nuts and bolts provided. Earlier model tower sections use three (3) bolts at each joint. The additional bolt is not for extra strength, it makes installation easier since it is outside of the lattice work.

**NOTE: Run Bolt up from the bottom and secure with the nut on top.**

Check the plumb of the column and make necessary corrections using the stabilizers.

**ATTENTION:**

***The bottom tower enclosure must extend out to provide protection under the platform when it is in the pivoted position.***

**SAFETY NOTICE:**

***Since the Material Platform Hoist will be operating during assembly of the tower sections, without the upper travel limit bracket in place, it is required that the control of the platform movement be under the DIRECT COMMAND of the person working on the platform. This ALLOWS FOR PRECISE CONTROL of the platform at all times.***

**EXTREME CAUTION:**

***Safety belts should be worn at all times by personnel on the platform when it is above the ground level. We recommend that a separate safety line is hung from the building and safety harnesses and rope-grabs are used.***

Raise the platform to near the top of the last tower section you have installed, being careful not to go above the top of it.

Install the next tower section and fasten with the hardware as before. Repeat this operation for all remaining tower sections making sure the uppermost section has the upper travel limit stop securely attached. **Anchorage brackets must be installed at least every 12'.**

**CAUTION:**

***DO NOT LOAD MORE THAN FIVE (5) TOWER SECTIONS ON THE PLATFORM AT ONE TIME.***

### **5.3.2 Tower Mounting Brackets**

The tower mounting brackets supplied with the standard RP-2001/RP-2010/RP3003 Material Platform Hoist are used to attach the tower to the building or other solid structure. The base of the bracket must be attached to the building with bolts, anchor bolts or other suitable fasteners and have sufficient tensile strength to resist all static and dynamic loads which are anticipated. 9/16" holes are provided in the bracket base for installation of 1/2" fasteners. Each fastener must have at least 5000 lbs of tensile strength.



**ATTENTION:**

***The mounting brackets must be mounted so that the base is HORIZONTAL. If the bracket is mounted vertically, it will provide virtually no lateral support and lead to an unsafe condition.***

The tower mounting brackets are attached to the round leg of the tower with standard right angle scaffold mounting clamps. Be sure that the mounting bracket tube is not so long that it protrudes through the tower and will interfere with the passage of the platform and carriage. If the standard bracket is too short for the particular installation, extensions can be fabricated locally or special braces may be ordered from Hi-Tech Hoist LLC.



**Non-Pivot Wall  
Bracket  
Part # B11571**



**Pivot Wall Bracket  
Part# B11431**

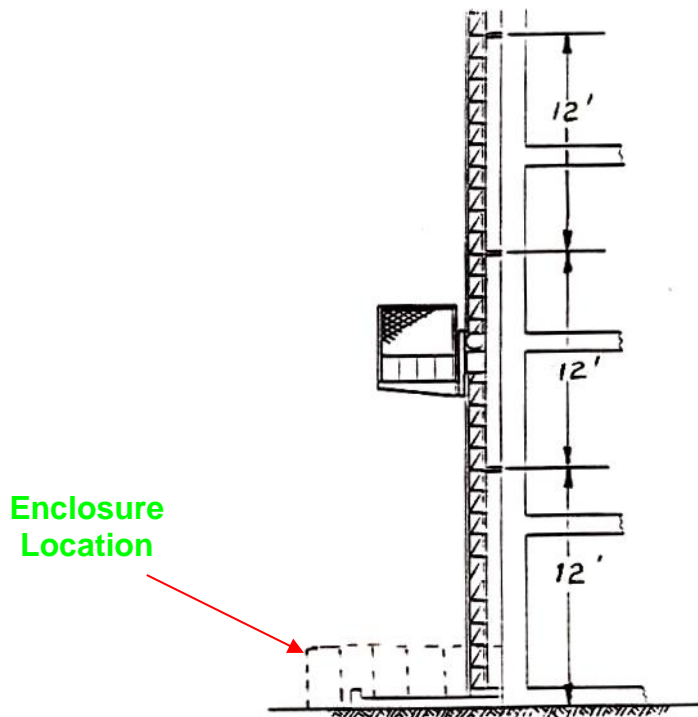


**Non-Pivot / Pivot  
Wall/Scaffold Bracket  
Part # 262061**

### 5.3.3 Anchoring Tower To The Structure

Anchor the tower to the building at least every 12 feet with the scaffold clamps and anchor brackets or with one of the optional mounting methods described.

**IMPORTANT**  
**THE TOWER MUST BE ANCHORED AS IT IS ERECTED!!!**



#### 5.3.4 Tower Enclosure

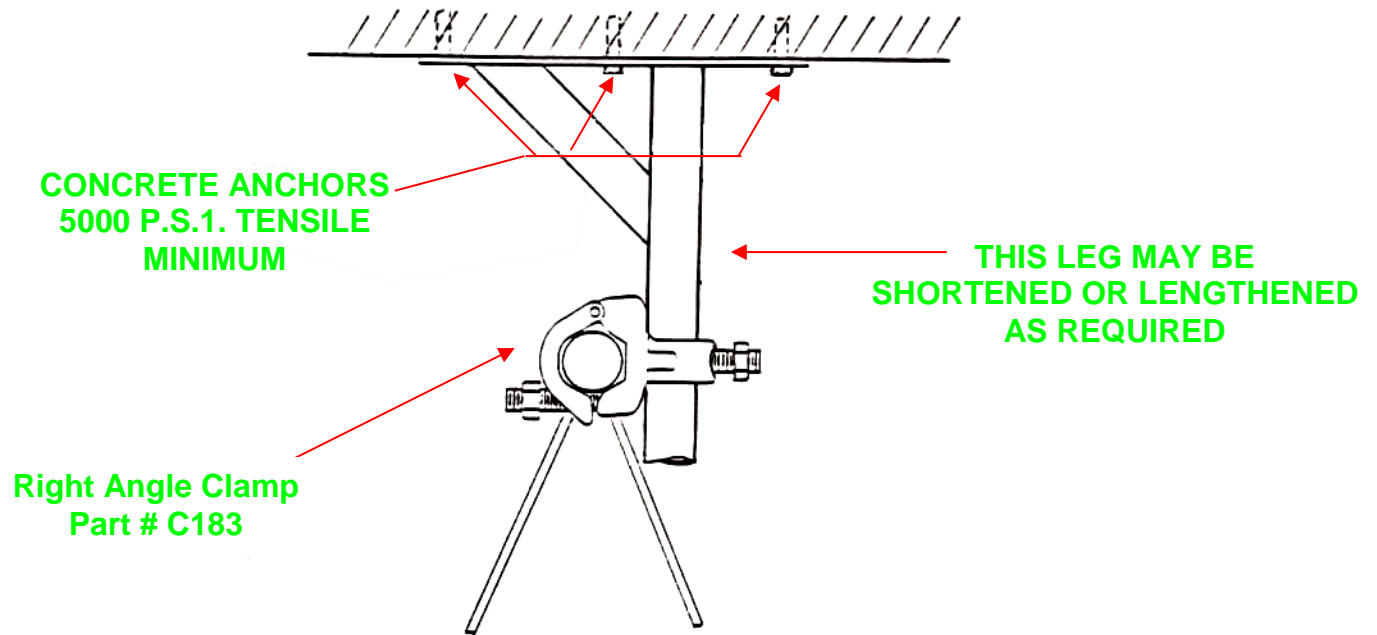
ANSI A10.5 requires that unenclosed towers, such as exist in this installation, must have a fence or other suitable enclosure around the area under the platform to prevent anyone from entering the area under the platform where they could be injured by a descending car (platform) or falling material. The enclosure must also take into account the area under the car (or platform) when it is in the pivoting position.

