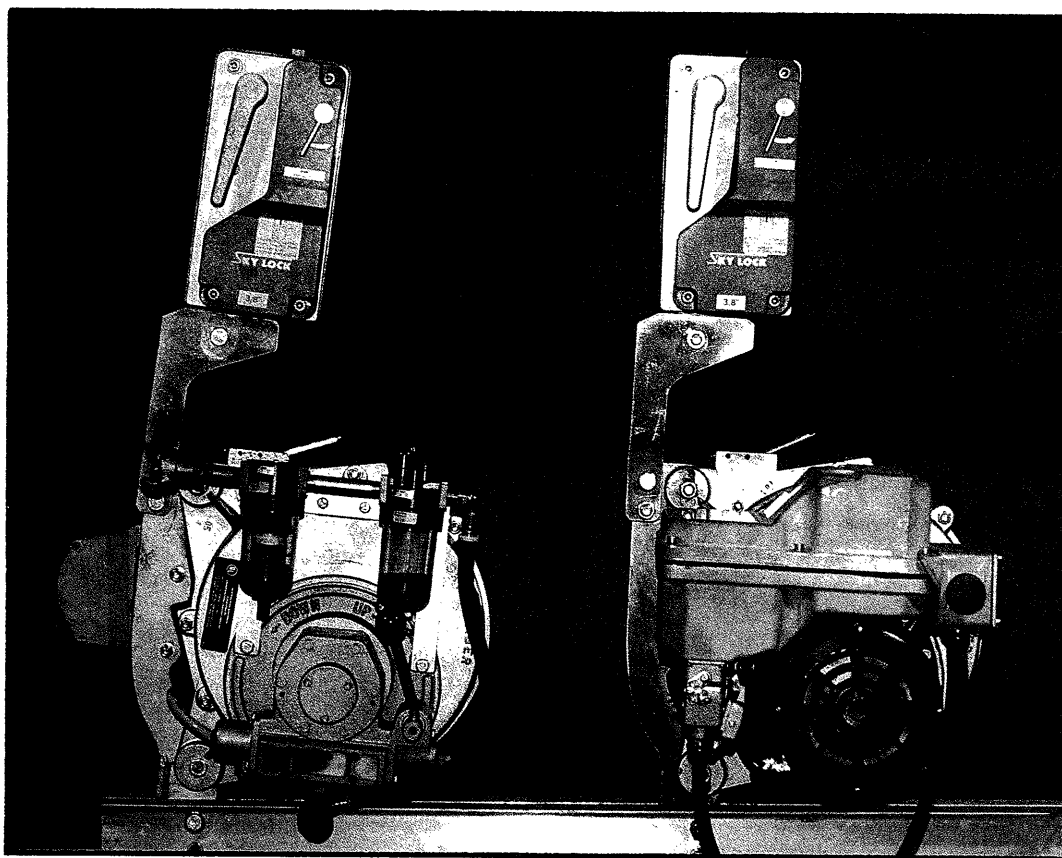


# SKY CLIMBER®

## OPERATOR'S INSTRUCTION MANUAL

alpha ♂ 1500



### TO EMPLOYER:

It is imperative that this manual be given to the operator of SKY CLIMBER equipment and that he reads, fully understands and follows all instructions contained herein.



**WARNING:** Any use of this equipment other than in strict accordance with these instructions shall be at the operator's risk and may result in serious injury to him and others.

**REMEMBER SAFETY IS THE RESPONSIBILITY OF BOTH YOU AND THE OPERATOR.**

# FOREWORD

## TO THE EXPERIENCED SKY CLIMBER® OPERATOR:

The typical first reaction of the experienced operator to an instruction manual is "Why should I read it? I've had enough experience with Sky Climber hoists to write the Manual." You may be right, but before you put this Manual away, hear us out.

The Sky Climber Alpha 1500 Hoist is a relatively new hoist. Its operation and control are different from earlier Sky Climber hoists. In addition, this Manual is intended to remind experienced operators of safe operating practices they should consistently follow. Are you operating according to the book, or have short cuts and omissions crept in?


Have we omitted anything important? Do you disagree with us on anything in this Manual? If so, please let us know by writing a letter to our President at Corporate Headquarters (address is on the rear cover). We welcome your comments.

## TO THE NEW SKY CLIMBER OPERATOR:

Welcome to the ever growing group of Sky Climber Hoist operators!

We know the Sky Climber Alpha 1500 Hoist can be operated safely. Properly operated and maintained, it will continue to perform satisfactorily for many years to come.

This Manual will guide you through the features of the Sky Climber Alpha 1500 Hoist, and will help you begin operating safely.


Throughout this Manual the words **WARNING**, **CAUTION** and **NOTE** appear in bold face type. **WARNING** is preceded by the safety alert symbol  and is printed in Red along with its corresponding message. This indicates that injury to personnel could occur if the proper procedures are not followed during operation or maintenance. Always read and follow the **WARNING** extremely carefully.

**CAUTION** indicates a possible hazard to the product or its components if the proper procedures are not followed. Whenever the word **CAUTION** appears, special attention should be given to prevent possible equipment damage.

**NOTE** is used to stress a point or to give additional information concerning the procedures being discussed.

These **WARNING**s and **CAUTION**s are not all inclusive. It is impossible for Sky Climber, Inc., to know, evaluate, and advise on every conceivable way in which our products may be used or serviced, and of all possible resulting hazardous consequences. It is therefore extremely important for anyone who uses a procedure about which this Manual is silent to first satisfy himself that it will not jeopardize his own safety, the safety of others, or cause product or component damage.

Every effort has been made to make this Manual as complete and accurate as possible at the time of publication. Sky Climber, Inc., however, reserves the right to continually improve its products. For this reason, changes may have been made to the Sky Climber Alpha 1500 Hoist or its accessories which are not detailed in this Manual.

 **WARNING:** Failure to inspect, maintain, and operate the Sky Climber Alpha 1500 Hoist, Sky Lock®, and accessories as described in this Manual, could result in serious injury or death.

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# **SECTION 1 - SAFETY PREVENT ACCIDENTS**

Read and follow this safety check list. It includes important safety requirements of State and National codes as well as the recommendations of Sky Climber, Inc. Follow all applicable Federal, State and Local codes and regulations pertaining to safety. They are minimum standards for the safe operation of Sky Climber® equipment.

## **1.0 INTRODUCTION**

Sky Climber Alpha Hoists and accessories are designed and manufactured to the highest standards in the industry for your safety. **ACCIDENTS WILL BE PREVENTED IF YOU FOLLOW THE INSTRUCTIONS IN THIS MANUAL.** It is the operator's responsibility to be sure that he and his co-workers are fully familiar with this Manual before using the Alpha Hoist and related equipment. Once the equipment leaves Sky Climber's control, the operator is responsible for its safe use, operation and maintenance.

## **1.1 OPERATOR**

1.1.1 People who operate suspended equipment must be:

- Emotionally and physically able to withstand the stress of working at elevations.
- Able to read and understand this Manual and follow its instructions.

1.1.2 If an operator is subject to seizures or loss of physical control, he shall not work at elevations.

1.1.3 Operators must be safety conscious, responsible, and not under the influence of alcohol, drugs or other substances.

## **1.2 SAFETY EQUIPMENT**

1.2.1 All persons using suspended access equipment must at all times wear safety belts or harnesses attached by lanyards and rope grabs to independent drop lines. Do not disconnect/remove safety belts, harnesses, or lanyards until you are safely on the ground or until completely disembarked from suspended devices to a safe location.

1.2.2 Use a short lanyard, and maintain the rope grab as high on the drop line, as practical, at least shoulder high.

## **1.3 GENERAL**

1.3.1 Know and understand the operation of this equipment. Be sure that all persons who service, erect, dismantle, or use this equipment are

thoroughly familiar with, and follow all the safety rules in this Manual. Make certain that they also comply with all Federal, State, and Local codes and regulations that apply to this equipment and its safe use.

1.3.2 Training in the use of Sky Climber equipment is available at no cost. Contact the nearest Sky Climber office listed on the back cover of this Manual for details.

1.3.3 Hard hats shall be worn at all times when servicing, erecting, disassembling, or using this equipment.

1.3.4 Provide protection for operators from collision with overhead obstacles and falling objects.

1.3.5 Provide protection below the suspended equipment to prevent injury to personnel from falling objects.

1.3.6 Keep all persons from beneath suspended equipment.

1.3.7 Never work alone on a suspended platform or where aid is not immediately available in case of an emergency. Maintain contact with your supervisor at all times.

1.3.8 Do not overload. The maximum rated capacity is 1500 lbs. (U.L. Rated). This rating is for each Alpha Hoist, including wire rope, power cord, platform, men, tools and other associated equipment, but does include the weight of the hoist itself.

1.3.9 Do not exceed the rated capacity of the platform. Different platforms have different load ratings.

1.3.10 Check the operation of the Sky Lock® overspeed brake at the beginning of each work shift or as adverse environments require. See Section 5.4.1.

1.3.11 Thoroughly inspect all equipment before use to be sure that it is maintained in a safe, workable condition. The supervisor should assign a responsible person to do this at regular intervals.

1.3.12 In the case of apparent difficulty in the machine, wire rope, platform, etc., notify your nearest authorized Sky Climber, Inc. representative, and do not use the equipment until it is repaired or replaced.

1.3.13 In an emergency, press the red emergency stop switch. This will cut power, stop operation, and allow the brake of the Alpha Hoist to set. Do not turn the emergency stop switch and restore power until the trouble has been corrected.

1.3.14 All suspended access equipment must be handled with care. Impose loads on platform gently. Do not drop hoists on platform when handling.

1.3.15 Use only Sky Climber® original parts in your Sky Climber equipment. Do not alter any Sky Climber Alpha 1500 Hoist or accessories.

1.3.16 When at a work station or when getting on and getting off a suspended platform, prevent platform movement away from the building by securing suspended platform to the building face or structure. Before moving platform (other than those platforms using continuous engagements) always disconnect it from the building face. Hardware may be damaged and personal injury may result if platform is not disconnected from building face before it is moved.

## 1.4 SYSTEM SUPPORT

1.4.1 Make certain the roof, parapet or cornice will support the load imposed by the rigging and suspended platform. Do not secure to a weak or questionable structure. In case of doubt, consult a professional engineer and/or the building owner's qualified representative.

1.4.2 Make certain that the supporting devices, such as: "A" frame, parapet clamp, cornice hook, or outrigger will support the suspended platform load with a minimum of 4:1 safety factor. In case of doubt, consult a professional rigger/engineer.

1.4.3 Tie backs must be used on all supporting devices. Tie backs must be perpendicular to the building face, kept tight and attached to a structural member which is capable of supporting the entire suspended load as well as the support system.

**NOTE:** Professionally designed davit systems do not usually require tie backs.

1.4.4 Always use correct size and type of rope clamps. Wire rope will slip through oversize clamps. Undersize clamps will damage wire rope.

1.4.5 Never use a free flowing material in a container as counterweight. Always use a solid material (identified by weight), that can be properly secured to outrigger. See Figure 1.1. Sandbags or liquid filled containers should never be used as counterweight.

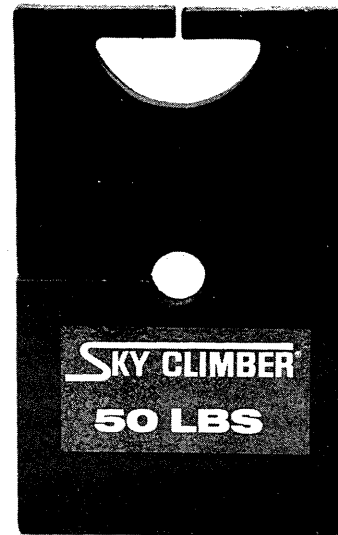


Figure 1.1

1.4.6 Double nuts should always be used with eye bolts in suspension systems to prevent loosening.

1.4.7 Never move suspension supports with platform suspended. Platform must be firmly supported on a safe surface before suspension supports are moved.

## 1.5 WIRE ROPE

1.5.1 Comply with codes, regulations and industry standards which forbid or warn against the use of kinked, bird-caged or damaged wire rope. Inspect wire rope for wear and damage prior to use and during operation. Wire rope is susceptible to serious damage if not handled in accordance with these and other instructions in this Manual. Exposure to concentrated acids, caustic material, corrosion, fire, electricity, undue heat, or mistreatment damages the rope. When such exposure has occurred, replace rope immediately.

**⚠ WARNING:** The use of kinked, bird-caged or excessively worn or damaged wire rope is unlawful. Such use may result in injury or death to yourself or others.

1.5.2 Use Sky Climber® specified wire rope, clamps, thimbles, and other work associated components. See Section 4 for further information.