You must barricade the space under the platform to assure that nothing or no one may interfere with the platform movement while the hoist is in operation and no one has access to the area beneath the platform (ANSI A10.5, Paragraph 6.7). This is the user's responsibility.

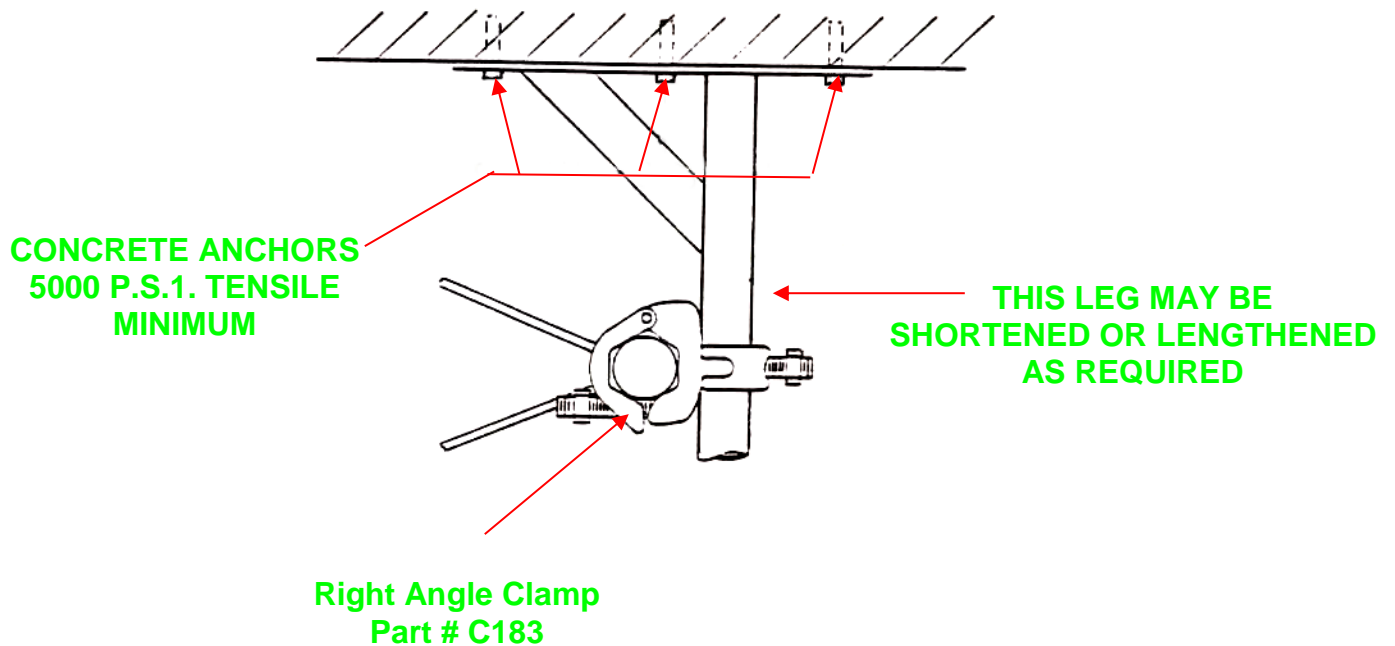
At each floor landing, full floor height enclosures (10 feet high) are required by ANSI A10.5, Paragraph 6.4.3. This is the user's responsibility.

#### 5.3.5 View Of Tower, Bracket & Clamps

Typical Mounting System



Side Mounting System



## 5.4 Motor & Speed Reducer

The prime mover for the RP-1000/RP-2001/RP-3003 Material Platform Hoist is an integral electric motor and speed reducer. The 5 horsepower motor/s require/s 220/240 60 Hertz, 30 amp power (RP-1000/RP-2001: (1) 5 HP Motor/Single Phase; RP-3003: (2) 5 HP Motors/3-Phase). The motor provides an ample service factor and temperature rise to satisfy all reasonable operating conditions. **The motor control box is mounted just below the motor** The **control box** contains circuit breakers, relays, overload protection, a wiring diagram and interconnections for all safety devices and controls. Details concerning the electric brake are covered in the next section.

The speed reducer is of the CYCLO design and is immensely strong. There are no gears to fail and there is only rolling, no sliding, friction. The speed reducer is grease lubricated and requires servicing at infrequent intervals.

The speed reducer drives an 18 tooth steel pinion which engages the tower rack to produce the lifting and braking capability of the material platform hoist. There is no normal free fall capability of the hoist. The upward speed is essentially the same as the speed in the downward direction. Approximately, 70 fpm for the RP-2001 & RP-3003 and 100 fpm for the RP-2010.

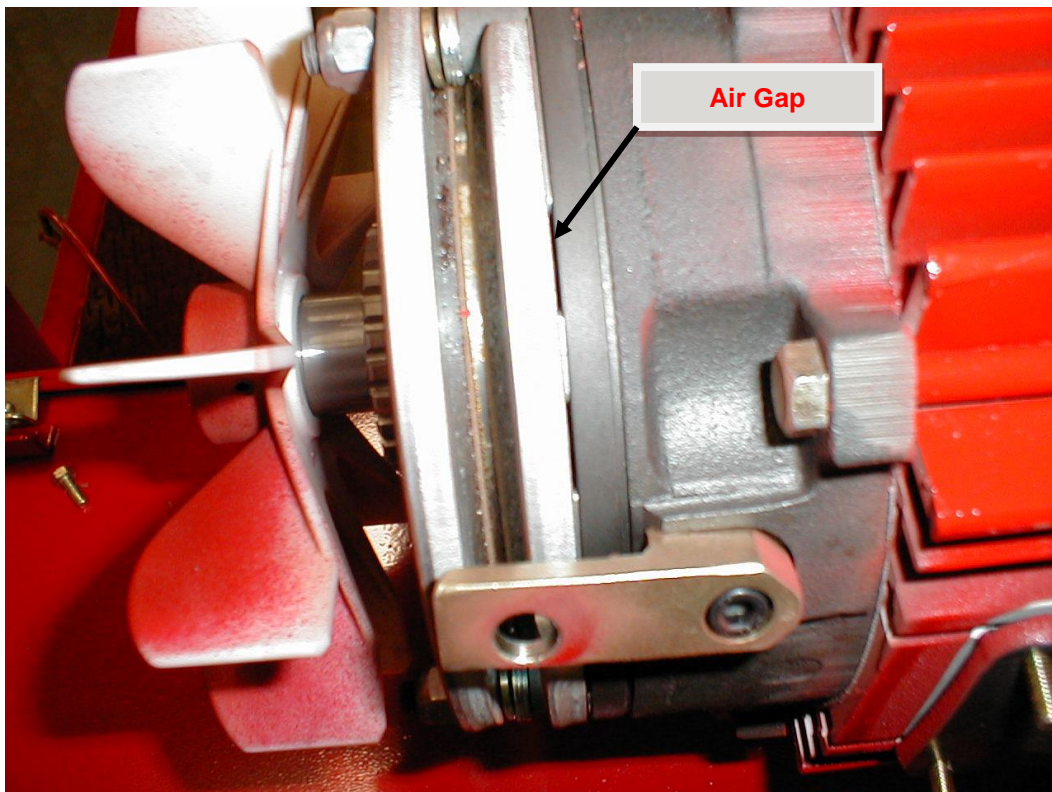
The pinion is secured to the speed reducer shaft with a key and a retainer bolt. This component (the pinion) is a critical part of the hoist and must be inspected regularly and replaced if worn or damaged. (3003 Model shown below)



### 5.4.1 Electric Brake

The electric brake is mounted integral with the motor and cooling fan. The brake is set **on OR by** spring action and has sufficient torque to support the platform and load when the power is off. The standard torque value is well above the torque of the motor. If the brake does not release, the motor and hoist will not move. **The brake is released when power is applied to the motor in either the UP or DOWN direction.** Alternating current is routed through a rectifier and then to the release coil in the brake. When power is cut to the motor, intentionally or otherwise, the brake will set and immediately stop all motion of the hoist.

The normal operation of the brake is as follows. Spring pressure holds the brake on. The brake is DC (direct current) operated. The DC is obtained from a rectifier located in the control box. Whenever the motor is energized in either direction, the motor brake is simultaneously released. When the motor is de-energized, the brake is immediately set to prevent any movement of the hoist.



Fan Cover Removed



## 5.5 Cable Support & Guides

There are normally two (2) electric cables attached to the electrical control box on the hoist – the power cable and the push-button control pendant. Both of these cables must, at all times, connect the moving carriage with the ground. In order to prevent these two trailing cables from getting caught on the adjacent structure or getting tangled on tower supports, they are retained in cable guides which are attached to the tower at approximately 30 foot intervals. The cable support arm is attached to the carriage and provides the mechanical support for the weight of the cables. The excess cable should be contained in a suitable barrel or drum where it will generally self coil and uncoil. It is not recommended to allow it to pile up on the ground. As the hoist rises, the cables are drawn up with it. As the cable support passes through each cable guide, it forces itself through the spring openings of the guides. The guides then provide restraint for the cables and prevent them from blowing sideways. During descent, the cables recoil themselves on the ground and the cable support arm passes through each cable guide as before.



**Cable Guide  
Part # B11521**



**Cable  
Guides at  
30 ft.  
Intervals**

## 6.0 ELECTRICAL CONTROL CIRCUITS & CONTROLS

All electrical relays, fuses, circuit breakers, terminal blocks, etc, are located in the electrical control box. Various travel limit switches are located on the carriage and the interlock switch is located on the rear of the platform. Travel limit switches are located on the carriage and contact stops are mounted on the tower.

### Line Voltage Vs Full Speed Lifting Capacity

<u>RMS VAC L-L</u>	<u>Full Speed Capacity</u>
240 Volts	2000 Lbs
230 Volts	1800 Lbs
208 Volts	1300 Lbs
190 Volts	1000 Lbs (Under-Voltage Fault)