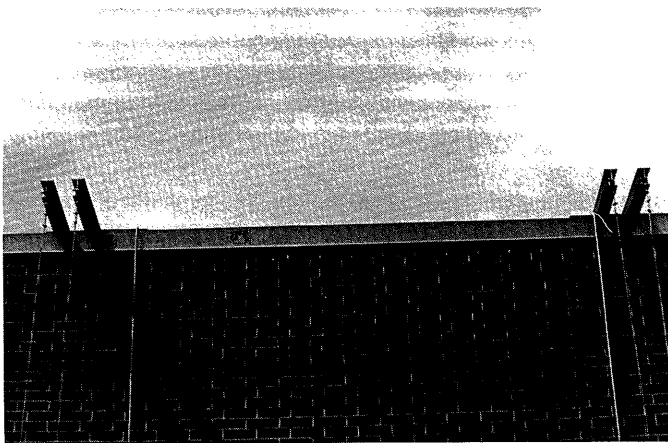
1.5.3 Rig from top of structure allowing approximately ten feet of extra wire rope at bottom to reeve hoist. Store extra wire rope on roof, neatly coiled, tied, and protected from the elements.

Sky Climber, Inc. strongly recommends that all rope drops be of sufficient length to reach a safe surface when reeved.

**⚠ WARNING:** If it is necessary to rig with less rope than specified above, it is mandatory that the bitter end of the rope be looped back on itself and secured with a "J" clamp. See Figure 4.4.

1.5.4 Wire must be rigged to remain vertical, with suspension points directly above the hoist entry guide or lead-in device at all times.

1.5.5 When using a four wire system, make certain each wire rope is attached to its own hanging device. Contact Sky Climber, Inc. for details. See Fig. 1.2.



**Figure 1.2**

1.5.6 Special precautions must be taken to protect the wire rope when welding. See Section 1.10 for list of precautions.

1.5.7 Wire rope fittings, (J-clamps, shackles, etc.) must be checked for tightness at first loading and then at the beginning of each work shift thereafter.

## **1.6 POWER CIRCUIT**

### **1.6.1 GENERAL**

1.6.1.1 Do not remove the motor from the hoist for any purpose unless the platform is safely supported.

1.6.1.2 Emergency brake release may be used to permit controlled lowering of suspended equipment if power fails. See Section 3.1.3.2.

1.6.1.3 Do not allow electrical cord to become tangled with wire rope, or to catch on any obstruction when raising or lowering suspended equipment.

1.6.1.4 Make certain electrical cord is of sufficient length to permit full travel of suspended equipment.

### **1.6.2 ELECTRIC POWERED HOIST**

1.6.2.1 Before using electric powered Alpha 1500 Hoists, have a qualified person check voltage while hoisting with your maximum load. It should be no less than 200, nor more than 240 volts.

1.6.2.2 Make sure electric power "source" has an independent ground.

1.6.2.3 Use only approved connectors and power cords with strain relief, correctly assembled between hoist and power receptacle. Inspect to verify ground continuity, and use ground fault interrupter (as required by code in your location). Consult local safety authorities for further information.

1.6.2.4 Ensure that all metal accessories, outlets, junction boxes and other components which might become current carrying, are adequately grounded.


1.6.2.5 Electric power tools used on suspended work platforms must be grounded using power cords containing a separate ground wire unless double insulated.

## **1.7 CONTROLS**

1.7.1 Check all hoist controls to be sure they are in neutral or off position before turning on power to the system.

1.7.2 Be sure everyone is in a safe place before operating hoist.

1.7.3 Always operate hoists and suspended equipment up and down a few inches to check functions, before going aloft.

 **WARNING:** Always wait for Hoist to come to a full stop before changing direction of travel. Failure to do so may result in serious injury or property damage.

1.7.4 Engage the operating switch by manual action only. Do not lock the operating switch in operating position.

## 1.8 OPERATOR'S SUPPORT/WORK PLATFORM

1.8.1 Check stirrup bolts daily for soundness and tightness.

1.8.2 Never operate from work cage or platform without guard rails, toe boards, bumpers, and all personal safety equipment.

1.8.3 Operate platform in level position only.

1.8.4 Work from deck of platform only. Do not stand on guard rails, toe boards, platform/work cage supported objects, nor lean out from ends of platform. Do not use ladders, etc., to get at higher elevations.

1.8.5 The bosun chair seat should only carry the operator. Do not hang any loads from the seat at any time nor attach any device or support to the seat or seat back.

1.8.6 Do not attempt to bridge from one platform to another, nor to any structure or other equipment.

1.8.7 Do not attempt to transfer a work platform to another "drop" while it is suspended in the air. Perform all transfer operations with the platform resting on a safe surface.

1.8.8 Under no circumstances are aluminum platforms to be used where caustic materials, acid, or acid fumes can contact the platform. When caustic materials are used or are in the work area, use only wood or fiberglass platforms.

## 1.9 THE ENVIRONMENT & SURROUNDINGS


 **WARNING:** Serious injury or death may result from contacting electrical wires.

1.9.1 Refer to Federal, State, and Local codes and regulations when working in the vicinity of electric lines. Consult the local power supplier for safe operating procedures before rigging.

1.9.2 Do not use long handled tools when working in the vicinity of electric lines.

1.9.3 Under no circumstances shall the wire rope and platform be closer than 15 feet to live electric wires.


1.9.4 Make certain that there are no obstructions to the free vertical travel of the platform. In the event the movement of the platform is arrested by an obstacle, stop the hoist, inspect the platform and obstruction, and determine whether it is safe to proceed. Then reverse the direction enough to clear the obstacle.

 **WARNING:** Do not overload your system or create a slack wire condition by operating the hoist after getting stopped by an obstacle.

1.9.5 Do not use hoist when winds or gusts exceed 25 mph at work elevations.

1.9.6 Carefully follow the instructions given in this Manual for the use of Sky Lock® brakes in normal, contaminating, and freezing work environments, and for functional checking of the Sky Lock.

1.9.7 If you are using your Alpha 1500 Hoist in or near a marine (or corrosive) environment, more frequent inspections are required. For such applications, conduct a thorough inspection of the hoists, wire rope, fittings and equipment every 4 hours. Replace all components degraded by corrosion or wear.

 **WARNING:** The electric powered Alpha 1500 Hoist is not rated for working in an explosive atmosphere.

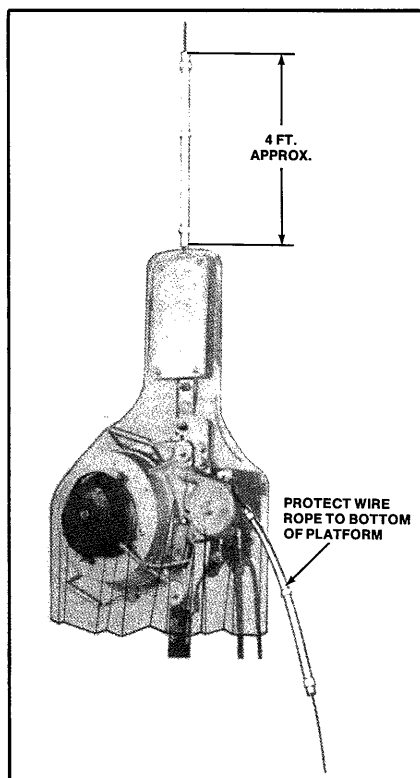
## 1.10 WELDING

When welding, the possibility of electric shock to personnel and/or the possibility of welding current passing through your wire ropes must be prevented by exercising the following precautions:

1.10.1 Use a suitable insulated thimble to attach each wire rope to its suspension point. Insulate extra rope stored on the roof to prevent grounding, or terminate the suspension rope at the insulated thimble.

1.10.2 Cover the wire support cable with insulating material above and below the Sky Climber® hoist. See Figure 1.3. This can be accomplished by using a length of split rubber tube taped in place around the cable as follows:

- a. Above the Sky Lock brake extending upward for approximately 4 to 5 feet (more if required by local codes).
- b. Below the Sky Climber Alpha 1500 Hoist, extending downward sufficiently far to insulate the tail line from the platform. The portion of the tail line that hangs free below the platform must be guided and/or retained so that it does not become grounded.



**Figure 1.3**

1.10.3 Cover each Sky Climber Hoist, Sky Lock® brake and wire winder with protective covers made from insulating materials.

1.10.4 Connect a grounding conductor from the platform to the work piece. The size of this conductor must be equal to or greater than the size of the stinger lead.

**NOTE:** This must be a secondary conductor and must not be in series with the primary conductor between the welder and work piece.

## 1.11 CORROSIVE ATMOSPHERE

When Sky Climber hoists are used in corrosive work-associated atmospheres such as acid washing, the hoist and supporting wire rope must be protected from direct contact with the corrosive solutions and work products. On the final drop each day, the rope shall be washed with a neutralizing solution and relubricated. Daily examination of the full supporting length of wire rope is mandatory.

Contact your nearest authorized Sky Climber Service Center for recommendations when operating in corrosive atmosphere.

## 1.12 SAFETY DECALS/INSTRUCTIONS

The following safety instructions and signs shall be on your Sky Climber equipment:

### Operating Instructions

Part No.: 102-372

Location: Mounted on electric box

DO NOT OPERATE THIS ALPHA HOIST UNLESS -

- YOU READ, UNDERSTAND AND FOLLOW FULLY THE INSTRUCTIONS CONTAINED IN THE ALPHA SAFETY AND OPERATING MANUAL.
- YOU COMPLY FULLY WITH ALL FEDERAL, STATE AND MUNICIPAL REGULATIONS AND CODES THAT APPLY TO THIS EQUIPMENT AND ITS USE.
- YOU WEAR AT ALL TIMES A SAFETY BELT ATTACHED TO A LIFELINE IN THE MANNER DESCRIBED IN THE APPLICABLE SAFETY CODES.
- YOU USE ONLY 3/8" DIAMETER WIRE ROPE OF THE TYPE SPECIFIED IN THE ALPHA SAFETY AND OPERATING MANUAL.
- THE GROSS LOAD SUPPORTED BY THE WIRE ROPE DOES NOT EXCEED 1500 POUNDS OR A LESSER AMOUNT AS DEFINED BY ASSOCIATED EQUIPMENT PLACARDS OR IN THE ALPHA SAFETY AND OPERATING MANUAL.

**Canadian Standards Association  
Certification Decal**

Part No. 102-262

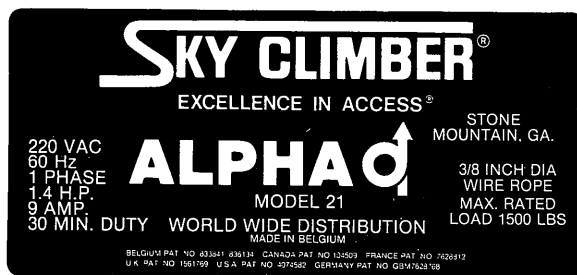
Location: Mounted on electric box



**Nameplate**

Part No.: 102-374

Location: Mounted on electric box



**Underwriters Laboratories Certification  
Decal**

Part No. 102-242

Location: Mounted on gear box

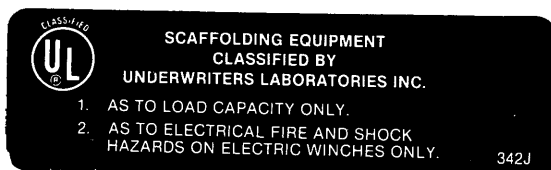
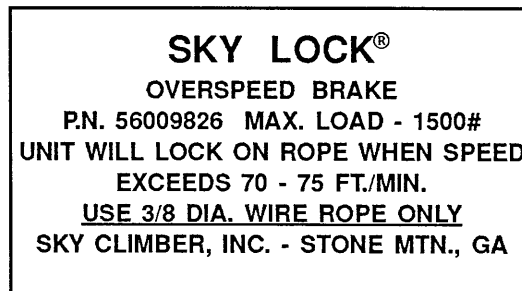


Figure 1.4 shows safety related information which was shipped in the container with the Sky Climber® Hoist. It must be read and complied with at all times.