### Supply Wiring Requirements

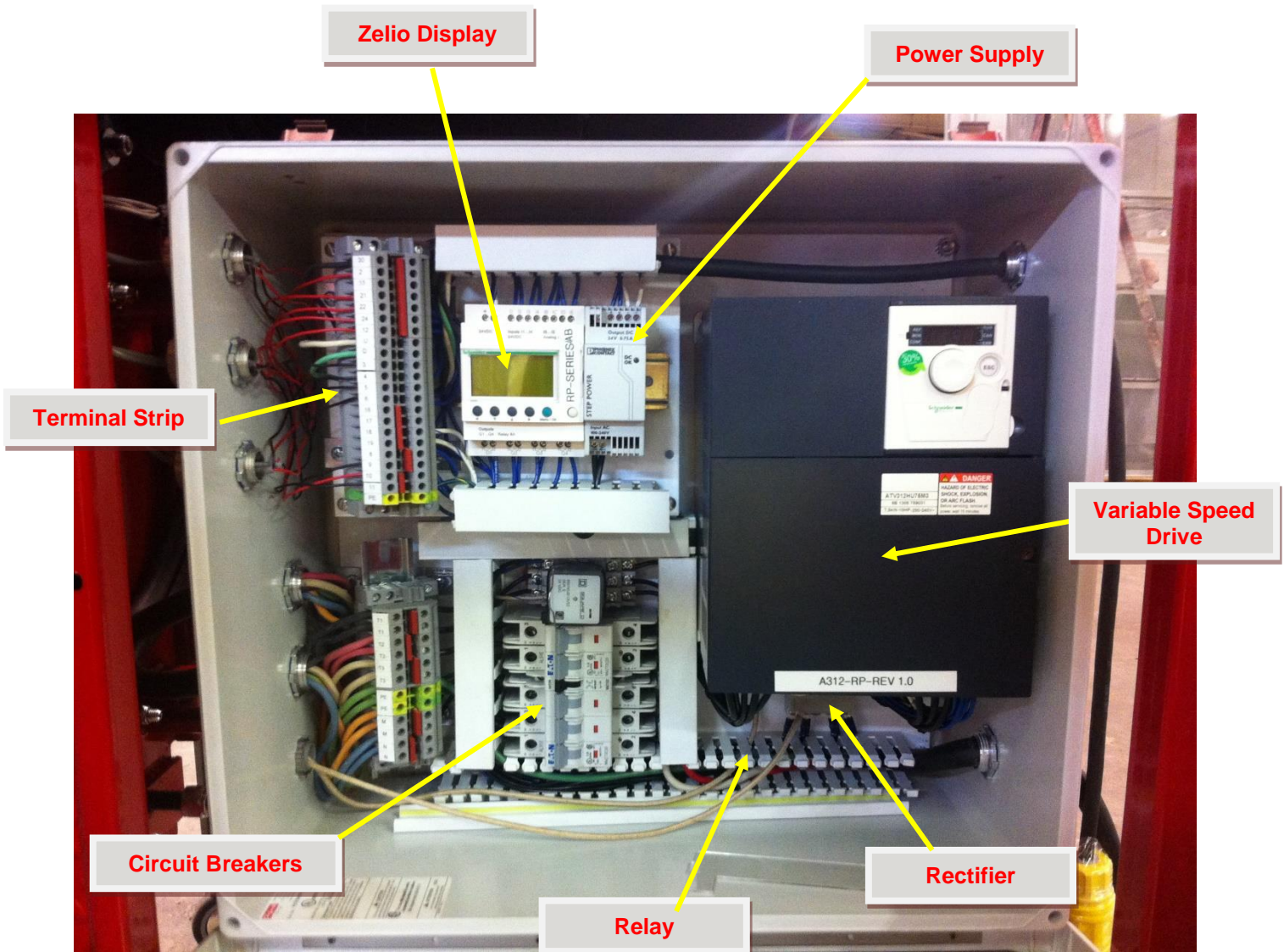
Measure the total distance from the control panel on the hoist to the power distribution panel.

50 – 200 Feet	Use 10 Gauge
200 – 400 Feet	Use 8 Gauge

### Power Line Current = 25 Amps RMS

It is recommended that a local emergency disconnect be provided adjacent to the hoist operators position. This may be required by a Local authority or Code and is specified in ANSI A10.5, Paragraph 21.4.





## 7.0 SEQUENCE OF OPERATION

The RP-2001/RP-2010/RP-3030 Rack & Pinion Material Platform Hoist operates in two (2) modes; UP and DOWN.

**7.1 In the UP mode**, the hoist is at the lower level and is loaded. The operator depresses and holds the momentary UP button and the hoist accelerates to full speed. The hoist will continue to travel up unless the operator releases the UP button. Once the operator releases the UP button, the hoist will stop quickly and the motor brake will engage. When the UP button is held, the hoist will continue to travel upward until it reaches the Upper Travel Limit Switch bracket. At this point, the hoist will stop and the UP push-button will no longer activate the hoist.

**7.2 In the DOWN mode**, the hoist is at the upper level and is loaded. The operator depresses and holds the momentary DOWN button and the hoist begins its downward travel. The hoist will continue to travel downward, at full

speed, until the Slow Down Travel Limit Switch is passed. Once this switch is passed, the hoist will start moving at a slower speed to prepare to stop. When the hoist reaches the Lower Travel Limit Switch bracket, it will stop and the DOWN push-button will no longer activate the lift.

### **7.3 Ramp Switch Detail**



## 8.0 OPERATING PROCEDURE

Note: ANSI A10.5 requires that the operator is supplied with proper overhead protection (Paragraph 18.1). Proper lighting is also required for operation and maintenance (Paragraph 18.5).

- 8.1 Open the safety bar and lower the loading ramp.
- 8.2 Load the material/equipment; position it so that the load will not shift and fall from the platform while in transit. If the load protrudes above the side enclosures, secure it to prevent it from falling out. Be sure that no material is in contact with the tower. Loose material such as sand or gravel must be transported in closed containers.
- 8.3 Close the safety bar or safety chain and latch the loading ramp in the closed position. The ramp must be in the up position and securely latched before the hoist will operate.
- 8.4 Press and hold the UP button on the pendant control to raise the load to the desired level. Release the UP button when the desired level is reached.



2-Button Pendant Assembly



- 8.5 Open the safety bar and lower the loading ramp. Remove the material/equipment.
- 8.6 Close the safety bar and raise the loading ramp and latch securely, the operator may now lower the platform with the pendant control.
- 8.7 For Hoists With The Pivoting Platform - The Worker at the upper level releases the pivot latch and swings the platform 90 degrees. The platform latch will snap into the latched position and hold the platform in position for unloading. Open the safety bar or chain and lower the loading ramp. Remove the material/equipment.

### **SAFETY NOTICE**

**Ensure that the platform latch is locked in the over-center position during unloading to prevent the platform from pivoting away from the building/structure.**

- 8.8 Downloading From The Building - To use the hoist to transfer material from the building/structure to the ground, the procedure is essentially reversed.

### **ATTENTION:**

**DO NOT OVERLOAD THE HOIST WHEN LOWERING LOADS!!!**



### 8.9 Pivot Platform Feature

In some applications, it is useful to mount the tower and hoist in such a manner that the platform can pivot 90 degrees to the side in order to place the platform opening adjacent to the building opening. To provide this capability, a special pivot frame is mounted between the carriage and the platform. This hinged (pivoted) frame arrangement is also provided with additional electrical interlocks to prevent hoist operation when pivoted and mechanical locks to secure the lift in either the pivoted or operating position. The enclosure for the pivoting platform can be supplied with either one or two openings for loading.



*Normal Position*



*90° Pivot Position*

## 9.0 DISMANTLING THE TOWER

### **REMINDER – SAFETY NOTICE:**

***The person on the platform must directly command the control of the platform only. Safety belts must be worn and attached through rope-grab to a safety rope attached to the building/structure.***

- 1.1 To dismantle the tower it is basically the reverse procedure used to erect the tower.
- 1.2 Make sure the area below the platform is barricaded and clear.
- 1.3 Detach the upper travel limit switch.
- 1.4 Remove the anchor brackets and scaffold clamps. Unbolt and remove the tower sections.
- 1.5 Repeat these steps until the tower is completely disassembled.

### **-CAUTION-**

***DO NOT LOAD MORE THAN FIVE (5) TOWER SECTIONS  
ON THE PLATFORM AT ONE TIME***

## 10.0 INSPECTION & MAINTENANCE

### 10.1 Daily

#### At The Ground Level, Check:

- The operation of all of the electrical interlocks, down travel limit switch and UP-DOWN buttons.
- The security of the base unit.
- The stability of the jacks. Ensure that they are snug against the ground.
- The foundation, planking, etc. Ensure that they are secure.
- All safety fences and gates. Ensure that they are in proper working order.

#### With The Hoist Raised About 5 Feet Off The Ground, Cut The Power & Inspect Under The Hoist For:

- Cracks or bent parts.
- Loose or missing nuts or bolts.
- Security of the connection between the bottom of the tower and the base.
- Operation of lower travel limit switch and ramp.

#### A Qualified Person Should Ride The Hoist At The Beginning Of The Work Day To Inspect The Following:

- Check for grooving of the tower by the rollers.
- Check all carriage rollers for damage, wear, binding, looseness, etc.
- Check all tower bolts for missing or loose items and tightness.
- Check all anchorage brackets and hardware.

- Check all cable guides for proper alignment and spring action.
- Check operation of the UP travel limit switch and security of the UP travel limit switch bracket.
- Check for free operation of the rocking pawl on the emergency brake (Item 5 in the Brake Assembly Diagram)
- Clean dust and dirt off of the motors and the control cabinet/main control cabinets, ventilation openings in ventilated motors, etc.
- Check the adjustment and condition of the travel limit switch arms. Check for proper operation of travel limit switches.
- Make sure that all machine/equipment guards are securely in place.
- Make sure that nothing is stored in front of the electrical enclosures; clear space requirements are usually the width of the enclosure (but at least 36") with 36" of depth in front of it. We recommend marking the floor with the clear space.

## **10.2 Monthly**

Same as Daily Inspection, plus add spray lubricant (Open Gear Lube) to the rack and pinions (Grainger 4X595 or equivalent) as required.

## **10.3 Quarterly (Every 3 Months)**

- Inspect the drive pinion for signs of wear. Remove any grease and dirt with solvent before inspection. Replace the drive pinion if any teeth show signs of wear or there is evidence of cracks or other damage.
- Check the clearance between the opposite pairs of rollers - - 1/8" maximum clearance is acceptable between the tower and the roller.

## **10.4 Semi-Annually (Every 6 Months)**

If the unit is stored and unused for three (3) months or more, clean, lubricate and test the brake assembly before use.

## **10.5 Annually**

- Exercise all circuit breakers, switches, starter overload relays, etc. Turn them off and on at least once or push their test button and then reset them; when so equipped. This is a mechanical exercise and can be done with the power off. The purpose is to keep them from "setting-up" in one position.
- Check for signs of loose terminals or connections, overheating components, chafed wires, loose conduit fittings or straps, etc. Repair as necessary.
- Check for damaged operator controls, such as push-buttons, etc. Replace as necessary.

## 10.6 Inspection & Maintenance Log

[illegible]

## 11.0 VARIABLE SPEED DRIVE INSPECTION & MAINTENANCE

- The Variable Speed Drive must be inspected very day.  
If the equipment is not inspected and maintained, errors and malfunctions may not be discovered which could lead to accidents. The environment in which the drive is used, such as temperature, humidity, dust and vibration, or deterioration of its components with aging can cause it to break down.
- Before inspection, perform the following steps.
  - 1) Shut off all input power to the inverter.
  - 2) Wait for at least ten minutes and check that the charge lamp is no longer lit.
  - 3) Use a tester that can measure DC voltages (800V DC or more), and check that the voltage to the DC main circuits (across PA-PC) does not exceed 45V.

***Performing an inspection without carrying out these steps first could lead to electric shock.***

- When using the switchgear for inverter, it must be installed in a cabinet.  
***Failure to do so can lead to risk of electric shock and it will result in death or serious injury.***

### 11.1 Regular Inspection

Subject of Inspection	Inspection Procedure			Criteria for Judgement
	Inspection Item	Inspection Cycle	Inspection Method	
1. Indoor Environment	1) Dust, temperature and gas.	Occasionally	1) Visual check, check by means of a thermometer, smell check.	1) Improve the environment if it is found to be unfavorable.
	2) Drop of water or other liquid	Occasionally	2) Visual check	2) Check for any water condensation.
	3) Room temperature	Occasionally	3) Check by means of a thermometer.	Max. temperature: 105° F
2. Units and components	1) Vibration and noise	Occasionally	Tactile check of the cabinet	If something unusual is found, open the door and check the transformer, reactors, contactors, relays, cooling fan, etc., inside. If necessary, stop the operation.
3. Operation data (output side)	1) Load current	Occasionally	Moving-iron type AC ammeter	To be within the rated current, voltage and temperature. No significant difference from data collected in a normal state.
	2) Voltage (*)	Occasionally	Rectifier type AC Voltmeter	
	3) Temperature	Occasionally	Thermometer	

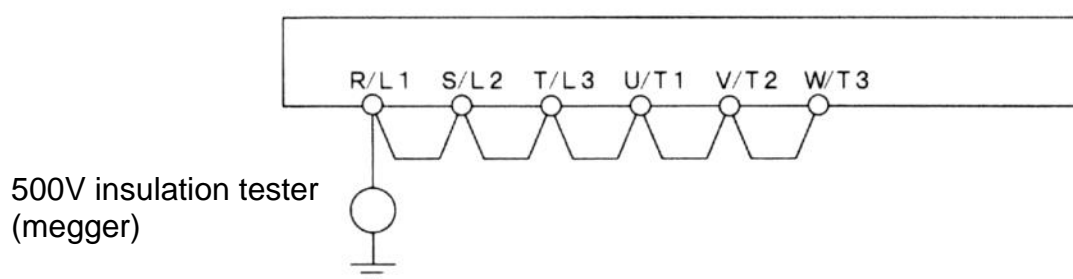


\* The voltage measured may slightly vary from voltmeter to voltmeter. When measuring the voltage, always take readings from the same circuit tester or voltmeter.