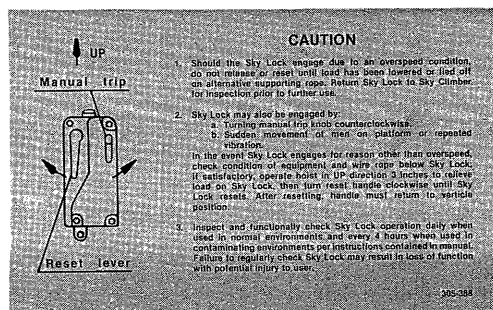
**Sky Lock® Brake Nameplate**

Part No. 305-387



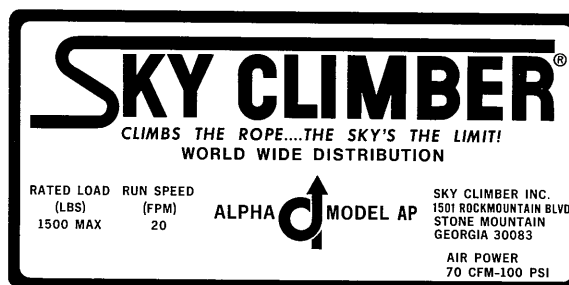
**Sky Lock® Brake Instruction Decal**

Part No. 305-388



**Nameplate located on Air Motor**

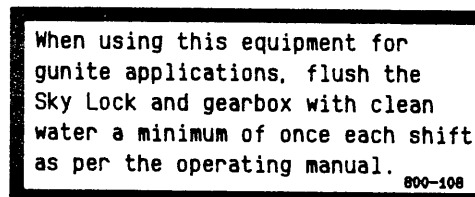
Part No. 101-269



Packet	Contents
SC342 Alpha - Single Phase Electric	SC399 Warranty Card SC485 Alpha Instruction Manual SC486 Hoist & Sky Lock Type II Parts Manual
SC343 Alpha Air	SC399 Warranty Card SC485 Alpha Instruction Manual SC445 Air Hoist & Sky Lock Type II Parts Manual

**Decal, Gunite Application**

Part No. 800-108



**Figure 1.4**

## SECTION 2

### INTRODUCTION / DESCRIPTION

#### 2.0 INTRODUCTION

This Manual contains Sky Climber, Inc.'s minimum requirements for safety, operation and inspection. Follow all Federal, State, and Local codes and regulations pertaining to the safe use and maintenance of this equipment.

**⚠ WARNING:** Failure to inspect, maintain, and operate the Sky Climber® Alpha 1500 Hoist, Sky Lock® brake, and related equipment as defined in this Manual could result in serious injury or death.

#### 2.1 GENERAL FEATURES

The Sky Climber Alpha 1500 Hoist is a man-rated, portable, traction sheave hoist, classified by Underwriters Laboratory (UL) and certified by the Canadian Standards Association (CSA). It climbs up and down a 3/8" diameter steel wire rope carrying men and materials to desired work stations. The Sky Climber Alpha 1500 Hoist may be used to power platforms, work cages, bosun chairs and other approved devices used in suspended operations. The Sky Climber Alpha 1500 Hoist is available for 220 VAC single phase 60 Hz electric operation and 100 PSIG air operation. See Figure 2.1.

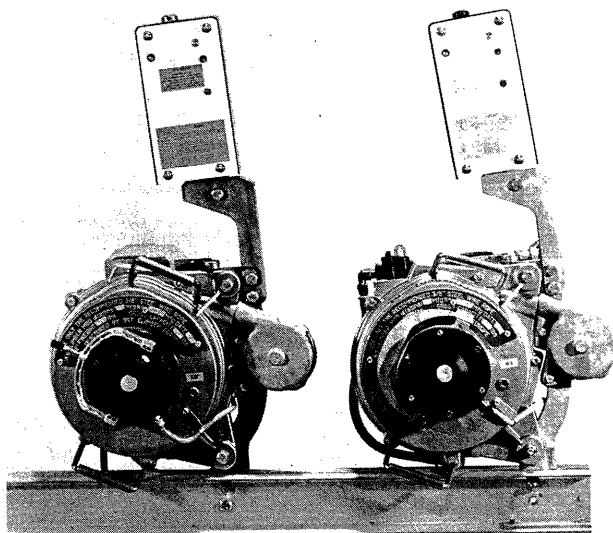


Figure 2.1

#### 2.2 ELECTRIC POWERED ALPHA 1500 HOIST

The electric powered Sky Climber Alpha 1500 Hoist consists of a traction sheave and gearbox with a 1.5 horsepower electric motor and electro-magnetic brake that is electrically released and mechanically set, and a control box.

**⚠ WARNING:** A Sky Lock overspeed brake safety device shall be used at all times with each Sky Climber Alpha 1500 Hoist. Failure to do so may result in serious injury or death.

##### 2.2.1 SPECIFICATIONS - Electric Powered Alpha 1500 Hoist:

**Weight:** 179 Pounds (with Sky Lock)

**Rated Capacity:** 1500 lbs.

**Speed:** 30 fpm.

**Dimensions:**

Height: 32 3/4"

Width: 14 1/2"

Length: 19 3/4"

**Motor Characteristics:**

- Nominal voltage: 220 VAC 60Hz Single Phase while running
- Maximum current drain: 9.0 amperes.
- 1700 RPM
- 220V Nominal breaker size per unit is 15 amperes (30 amperes per pair of hoists).

Rated Capacity is defined as the total load supported by the hoist. It includes the weight of the stirrup, platform, work cage, bosun chair, personnel, work tools, materials, operating accessories, power cord and wire rope. Rated Capacity does not include the weight of the hoist itself. The Sky Climber Alpha 1500 Hoist's Rated Capacity of 1500 pounds must not be exceeded.

##### 2.2.2 CONTROLS

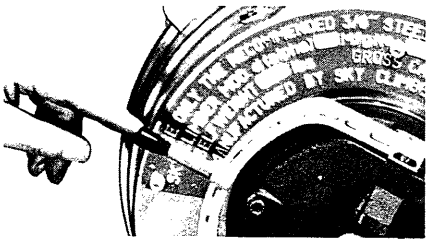
The electric powered Alpha 1500 Hoist has three controls: Directional Switch, Emergency Stop Button and Controlled Lowering Lever. See Figure 2.2.



**Directional Switch**



**Emergency Stop Button**



**Controlled Lowering Lever**

**Figure 2.2**

## 2.3 AIR POWERED ALPHA 1500 HOIST

The air powered Sky Climber® Alpha 1500 Hoist consists of a traction sheave and gearbox module, air motor, filter, lubricator, directional control lever and a spring set air released primary brake.

**! WARNING:** A Sky Lock® overspeed brake safety device shall be used at all times with each Sky Climber Alpha 1500 Hoist. Failure to do so may result in serious injury or death.

### 2.3.1 SPECIFICATIONS - Air Powered Alpha 1500 Hoist:

**Weight:** 147 Pounds (with Sky Lock)

**Rated Capacity:** 1500 lbs.

**Speed:** 20 fpm at 1500 lbs.  
24 fpm at 1000 lbs.

#### **Motor Characteristics:**

- nominal pressure at motor: 100 psig
- air volume per hoist: 70 SCFM

**Compressor Required:** 150 SCFM at 100 PSIG for 2 hoists.

Rated Capacity is defined as the total load supported by the hoist. It includes the weight of the stirrup, platform, work cage, bosun chair, personnel, work tools, materials, operating accessories, air lines, and

wire rope. Rated Capacity does not include the weight of the hoist itself. The Sky Climber Alpha 1500 Hoist's Rated Capacity of 1500 pounds must not be exceeded.

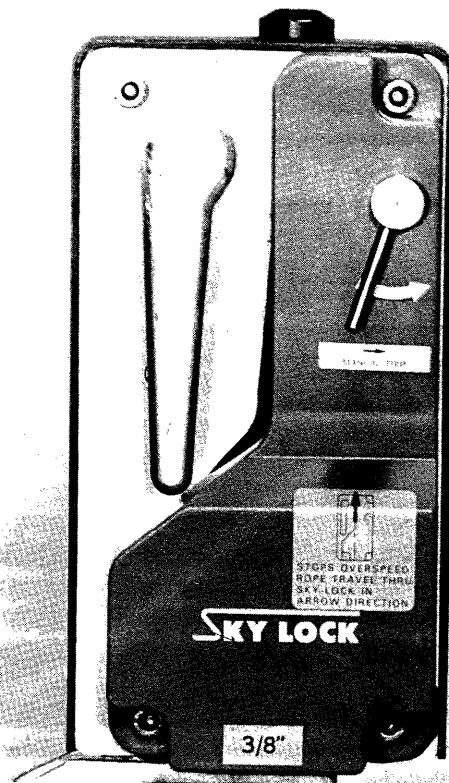
### 2.3.2 CONTROLS

The air powered Alpha 1500 Hoist has two controls: Directional lever and Controlled Lowering Handle.

## 2.4 SKY LOCK OVERSPEED BRAKE

The Sky Lock overspeed brake provides additional backup to the safety devices built into the Sky Climber Alpha 1500 Hoist. The Sky Lock is a device which senses the dynamic speed of the wire rope as it passes through the Sky Lock mechanism. If, as the Sky Lock brake is traveling down the wire rope, the factory preset speed is exceeded, the Sky Lock brake will lock onto the wire rope and support the load. The wire rope cannot be released until the load on the Sky Lock brake is relieved.

Use ONLY a Sky Lock Type II overspeed brake with the Alpha 1500 Hoist. See Figure 2.3. This model provides a manual trip lever for manual activation or functional checking. Installation and operating procedures are described in Section 3.3. Inspection procedures are described in Section 5.4.2.



**Figure 2.3**



## SECTION 3

# OPERATION / INSTALLATION & REEVING

### 3.0 GENERAL

Users are responsible for reading, understanding, and following the instructions in this manual. Do not operate the Sky Climber® Alpha 1500 Hoist until you have read and understood this Manual, and are willing to follow its instructions. Consult your supervisor or nearest Sky Climber Office if you have any questions concerning these instructions, or if training is required.

### 3.1 ELECTRIC POWERED HOIST

#### 3.1.1 GENERAL

For typical installation on a scaffold and for reeving instructions, see Section 3.4.

**⚠ WARNING:** The electric powered Alpha 1500 Hoist shall NOT be used in an explosive atmosphere.

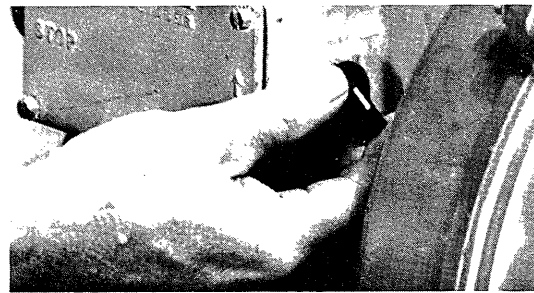
An explosive atmosphere is one in which flammable gases or vapors or small particles are or may be present in the air in quantities sufficient to produce an explosive or ignitable mixture.

#### 3.1.2 OPERATION

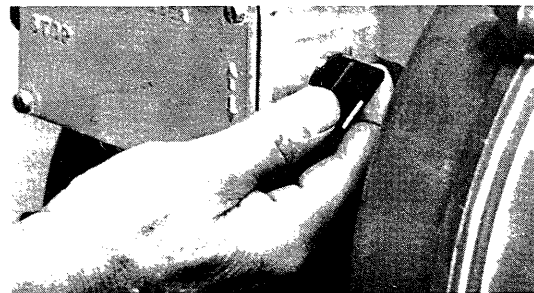
The electric hoist is activated by turning the directional switch in the desired direction of travel. Travel is stopped by releasing the directional switch, which cuts power to the motor and sets the hoist brake.

##### 3.1.2.1 DIRECTIONAL SWITCH

Turning the directional switch of the Sky Climber Alpha 1500 Hoist in desired direction of travel results in application of power to motor and release of brake. The directional switch is spring loaded, so that it returns to OFF when released; this results in automatic engagement of the hoist brake. See Figure 3.1.



Up



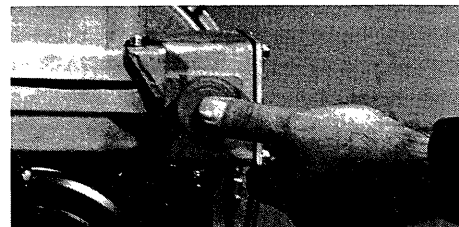
Down

Figure 3.1

**⚠ WARNING:** Always allow hoist to come to a full stop before changing direction of travel. Failure to do so could result in serious injury or property damage.

##### 3.1.2.2 EMERGENCY STOP BUTTON

Pressing the red Emergency Stop Button results in the interruption of power to the hoist, and allows the brake to set. This switch may be reset and power restored by turning it clockwise. See Figure 3.2.



Stop



Reset

Figure 3.2

### 3.1.3 EMERGENCY OPERATION- POWER FAILURE

In the event of loss of electric power, the Sky Climber® Alpha 1500 Hoist may be raised by using the optional hand crank, or lowered using the Controlled Lowering Handle.

**⚠ WARNING:** Always unplug the hoist at the pigtail connection before using the manual crank or Controlled Lowering Lever, otherwise serious injury or property damage may result.