## 11.2 Periodical Inspection

1. Check to see if all screwed terminals are tightened firmly. If any screw is found loose, tighten it again with a screwdriver.
2. Check to see if all caulked terminals are fixed properly. Check Them visually to see that there is no trace of overheating around any of them.
3. Check visually all cables and wires for damage.
4. With a vacuum cleaner, remove dirt and dust, especially from the vents and the printed circuit boards. Always keep them clean to prevent an accident due to dirt or dust.
5. When leaving the inverter unused for a long time, check it for functioning once every 2 years or so by supplying it with electricity for at least 5 hours with the motor disconnected. It is advisable not to supply the commercial power directly to the inverter but to gradually increase the power supply voltage with a transformer.
6. If the need arises, conduct an insulation test on the main circuit terminal board only, using a 500V insulation tester. Never conduct an insulation test on control terminals other than those on the main circuit or terminals on the printed circuit board. When testing the motor for insulation performance, separate it from the inverter in advance by disconnecting the cables from the inverter output terminals U, V and W. When conducting an insulation test on peripheral circuits other than the motor circuit, disconnect all cables from the inverter so that no voltage is applied to the inverter during the test.

**NOTE: Before an insulation test, always disconnect all cables form the main circuit terminal board and test the inverter separately form other equipment.**



**NEVER TEST THE INVERTER FOR PRESSURE PROOF. A PRESSURE TEST MAY CAUSE DAMAGE TO THE COMPONENTS**

## **11.3 Troubleshooting The Variable Speed Drive**

### **11.3.1 The Variable Speed Drive (VSD) Will Not Run**

Check the VSD display. If a fault code is present, press the STOP button twice to reset the VSD.

If the VSD display is blank, check that power is present at terminals L1 and L3 and that both circuit breakers are not tripped.

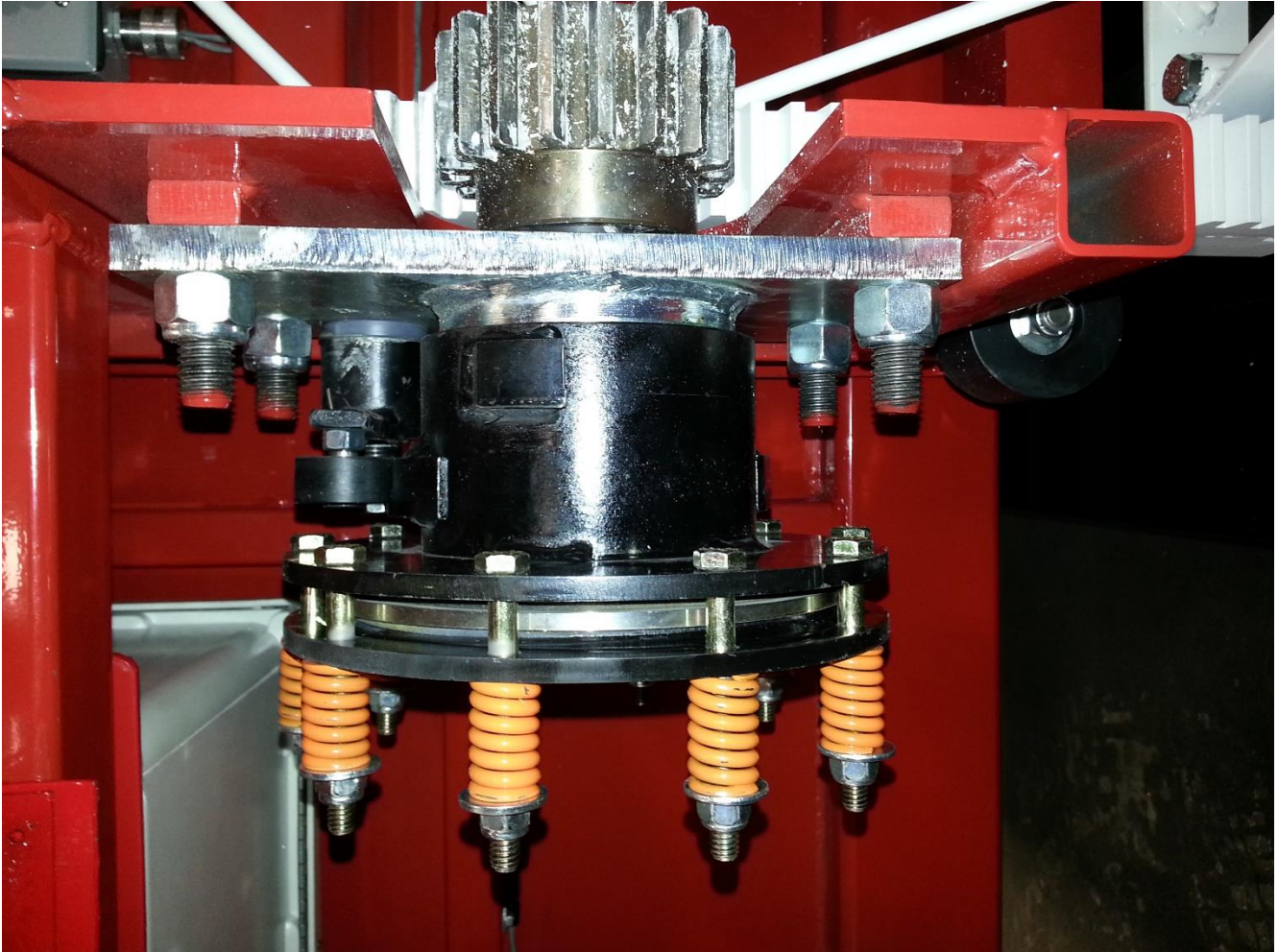
If the VSD display reads OFF, check to ensure that the Over Travel Limit Switch and Pivot Limit Switch are operating properly.

### **11.3.2 The VSD Trips During Acceleration**

Check that the motor brake is releasing when the VSD starts.