#### 3.1.3.1 ASCENT - OPTIONAL HAND CRANK

If power fails and you desire to raise suspended equipment:

- Unplug the hoist at the pigtail connection.
- Remove protective cover at end of gearbox.
- Insert crank attachment in gearbox of hoist.
- Apply pressure to crank with one hand, while pulling Controlled Lowering Handle toward outer end of motor with the other. See 3.2.3.
- Move crank in counter-clockwise direction to ascend.
- To stop, release Controlled Lowering Lever (which sets brake) before releasing crank.

**⚠ WARNING:** Release Controlled Lowering Lever to set Hoist brake before releasing crank, otherwise serious injury or property damage could result.

#### 3.1.3.2 DESCENT - CONTROLLED LOWERING LEVER

If power fails and you desire to lower the hoist and its load:

- Unplug the hoist at the pigtail connector.
- Release Hoist brake by gently pulling Controlled Lowering Lever. See 3.2.3. See Figure 3.3.

**CAUTION:** Partial release of Hoist brake may result in overheating and premature brake wear. This brake may not be serviced in the field.

**⚠ WARNING:** Before descending, be sure that optional hand crank is removed from hoist, otherwise, serious injury or property damage could result.

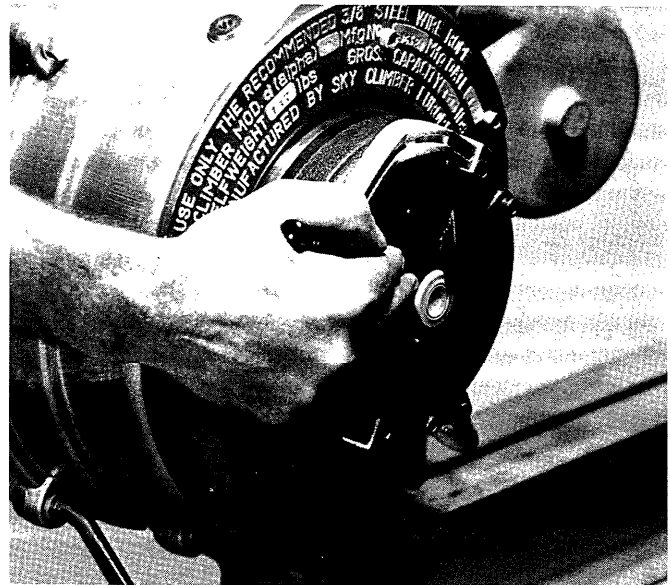


Figure 3.3

**NOTE:** Never manually release the hoist brake for normal lowering operations.

#### 3.1.4 POWER SUPPLY

Minimum electrical power required per hoist is 9 amps at 220 volts.

**CAUTION:** The motor may overheat if the measured voltage at the motor during operation is less than 200 or more than 240 volts.

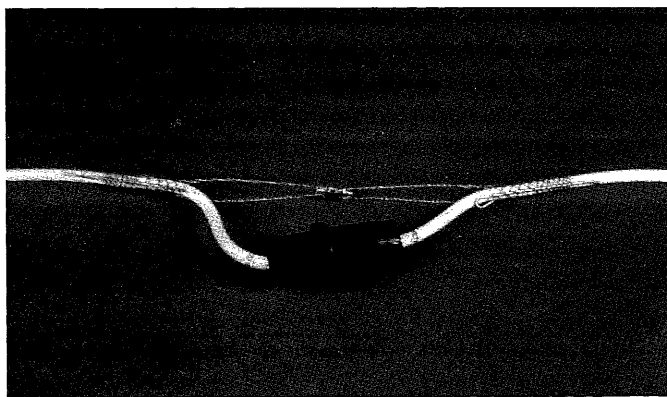
If a problem in motor performance exists when operating two Sky Climber Alpha 1500 Hoists due to low voltage, the use of a booster transformer or of a separate power cord for each hoist is recommended.

#### 3.1.5 POWER CORDS

Because of varying platform loads or source voltage and electrical system impedance, it is impossible to recommend optimum electrical cord wire sizes. In nearly all cases, a 250 ft., 600V, 10-3 SO electric cable can be used. Longer drops may necessitate the use of a voltage booster transformer or location of the power source in the middle of the drop.

**IF A BOOSTER TRANSFORMER IS NEEDED,  
CALL YOUR SKY CLIMBER REPRESENTATIVE.**

The power cord must be secured to the swing stage by strain relief devices or other means to prevent the connector from pulling apart. When two power cords are used in series, include strain relief devices as shown in Figure 3.4.



**Figure 3.4**

Make sure the cord length is sufficient to permit free travel of the platform without applying undue strain to the cord strain relief. It may be necessary to connect building power midway between upper and lower travel limits to ensure full travel of the platform and to avoid limitation of travel due to insufficient power cord or voltage drop.

When finished for the day, make certain power cord is disconnected at the main outlet. Protect power cords from rain and water at all times.

Make certain the ground connector of the building power receptacle is grounded. See Safety Check List, Section 1.6.

Do not attempt to alter any connectors to fit power outlets. Do not use deteriorated or contaminated components.

### **3.1.6 THERMAL OVERLOAD**

When the motor is overheated because of excessive current draw or prolonged use in hot weather, a thermal overload switch will cut power to the motor windings. Determine the cause of overheating and make the necessary corrections. Allow the motor to cool approximately 20 minutes, so that the thermal overload switch will reset.

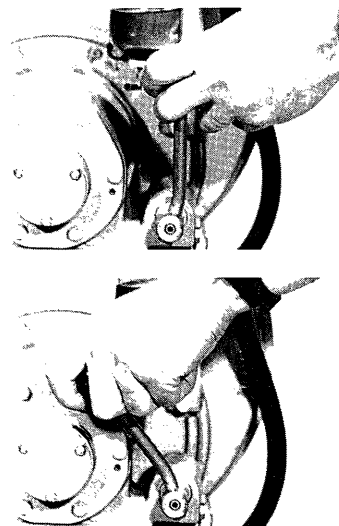
## **3.2 AIR POWERED HOIST**

### **3.2.1 GENERAL**

For typical installation on a scaffold and for reeving instructions, see Section 3.4.

### **3.2.2 OPERATION**

The air hoist is activated by turning the directional lever of Sky Climber® Alpha 1500 Hoist in desired direction of travel. This results in application of air to the motor and release of the brake. The directional handle is spring loaded so that it returns to OFF when released. This results in automatic engagement of the hoist brake. See Figure 3.5.



**Figure 3.5**



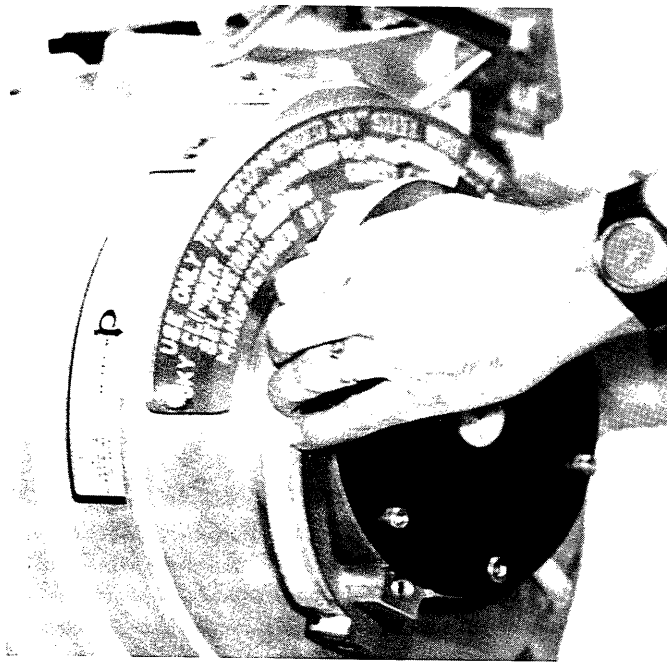
**WARNING:** Always allow hoist to come to a full stop before changing directions of travel. Failure to do so could result in serious injury or property damage.

### **3.2.3 EMERGENCY OPERATION - LOSS OF AIR**

In the event of loss of air, the Sky Climber Alpha 1500 Hoist may be lowered using the Controlled Lowering Handle.

If air is lost and you desire to lower the hoist brake, push the Controlled Lowering Handle as far as it will go inward toward the hoist. See Figure 3.6.

**CAUTION:** Partial release of hoist brake may result in overheating and premature brake wear. This brake may not be serviced in the field.



**Figure 3.6**

**NOTE:** Do not use the Controlled Lowering Handle for normal lowering operation.

### 3.2.4 AIR SUPPLY

Minimum air required per hoist is 70 SCFM at 100 PSIG. A 100 PSIG, 150 SCFM air compressor is required for two hoists.

### 3.2.5 AIR LINES

Use 3/4 inch inside diameter air lines between the units and the air compressor (larger lines may be needed for extra long runs). When a pair of units are used, "Y" off the line at the platform center and continue on to each unit with two 3/4 inch hoses of equal lengths.

Two important variables determine air motor speed. They are pressure at the air motor and the load that the hoist is lifting. Up to a maximum speed, increasing the air pressure increases flow which in turn increases speed, increasing the load on the hoist decreases speed. For a given pressure and flow rate an air line has an associated pressure drop.

Assuming 100 PSIG at the compressor and 1000 pound load on the hoist the following chart lists maximum lengths (feet) of each size air hose that will result in maximum speed.

	Hose Inner Diameter		
	3/4"	1"	1 1/4"
One Unit	400	1000	1000+
Two Units - Yoked	100	300	1000

**NOTE:** Always secure the hose to the swing stage so the weight of the hose is not on the unit.

Two shut off valves should be installed; one in the supply line near the air supply source, and the other on the platform/work cage accessible to the operator.

### 3.2.6 AIR FILTERING AND LUBRICATION

The air powered hoist is equipped with an air filter and a lubricator mounted in the input line ahead of the motor.

The filter removes both free moisture and solids from the air. There are no moving parts. The filter element should be cleaned periodically. The lubricator supplies a measured quantity of oil to the air motor. To fill the lubricator; remove the oil fill plug and fill to the visible rim of the bowl with SAE No. 10 petroleum based hydraulic or spindle oil. Replace the fill plug.

**CAUTION:** Do not use oils with adhesive or tacky additives.

Use a slotted screwdriver to trim the adjusting screw in the top of the lubricator.

Leaner - clockwise

Richer - counterclockwise

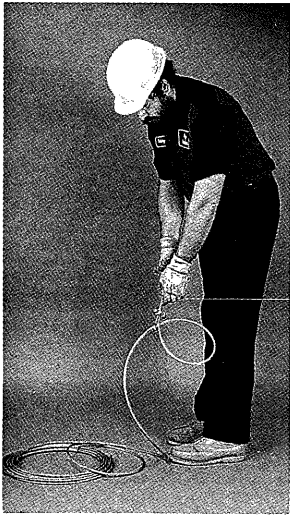
Correct oil delivery is approximately 6 drops per minute. Each air motor has its own efficiency based on oil delivery.

**DO NOT** connect to air systems which use synthetic fire-resistant lubricants in the air compressor, especially the phosphate ester types. In areas where bowls are exposed to atmospheres containing vapors or fluids which are damaging to plastic, use metal bowls.

## 3.3 SKY LOCK® OVERSPEED BRAKE

### 3.3.1 GENERAL

The Sky Lock overspeed brake is a safety device which senses the speed of the 3/8" diameter wire rope passing through its mechanism. If the factory pre-set actuation speed is exceeded as the Sky Lock is traveling down the wire rope, the Sky Lock brake will lock onto the wire rope and support the descending load. The wire rope can not be released until the load on the Sky Lock brake is relieved.



**"Wrong Way"**

**"Right Way"**

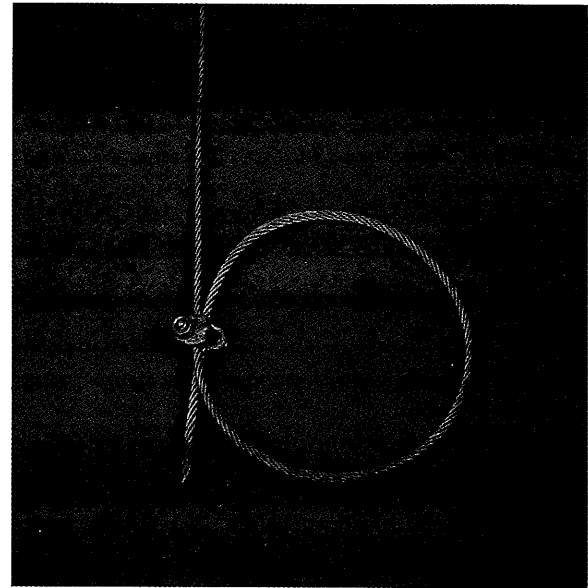


**Figure 4.3**

During installation, care shall be observed to avoid dragging the wire rope in dirt or around objects which will scrape, nick, crush, induce sharp bends, or otherwise damage it.