If the brake is not releasing, check if CR1 is activating. If CR1 is activating, there should be 220 Volts DC at terminals 21 and 22. If not, replace the Rectifier. If CR1 or CR2 is not activating, check for 24 Volts DC between terminals 1 and 5.

## 12.0 ROTARY BRAKE ADJUSTMENT & TEST PROCEDURE



**Rotary Brake Assembly Mounted On Machine**

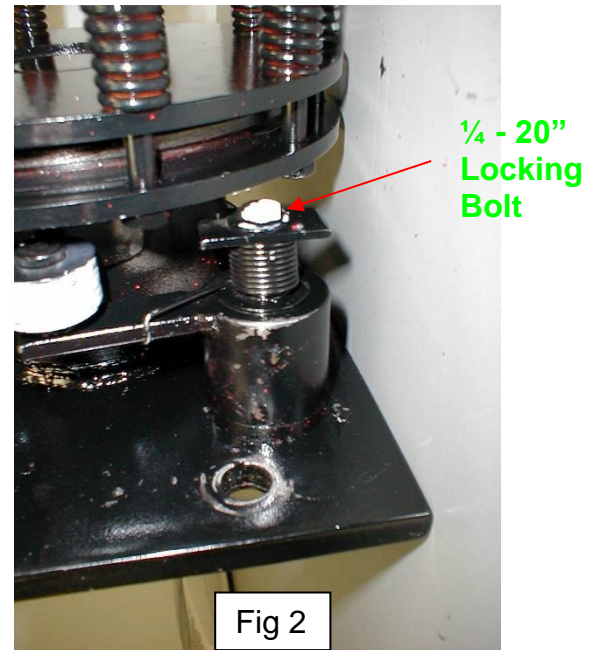
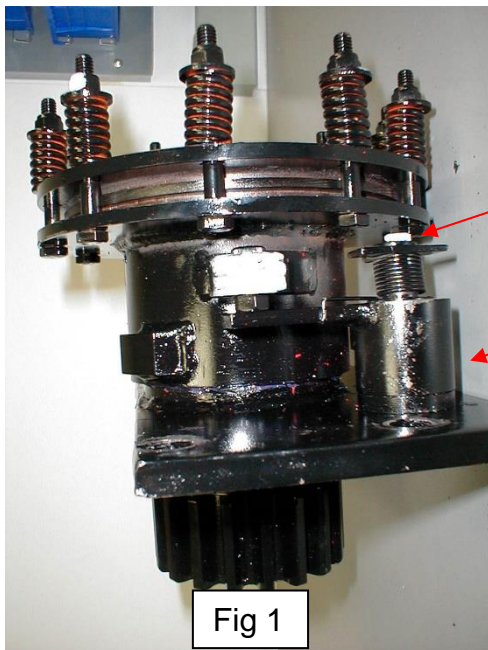
***Note: The brake is adjusted at the factory and should not require any adjustment. Utmost care should be used when working on the brake to ensure that it is functioning properly and safely at all times.***

**-WARNING-  
IF THE BRAKE HAS BEEN SERVICED OR ADJUSTED  
A DROP TEST MUST BE PERFORMED**

## 12.1 Brake engagement adjustment

### 12.1.1 To Adjust The Pawl Spring:

Loosen the  $\frac{1}{4}$  - 20" locking bolt (fig 2). Turning the pawl spring adjuster (Fig 1) clockwise increases pawl spring tension. Less tension allows the brake to engage at a slower speed. Too much tension will prevent the brake from engaging. It should not engage under normal operating conditions. Once the position of the pawl spring adjuster has been determined, tighten the locking bolt while holding the adjuster.





## 12.2 Stopping Distance:

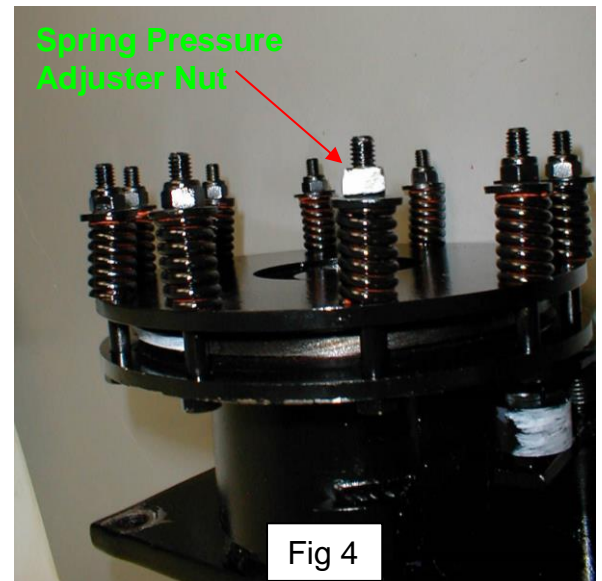
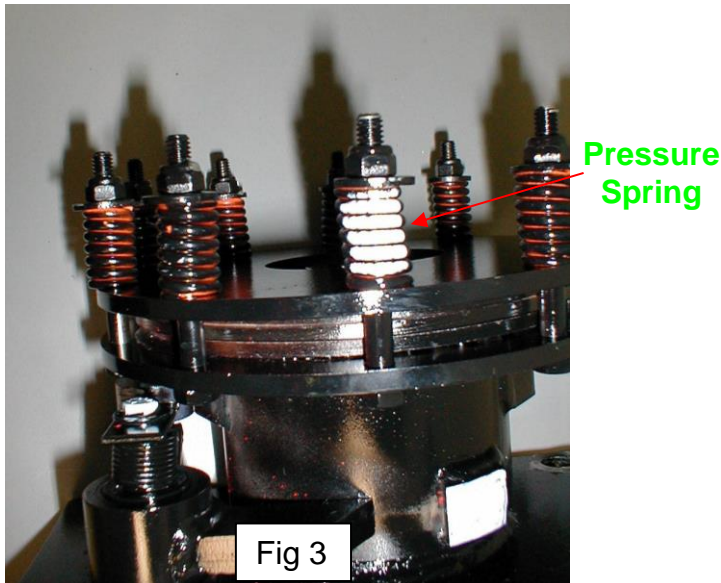
### Pressure Spring Adjustment

Once the brake is engaged, the spring pressure on the pads determines the stopping distance. Increased pressure will decrease the stopping distance.

All springs must be adjusted evenly.

Using a feeler gauge set, measure near the center of each spring.