Rig from top of structure, allowing approximately ten feet of extra wire rope at bottom to reeve hoist. Store extra wire rope on roof neatly coiled, tied and protected from the elements.

**⚠ WARNING:** If it is necessary to rig with less rope than specified above, it is mandatory that the bitter end of the rope be looped back on itself and secured with a "J" clamp. Failure to do so may result in serious injury or death. See Figure 4.4.



**Figure 4.4**

In the event the tail line must be restrained, consult your local Sky Climber, Inc. Office.

The wire rope supplied by Sky Climber is lubricated when it leaves the factory. Under normal conditions, further lubrication is required at weekly intervals. If lubricant in spray cans is available, the coiled or suspended rope is sprayed with lubricant. Remove excess lubricant with a rag.

### **4.3 INSPECTION / REPLACEMENT CRITERIA**

The full length of wire rope to be used shall be inspected.

No precise rules can be given for determination of the exact time for replacement of wire rope, since many variable factors are involved. Continued use of a wire rope depends upon its remaining strength and its ability to pass around the traction sheave. Because of the nature of the application, wire rope **SHALL** be taken out of service when **ANY** of the following conditions exist:

- a. Four randomly distributed broken wires in three lays, or two broken wires in one strand in three lays.

- b. More than one valley break (broken wire). A wire break in the valleys between strands indicates an abnormal condition, possibly fatigue, and breakage of other wires not visible.
- c. Kinking, crushing, birdcaging, or any other damage resulting in distortion of the rope structure.
- d. Evidence of any heat damage from any cause.
- e. Evidence of rope deterioration from corrosion.
- f. Noticeable rusting, corrosion, pitting, or more than two broken wires in the vicinity of end attachments.
- g. Evidence of core failure (a lengthening of rope lay and a reduction in rope diameter indicates core failure).
- h. Reduction of wire rope diameter to 0.343", when measured under load.

**⚠ WARNING:** Replacement rope shall be to Sky Climber's specifications. Use of wire rope obtained from sources other than Sky Climber, Inc. could result in serious personal injury and/or property damage.

Wire rope is measured across its largest dimensions on the outer limits of the strands. See Figure 4.5.

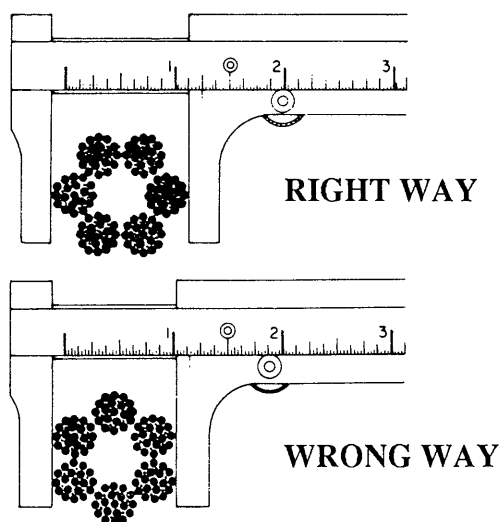


Figure 4.5

**NOTE:** Consult your Wire Rope Manufacturers Manual/Handbook or the "Wire Rope Users Manual" published by American Iron & Steel Institute for a comprehensive list and pictures or examples of critical inspection and replacement factors for wire rope.

#### 4.4 FITTINGS

Use only 3/8", "J" type wire rope clamps with a minimum of three clamps spaced approximately three inches apart. See Figure 4.6.

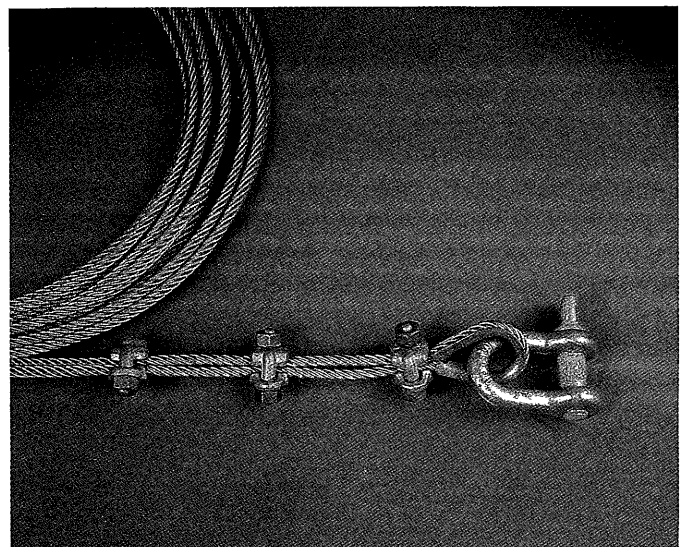


Figure 4.6

**DO NOT USE "U" type clamps** as illustrated in Figure 4.7. They cause crushing of wires and reduction in strength of the wire rope.

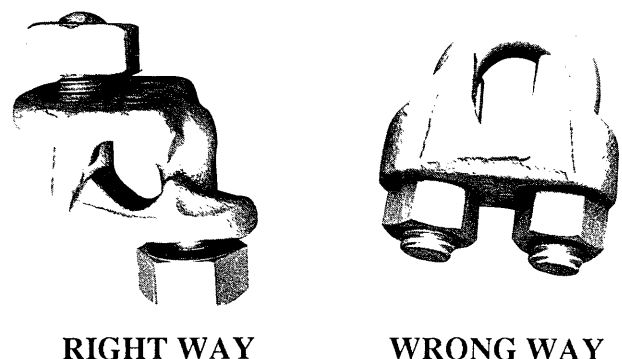


Figure 4.7

Always use a 3/8" heavy duty thimble and a 5/8" screw pin shackle to avoid permanent damage and to retain full strength in the wire rope for use on future jobs. Insulated thimbles are available for rigging platforms which are to be used for welding.

Braze both ends of wire rope. See Figure 4.1.

When installing "J" clamps, tighten to 45 ft.-lb. each. Retorque to 45 ft.-lb. daily thereafter.

**⚠ WARNING:** Failure to check rigging and "J" clamps before each work shift for tightness (45 ft.-lb.) could result in serious personal injury or death.

## 4.5 SKY CLIMBER WIRE-WINDER

A wire-winder is available as an accessory item (Figure 4.8). The wire-winder is intended for special applications where the tail line cannot hang free. Secure the wire-winder on the platform or floor of the stage. Position to allow a smooth passage of the wire rope through the conduit feed line. Connect the conduit to the departure guide of the hoist. Continually observe wire-winder during operation to assure that wire rope lays properly and does not kink.

To alert operators that they are nearing end of rope, the last 15 feet should be marked with bright red or yellow paint.

**⚠ WARNING:** Make certain that sufficient rope is used in wire-winder to avoid running off rope end. Failure to do so may result in serious personal injury or death.

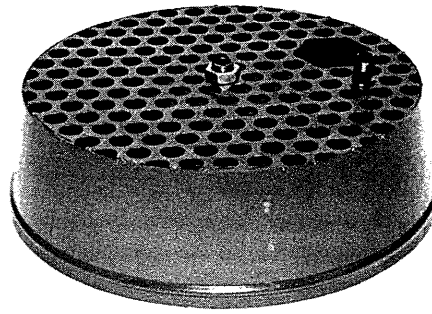


Figure 4.8

# SECTION 5 - INSPECTION & MAINTENANCE


## 5.0 GENERAL INFORMATION

The Sky Climber® Alpha 1500 Hoist is built to provide years of trouble-free service when properly maintained and operated in accordance with the instructions contained in this Manual.

To preserve reliability and to extend service life, the Sky Climber Alpha 1500 Hoist and Sky Lock® brake must be inspected periodically for wear, damage, and contamination. The frequency of inspection is listed in the Periodic Inspection Table in Section 5.2.

INSPECTION AND MAINTENANCE IS THE OPERATOR'S RESPONSIBILITY.

Sky Climber, Inc. recommends that each Alpha 1500 Hoist be returned to a Factory authorized service center for routine inspection after each twelve (12) months of normal operation.

 **WARNING:** Failure to comply with the following Periodic Inspection Frequency Table could result in a malfunction and in serious personal injury/property damage.

## 5.1 TYPES OF INSPECTION

### 5.1.1 FACTORY INSPECTION

The Sky Climber Alpha 1500 Hoist and Sky Lock brake shall be returned to a Sky Climber, Inc. authorized service center for inspection, maintenance and testing at periods specified in Table I (Section 5.2). The location of the nearest authorized service center may be obtained from a Sky Climber office listed on the back cover of this Manual.

### 5.1.2 FIELD INSPECTION

The operator or designated qualified person shall perform the indicated FIELD INSPECTION (see Table I). Corrective maintenance shall always be performed promptly to ensure SAFE and RELIABLE operation. Maintenance must be performed by a Factory authorized service representative.

## 5.2 FREQUENCY OF INSPECTION

The Sky Climber Hoist and associated equipment should be inspected at intervals defined in Table I and related notes. Every item listed in Table I is important. The "X" in a column refers to the inspection frequency requirement noted by its column heading.

Failure to comply with the schedule in Table I will void the Sky Climber Warranty. It is the operator's responsibility to see that inspection and maintenance are performed at the required intervals.



**TABLE I - PERIODIC INSPECTION FREQUENCY**

ITEM	Field		Factory Authorized Service Center	
	WHEN REEVED	EACH WORK SHIFT	3 MO.	12 MO.
SAFETY EQUIPMENT	X	X		
ROPE CONDITION	X	X		
SKY LOCK	Note(1)	Note (2)	Note(3)	Note(3)
- Coupling nuts & bolts	X	X		
HOIST UNIT	X	X		X
- Coupling nuts & bolts	X	X		
- Rope Housing drain	X	X		
- Lubrication	X	Note (4)		
WORK PLATFORM	X	X		
RIGGING	X	X		
ELECTRICAL CONNECTIONS	X	X		

**TABLE NOTES:**

1. Test in accordance with Sections 5.4.2.1 and 5.4.2.2.

2. Frequency of inspection is dependent upon the "Work Environment". See Section 5.4.2.2.

a. Normal: Check at start of each work shift.

b. Abrasive, caustic, or adhesive: Check at start of each work shift and every 4 hours thereafter.

c. Freezing: Check at start of each work shift and every two hours thereafter.

3. Return to Sky Climber authorized service center:

- a. every three months if used in contaminated or freezing environments
- b. every six month if used in a normal environment

See instructions, Section 5.2.

4. Apply "Molykote BR 2 Plus" grease (or equivalent) to grease nipple with suitable grease gun.

- a. At beginning of job.
- b. Monthly thereafter.

### 5.3 OPERATOR'S SAFETY EQUIPMENT INSPECTION PROCEDURE

1. Check that each person has a separate drop line that is adequately tied off to a substantial building structure; but not to the same device used to support the Sky Climber® hoist suspension rope. See Figure 5.1.

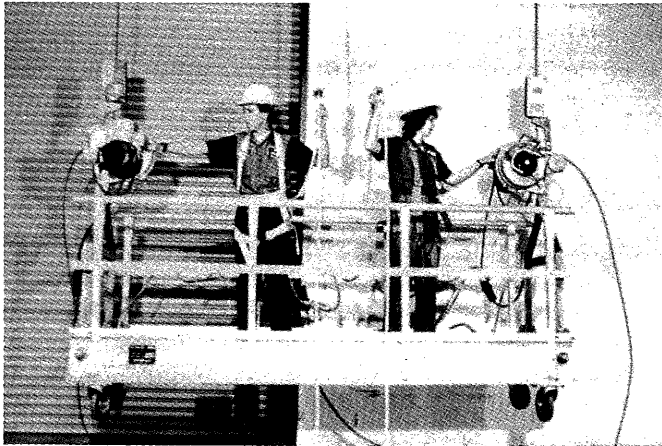


Figure 5.1

Inspect the drop line to ensure that it has not been damaged and will meet governing safety codes, rules, and regulations. Replace any rope which is worn or oil soaked.

2. Check performance of safety rope grab to ensure that it will adequately support the operator's weight. Follow the rope grab manufacturer's instructions completely.
3. Inspect lanyard, safety belt, or harness attachment hardware to ensure that all items are in good condition and can be attached or removed without difficulty. Do not use webbed belts or lanyards with broken stitching. See Figure 5-2 for the type of operator safety equipment available from Sky Climber, Inc.

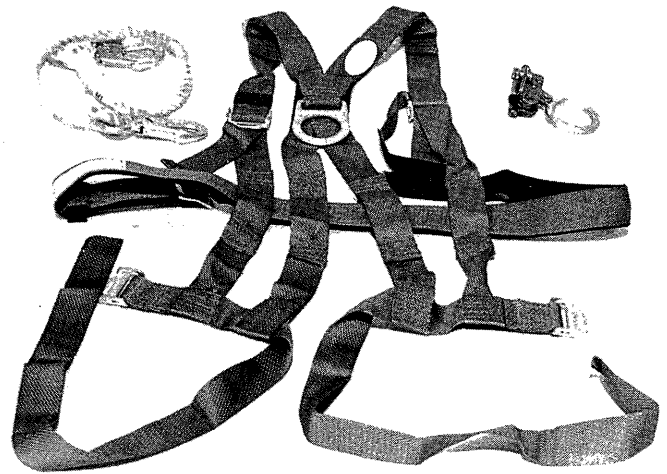


Figure 5.2

4. Where attachment of the safety lanyard to a wire rope line mounted on the stage is permitted by the governing safety authorities, check safety wire rope and means of attachment to stage to ensure that attachment fittings are secure and have adequate strength.

**! WARNING:** Never go aloft without a drop line and properly attached safety belt or harness. Failure to do so may result in serious personal injury or death.

### 5.4 SKY LOCK® OVERSPEED BRAKE INSPECTION/ FUNCTIONAL CHECKS

The Sky Lock overspeed brake is a precision device which must be frequently inspected and functionally checked to assure that it is operating properly. See Table 1 - Periodic Inspection Frequency, and the explanation which follows.

**! WARNING:** Failure to inspect and functionally check the Sky Lock overspeed brake as required in Table I - Periodic Inspection Frequency may result in personal injury and property damage.

## 5.4.1 WORK ENVIRONMENT

The Sky Lock overspeed brake will be used in numerous environmental conditions. These conditions with recommended precautionary measures may be grouped as follows:

### 5.4.1.1 GROUP 1 - NORMAL (+32° F AND ABOVE, DAY/NIGHT)

A "Normal Work Environment" includes inspection operations, light maintenance, and window washing.

In this environment the only contaminant that would be expected to be deposited in the Sky Lock® brake is lubricant from the support cable.

Inspections/functional check should be conducted by the operator at the start of each work shift. However, if any of the adverse conditions identified below in Group 2, "Contaminated Work Environment," are present in close proximity to operations identified in Group 1, the precautions noted in Group 2 should be followed.

### 5.4.1.2 GROUP 2 - CONTAMINATED (+32° F AND ABOVE, DAY/NIGHT)

A "Contaminated Work Environment" can be identified as one in which one or more of the following categories of contaminants are used or are in close proximity to the operation:

**CATEGORY A:** Abrasive Material (e.g., sand, grit, dust, welding, etc.);

**CATEGORY B:** Caustic Material (e.g., corrosive chemicals, salty environment, acids or fumes, etc.);

**CATEGORY C:** Adhesive Material (e.g., cement, plaster, paint, caulking compound, etc.).

In such work environments, every effort must be made to prevent entry of contaminants into the Sky Lock brake. Recommended minimum precautions for equipment protection are:

1. Cover the wire support cable above and below the Sky Climber® hoist for a distance of 4 to 5 feet in each direction. A length of split rubber hose taped in place is adequate to serve this function. If a wire-winder is used, the guide tube will substitute for the rubber hose below the Sky Climber hoist.

2. Cover the wire-winder with clear plastic covers.


3. Do not use contaminated wire rope.

For a work environment with contaminants in Group 2, inspections and functional checks must be conducted by the operator at the beginning of each work shift and every four hours thereafter. If the adhesive material being used has a faster setup time than 4 hours, the frequency of the inspections and functional checks shall be increased accordingly.

### 5.4.1.3 GROUP 3 - FREEZING (+32° F AND BELOW DAY/NIGHT)

Temperatures of +32° F and below without the presence of moisture do not adversely affect the Sky Lock brake. However, if the work environment of either Group 1 or 2 changes to include freezing temperatures and sufficient moisture to form ice inside the Sky Lock brake, there is a possibility that the unit will fail to function as intended, with resultant potential danger to the user.

Under these circumstances the operator must take reasonable precautions to prevent moisture from entering the Sky Lock brake. To ensure that the unit is functioning properly, it should be inspected and functionally checked at the beginning of each work shift and a minimum of every two hours thereafter during the course of the workday. Should the Sky Lock brake malfunction when being inspected, it can be assumed that the unit is frozen. The Sky Lock overspeed brake should be thawed out with the aid of an external heat source. After the unit has been thawed, blow the moisture out of the Sky Lock brake with dry air.

 **WARNING:** When using compressed air, be sure to wear safety glasses to avoid eye injury.

Then pour approximately 1 cup of alcohol into the entrance guide of the Sky Lock brake. This procedure should clear the moisture from the inside of the Sky Lock brake and return it to a condition which will not be adversely affected by below freezing temperatures, unless subjected to additional moisture. To confirm continued acceptable operation, the Sky Lock brake must be inspected and functionally checked every two hours as noted above.

### 5.4.2 INSPECTING SKY LOCK® OVERSPEED BRAKE

The following inspection procedures are for the Type II Sky Lock brake.

**⚠ WARNING:** If the Sky Lock® over-speed brake fails any of the following inspections, it must be replaced at once or serious personal injury or death may occur.

#### 5.4.2.1 Inspecting "Trip" Performance of Sky Lock Overspeed Brake -

Use the following procedure to test the Sky Lock brake prior to reeving:

1. Insert the end of a wire rope through the Sky Lock.
2. Support the wire rope and Sky Lock in a vertical position. Let the Sky Lock drop down the wire rope. The accelerating brake should trip the mechanism, causing it to lock onto the rope before the brake falls 4".
3. Reset the Sky Lock brake and repeat this procedure two times. If the Sky Lock brake does not trip and lock onto the rope before falling 4" during any test, it must be replaced.

Use the following procedure to test the Sky Lock brake after reeving:

**⚠ WARNING:** Platform must be supported on a safe surface.

1. Make certain Sky Lock brake is properly set (See Figure 5.3.)

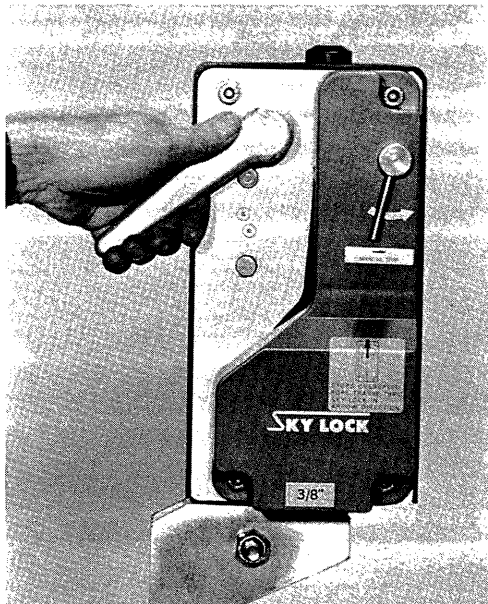


Figure 5.3

2. Disengage the Sky Lock brake from the Sky Climber® hoist or other platform attachment point by removing the attaching bolt from the lower Sky Lock fitting.
3. Raise the Sky Lock brake up the wire rope approximately 12" and release it (let it drop). The Sky Lock brake should trip and lock onto the rope after a fall of not more than 4". (See Figure 5.4.)

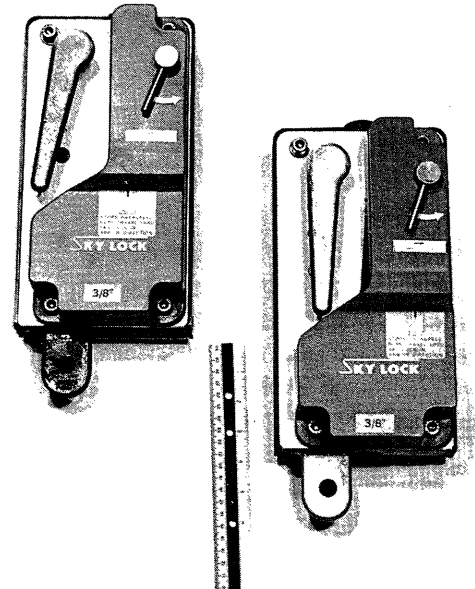


Figure 5.4

4. Reattach the Sky Lock brake to the Sky Climber hoist by either:
  - a. Raising the Alpha 1500 Hoist and platform by using power to a position where the attaching bolt can be inserted or,
  - b. Resetting the Sky Lock brake using the reset lever, and lowering it down to the hoist and inserting the attaching bolt.
5. Make sure attaching hardware is properly tightened.

#### 5.4.2.2 Inspecting Load Support Performance

1. Raise the platform several inches off the surface with the Sky Climber hoist.
2. Engage (trip) the Sky Lock brake onto the wire rope by activating the manual trip lever on the brake.

3. Operate the Sky Climber hoist in the "DOWN" direction. The system should not descend, because the Sky Lock® brake will be locked onto the wire rope and supporting the system.

**NOTE:** If the Sky Lock does not hold the load it must be replaced.

4. Operate the hoist in the "UP" direction approximately 3" to relieve the load from the Sky Lock brake.
5. Manually reset the Sky Lock brake.

**! WARNING:** Do not attempt to adjust or repair the Sky Lock brake. It is a precision device and must be handled carefully.

## 5.5 HOIST COMPONENTS INSPECTION AND MAINTENANCE

Maintenance of the Sky Climber® Alpha 1500 Hoist requires special tools and training available only at Factory authorized service centers. All Sky Climber Alpha 1500 Hoists must be returned to a Factory authorized service center for inspection and maintenance every 12 months.

**! WARNING:** Failure to have your Sky Climber Alpha 1500 Hoist inspected and maintained by a Factory authorized service center every 12 months, may result in serious personal injury or property damage.

### 5.5.1 CHECK THE GEAR OIL LEVEL

With the Alpha 1500 Hoist in the upright (operating) position, remove the oil plug. See Figure 5.5. If the oil volume is low (i.e. not at plug level) add HD85W-140 non-detergent oil (or equivalent) at the filler opening at the top of the gearbox.

**NOTE:** The gear box holds one quart of oil.

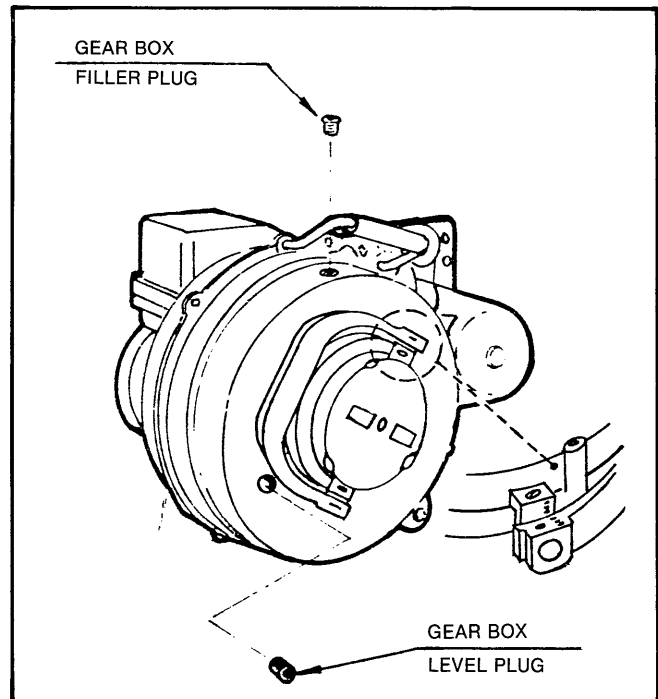


Figure 5.5

### 5.5.2 HOIST LUBRICATION

Apply "Molycote BR 2 Plus" grease (or equivalent) to the grease nipple. See Figure 5.6.

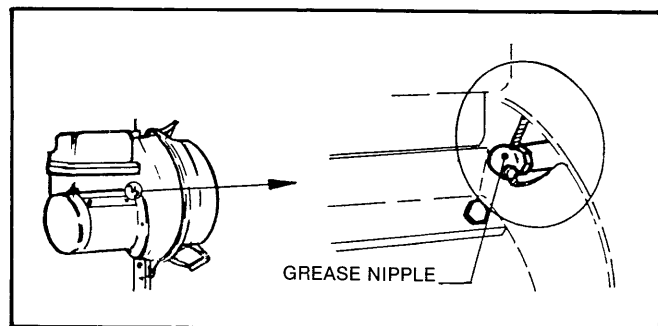


Figure 5.6

The rope housing drain holes at the bottom of the Alpha 1500 Hoist must be kept open to prevent accumulation of moisture and other contaminants. Check upon reeving, and at the beginning of each work shift. See Figure 5.7.