Springs must be adjusted in small increments, no more than .005" at a time. adjust all pressure springs (fig 3) to .030 using spring pressure adjuster nut (Fig 4).



## 12.3 Test Procedure

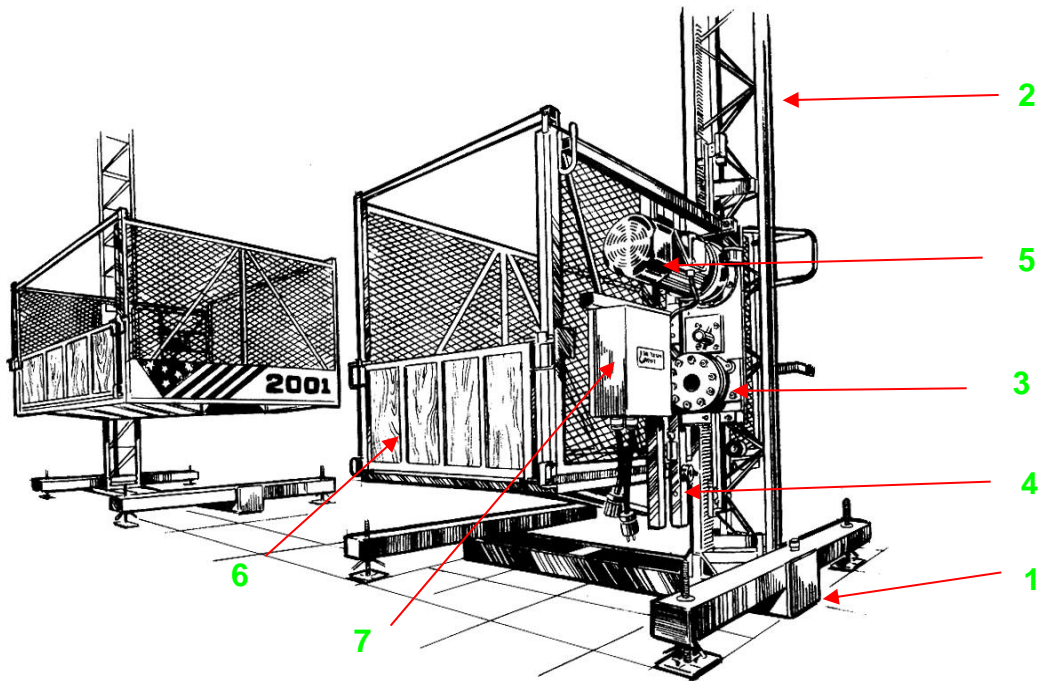
**WARNING! EXTREME CARE MUST BE TAKEN WHEN PERFORMING THIS TEST. PERSONAL INJURY MAY BE CAUSED DUE TO SUDDEN STOP OR FALLING OUT OF CARRIAGE**

Raise carriage about four feet then place an old tire under carriage. With the technician standing in the carriage lift up the brake bail(s), carefully swing the bails towards the rear of the motor(s). The carriage will start to fall until the rotary brake engages. The carriage should stop in four feet or less. Once the brake has been properly adjusted load the carriage to capacity run carriage up and down, the rotary brake must not engage under normal use it is intended to stop the carriage in the event of an uncontrolled decent.

### 13.0 REPLACEMENT PARTS

This list is restricted to those parts that you would expect to replace from time to time. Common hardware items including nuts and bolts and main structural components are not included in this list. Replacement parts should be kept on hand to rapidly repair single or typical group component failures, to minimize down time or when employee's health or safety would be impaired by delays. In addition, replacement parts should be kept on hand when they are difficult to obtain locally or are at risk of becoming discontinued.

Hi-Tech Hoist LLC recommends that typical replacement parts include two or more of every fuse size used. Complete parts lists are supplied with every hoist we design and manufacture; excluding used parts supplied by the customer.



Item #	Part #	Description	Qty Required
1	B11937	Base Assembly	1
2	262040	Tower, 5' Rack & Pinion	1
3	B12725A	Rotary Brake Assembly	1
4	B11939	Carriage Assembly	1
5	B11943	Motor Assembly (RP-2001)	1
5	A13254	Motor Assembly (RP-2010 / RP-3003)	2
6	B11944	Platform Assembly	1
7	B11940	Control Box Assembly	1
8	B11941	Upper Travel Limit Stop Assembly	1
9	B11942	Lower Travel Limit Stop Assembly	1
10	131021	Pendant Assembly	1
11	A11991	Upper Travel Limit Switch Assembly	2
12	A11992	Lower Travel Limit Switch Assembly	2
13	A11993	Platform Pivot Switch Assembly	1
14	B11938	A-Frame Assembly	1

## 14.0 LIMITED WARRANTY

Hi-Tech Hoist LLC warrants this equipment against defects in material and workmanship for a period of one (1) year on mechanical parts and ninety (90) days on electrical parts, excluding the wire rope cable. Since Hi-Tech Hoist LLC cannot control the conditions under which this equipment is operated, we assume no responsibility for the performance of the equipment.

Hi-Tech Hoist LLC will, within the warranty period, repair or replace at our option any defective part\* free of charge (shipping excluded). Hi-Tech Hoist LLC reserves the right to examine any defective part prior to replacement and may request it be returned to the company for examination. If the equipment has been used in a manner contrary to the instructions, or under conditions adverse to its use, or there is evidence of misuse or abuse, the warranty may be voided.

There is no warranty for equipment or material **NOT** supplied by Hi-Tech Hoist LLC.

Except as stated herein, there are no implied warranties of fitness or merchantability, and there are no other express warranties beyond the warranties.

### **IMPORTANT!**

It is the owner's responsibility to assure the hoist is in proper working order in accordance with the manufacturer's "Operator's Manual" and all safety procedures are being followed. Any hoist not in safe operating condition shall be removed from service until it is repaired to the original equipment manufacturer's standards. No modifications or alterations are to be made to the hoist. Any modifications or alterations will void this warranty. The manufacturer is not responsible for injury or damage caused by any modifications and alterations.

***ANY ITEMS BEING RETURNED MUST HAVE R/A #. ANY AND ALL SHIPMENTS WILL BE REFUSED WITHOUT PROPER DOCUMENTATION AND/OR AUTHORIZATION. SPECIAL OR CUSTOM ORDERED ITEMS ARE NOT RETURNABLE.***