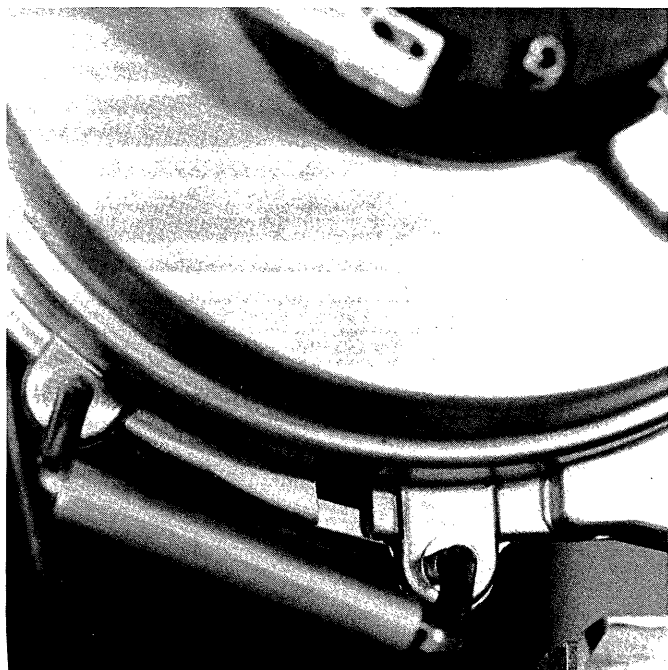


Figure 5.7

In addition to providing protective covers, it is desirable (and in some cases imperative; e.g. gunite) to flush each hoist and Sky Lock with clean water. This may be accomplished with the rope in or out of the hoist.

1. Flush each hoist and Sky Lock with clean, fresh water.

- a. Connect a garden hose to an ordinary hose bib or use a bucket and cup.
- b. Hold the nozzle at the inlet of first the Sky Lock and then the hoist.
- c. Continue to flush while running the hoist **Up** and **Down** several times.

2. When contamination is no longer flowing from the hoist drain hole, the procedure can be considered complete.

3. Steps 1 and 2 must be performed at least daily and in very contaminated situations, twice a day is desirable.

## SECTION 6 TROUBLESHOOTING

This section provides a list of problems and a systematic approach to their solution. Mechanical portions of the Sky Climber® Alpha 1500 Hoist cannot and must not be repaired in the field. Perform only those electrical repairs for which you are trained. If problem conditions still exist, call the nearest Sky Climber, Inc. representative.

### SKY CLIMBER ALPHA 1500 HOIST - TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
HOIST GOES UP BUT WON'T COME DOWN.	Sky Lock tripped.	OVERSPEED CONDITION: Get off platform!  NUISANCE TRIPPING: run up 3 inches and reset.
MOTOR RUNS "SLOW" OR "HUMS" UNDER LOAD.	Low source voltage.  On very long drops, TOO much voltage is lost in electric cord.  Brake not releasing.  Capacitor	Use booster transformer or separate drop cords.  Use booster transformer or run a separate electric cord to each unit.  Return to Factory authorized service center.  Return to Factory authorized service center.
"POPPING" CIRCUIT BREAKER.	Breaker undersized.  Short in electric cord.  Brake not releasing.	Connect to proper size breaker.  Replace cord.  Return to Factory authorized service center.
MOTOR "HUMS" BUT WON'T START.	Badly "Pitted" Points.  Brake not releasing.  Defective contactor.  Capacitor.  Low source voltage.	Return to Factory authorized service center " " "  Use booster transformer or separate drop cords.
RUNS IN ONLY ONE DIRECTION.	Defective contactor.	Return to Factory authorized service center.

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
MOTOR DOES NOTHING.	<p>Lost Power.</p> <p>Thermal overload tripped. (motor is usually hot.)</p> <p>Emergency stop switch engaged.</p>	<p>Restore.</p> <p>After 20 minute cooling period, recommence operation.</p> <p>Disengage.</p>



# SECTION 7

## SUSPENSION EQUIPMENT

### 7.0 GENERAL INFORMATION

In addition to the Sky Climber® Alpha 1500 Hoist and Sky Lock® overspeed brake, Sky Climber, Inc. supplies a complete line of time tested high quality suspension equipment.

Use the components listed in this manual to assemble a safe suspended access system.

### 7.1 SAFETY SUPPORT EQUIPMENT

#### 7.1.1 GENERAL

Independent drop lines, rope grabs, lanyards, safety belts, and safety harnesses which meet OSHA safety standards are available from Sky Climber, Inc.

NOTE: OSHA requires an independent drop line for each person going aloft.

Figure 7.1 shows an operator wearing approved safety equipment. Note that the rope grab should always be mounted on the drop line as far above the operator as practical.



Figure 7.1

#### 7.1.2 RIGGING AN INDEPENDENT SAFETY SYSTEM

1. Make sure the drop line is tied off to a separate attachment point, different from the attachment point for the wire rope supporting the hoist.

**! WARNING:** The tie-off point must support 5,400 lbs. The drop line must not be in contact with rough or sharp edges.

2. The drop line shall be in conformance with OSHA requirements, sized for and of a material compatible with the rope grab being used (i.e. 5/8" rope grab with 5/8" line, or 3/4" rope grab with 3/4" line) with certified heat and ultraviolet light stabilizers. The drop line shall be certified to a minimum breaking strength of 5,400 pounds.
3. Only one person may be attached to a drop line.
4. The position of the rope grab shall be kept at or above the user's shoulders at all times.
5. All parts of the rope grab shall be inspected by a competent person prior to each use. A documented, formal, rope grab inspection shall be performed at least twice annually.
6. Use only a snap hook of the correct size with the rope grab.
7. Generally, the D-ring of the body harness is positioned in the center of the back, while the D-ring of the body belt must be positioned both in the center of the back and at the belt line. Follow the safety equipment manufacturer's instructions.
8. The lanyard shall be no more than 4 feet in length, and shall meet or exceed OSHA state and local standards.
9. The drop line must extend to the ground or next lower safe surface.
10. Body belts and harnesses shall comply with latest edition of ANSI A10.14.

### 7.1.3 USING THE ROPE GRAB

1. Raise locking cam by pulling upward on the lanyard.
2. Push locking cam up the drop sure it is at or above shoulder height at all times.
3. When the desired working level is reached, check to be sure rope grab is at or above shoulder height.
4. Check to be sure that the rope grab is locked on the rope.

## 7.2 WORK PLATFORMS

Sky Climber, Inc.'s full line of work platforms includes bosun chairs, low profile knockdown work cages, work cage extensions, stages in varying widths and lengths, and stage components including stirrups, guard rails, and toe boards.

### 7.2.1 STAGE PLATFORMS

Figure 7.2 shows a platform installation including stirrups, Sky Climber® Alpha 1500 Hoists, Sky Lock® brakes, front and rear guard rails, roller bumpers, toe boards and drop lines.

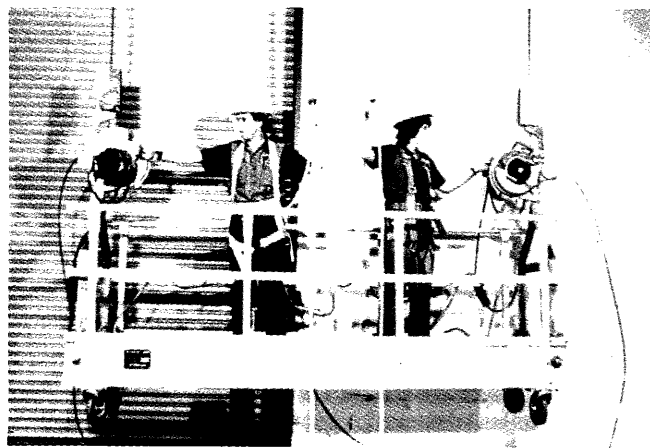


Figure 7.2

### 7.2.2 WORK CAGES

Figure 7.3 shows a properly rigged low profile, knockdown work cage.

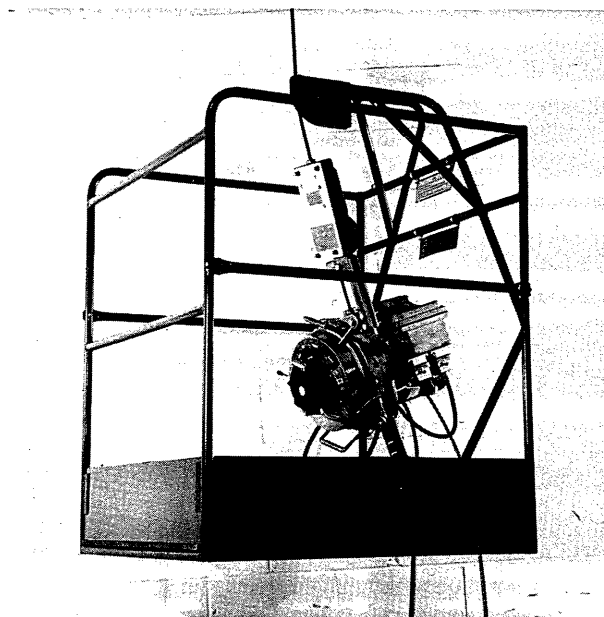


Figure 7.3

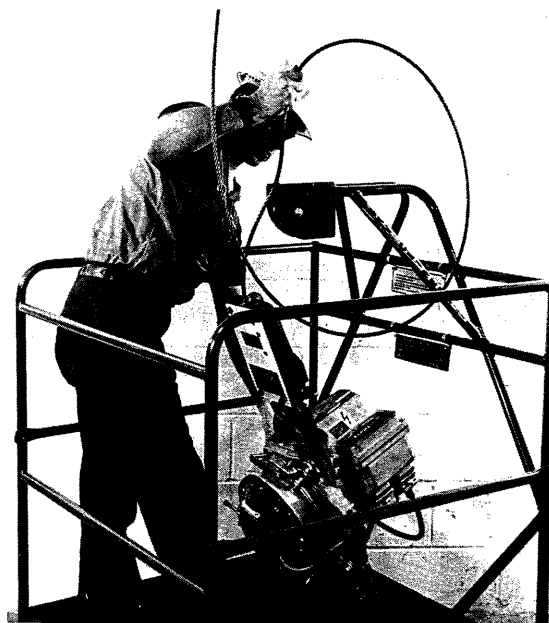


Figure 7.4

Follow applicable portions of Section 3.3 (Hoist Installation and Reeving) when rigging a low profile knockdown work cage. In addition, the following special instructions must be observed:

1. Reeve work cage.
2. Mount Sky Lock on Alpha 1500 Hoist.  
Low profile knockdown work cage: Insert prepared end of wire rope in rope guide and around front of pulley in upper rope guide arm. See Figure 7.4.

3. Reeve Sky Lock and Alpha 1500 Hoist BEFORE attachment to work cage.
4. With Hoist supported by wire rope, stand at front of work cage and install Alpha 1500 Hoist so that gearbox points to work cage front.
5. Do not operate without mid-rails.
6. Make certain all bolts and nuts are tight.
7. Test as described in Step 7 of Section 3.3.2.

## 7.3 RIGGING EQUIPMENT

On request, Sky Climber Inc. can provide rigging services. The following rigging information is intended to be general advice and recommendations only. SKY CLIMBER, INC., ASSUMES NO LIABILITY FOR THE ADEQUACY OF RIGGING INSTALLED BY OTHERS.

**⚠ WARNING:** Rigging is the responsibility of the user. Do not attempt to rig a job unless you know how. Failure of rigging could result in serious injury or death.

Contact your State Safety Inspector or a professional rigger for rigging requirements in your work area, and to answer any rigging questions you may have.

Outrigger beams, rolling roof rigs, parapet clamps, cornice hooks, tank top rollers, counterweight systems, tie-back ropes, and specialized rope support members are available from Sky Climber, Inc. When using such equipment, follow instructions supplied with the equipment as well as all applicable Federal, State and Local rules and regulations.

Your safety depends on properly anchoring the suspended staging. Test your system before going aloft. See Section 3.3. Continue to check and be sure your rigging remains safe throughout the entire use on the job. Make certain that there are no obstructions to the vertical travel of the platform.

### 7.3.1 ROLLING ROOF ASSEMBLY

Figure 7.5 shows a rolling roof assembly. Rolling roof assemblies should only be used after a thorough inspection to ensure roof is adequate to support the assembly. Notice tight tie-backs from each outrigger beam to separate anchor points. Use only enough supports for beam to clear parapet.

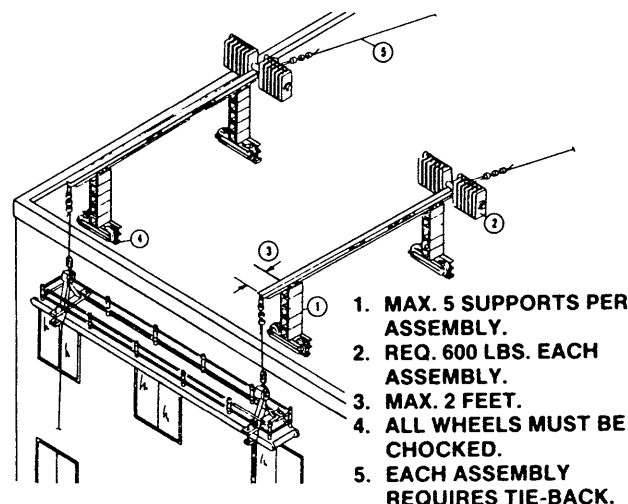


Figure 7.5

### 7.3.2 ROLLING ROOF RIG APPLICATION PARAMETERS

For your use in rigging applications, counterweight values are given in Table II. These are calculated to include a 4-to-1 safety factor, with a 1500-lb. load (1600-lb. gross load), single part line, and a maximum 39-inch cantilever. See Figure 7.6.

1. When multiple point suspension scaffolds are used, space outrigger beams so that the distance between beams is equal to the distance between scaffold stirrups.
2. Make sure the deck or other supporting structure is sound and capable of carrying load reactions "S1" & "S2" shown in sketch without undue deflection or damage. If doubt exists regarding the structural strength of those items, obtain the services of the building engineer for load allowances.
3. Tiebacks having a minimum strength equivalent to the hoist suspension line shall be installed without slack at right angles to the building face and secured to an anchor which is part of a sound portion of the structure. This anchorage shall have the capability of supporting the maximum suspended load with a factor of safety of 4:1. In the event that the tieback cannot be installed at right angles to the structure face, two tiebacks, without slack, shall be attached to the inboard end of each outrigger beam and anchored to the structure such that the beam is secured against movement in any direction.
4. Use only the shackles, thimbles and J-clamps defined in the sketch. **Do Not Substitute** for these parts.

**CAUTION:** TORQUE ALL J-CLAMPS to the manufacturer's recommended value:

3/8" wire rope - 45 ft.-lbs.



### 7.3.3 FOUR WIRE SYSTEM

Sky Climber, Inc., strongly recommends the use of a Four Wire System (Figure 7.7). This system is comprised of two hoists with attached Sky Lock® brakes and hoist wire ropes, and two secondary safety wire ropes with a Sky Lock brake on each, securely attached to stirrups or platform. Sky Climber, Inc. additionally recommends the use of separately suspended drop lines with harnesses, rope grabs, etc., for each individual on suspended access equipment.

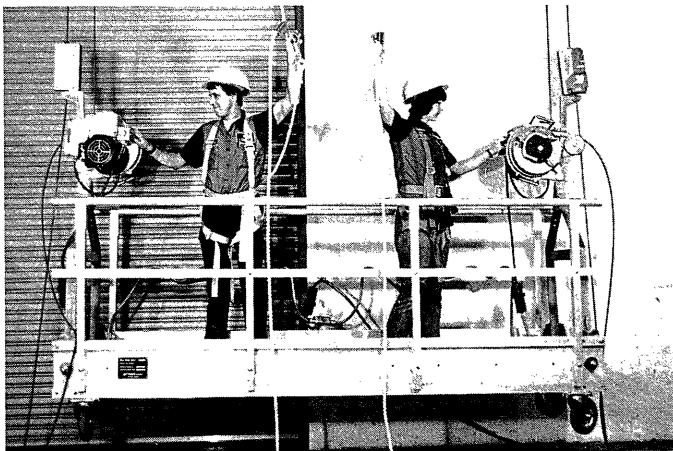


Figure 7.7

### 7.3.4 CORNICE HOOKS

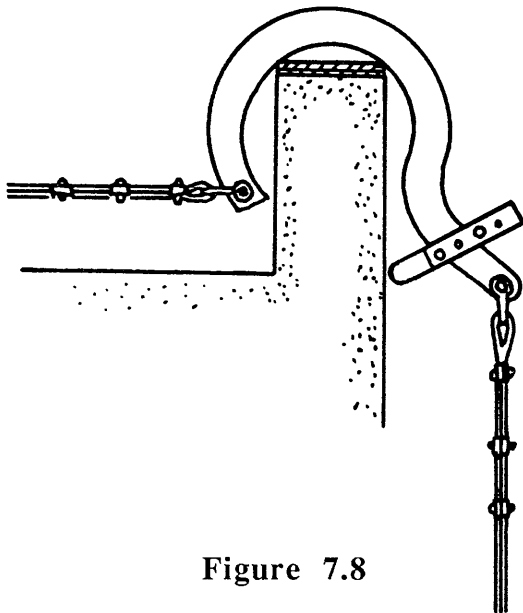


Figure 7.8

### 7.3.2 PARAPET CLAMPS

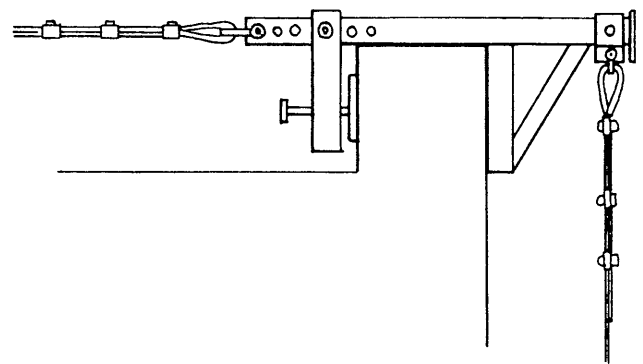


Figure 7.9

**! WARNING:** Make sure cornice or parapet wall will support load. Use parapet clamps and cornice hooks only on steel reinforced concrete structures, not on non-reinforced brick, concrete block, or stone parapets. Always tie-back cornice hook, parapet clamp, or outrigger to an adequate structural member. See Figures 7.8 and 7.9.

**NOTE:** Consult a professional engineer or the building owner to verify parapet strength.

### 7.3.3 SUSPENSION CHOKER

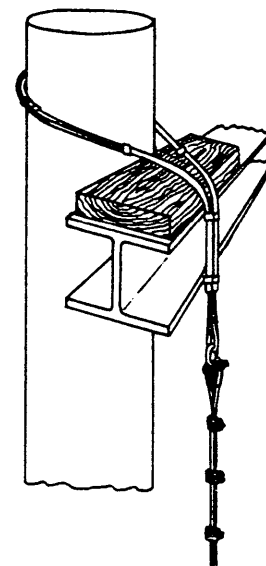


Figure 7.10

## 7.4 MISCELLANEOUS SUPPORT EQUIPMENT

### 7.4.1 TANK TOP ROLLER

The tank top roller, Part No. 154-3 (Figure 7.11), provides a rigging method for access to petroleum or other storage tanks. Steel roller has shackles for tie-back and to support suspended load. Figure 7.12 illustrates placement of tank top roller in relation to storage tank. Arrow shows location of roller. Lifelines shall be attached to separate tank top roller or equivalent.

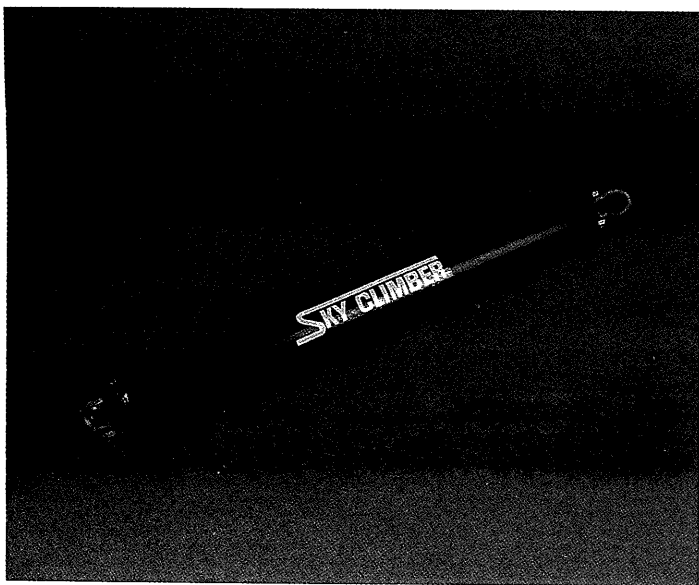


Figure 7.11

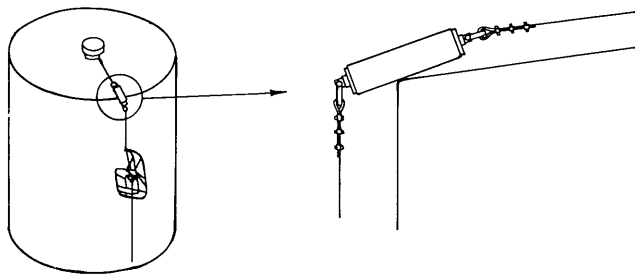


Figure 7.12

### 7.4.2 RING GIRDER ROLLER

The ring girder roller, Part No. 154-10 (Figure 7.13), is utilized in a similar manner to the tank top roller where a steel ring girder is located below the outer perimeter of the storage tank. The roller travels

on the rim of the ring girder as illustrated in Figure 7.13. The arrow indicates the placement of the ring girder on the tank. Drop lines shall be attached to separate ring girder rollers or equivalent.

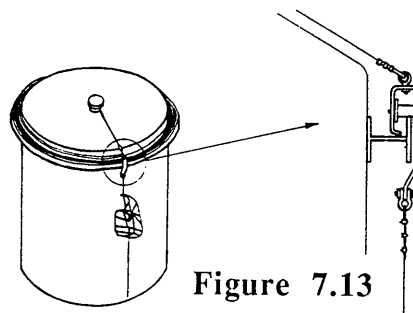
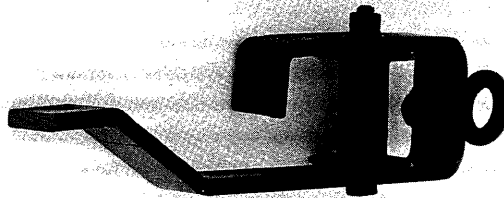


Figure 7.13

## 7.5 OTHER SCAFFOLDING EQUIPMENT

### 7.5.1 ELECTRIC CORD

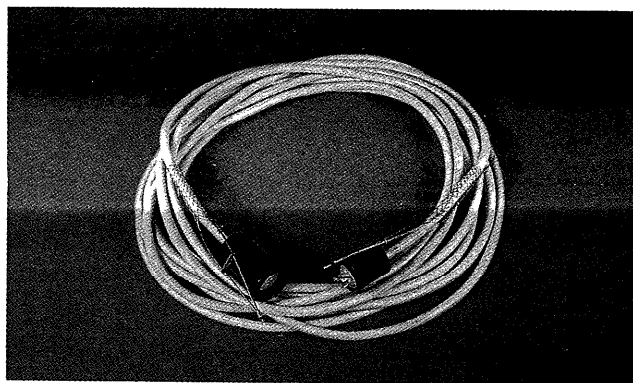


Figure 7.14

### 7.5.2 ELECTRIC SUPPLY YOKE

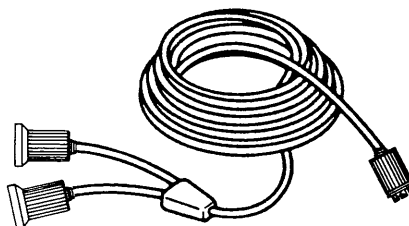


Figure 7.15

### 7.5.3 STRAIN RELIEF

Strain relief must be used to eliminate pull of electric cord connectors.



Figure 7.16

### 7.5.4 AIR SUPPLY YOKE

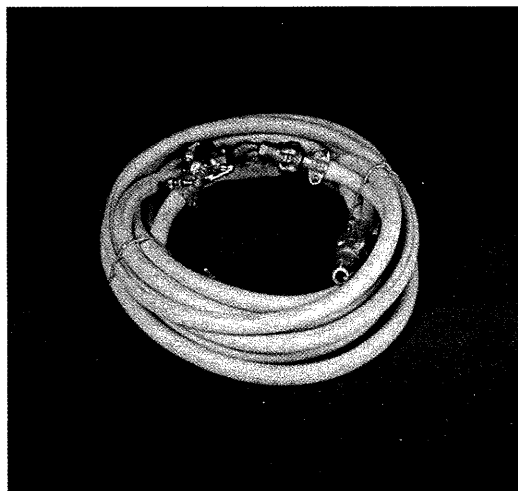


Figure 7.17

## SECTION 8

# PLATFORM TRANSFER INSTRUCTIONS

1. Personnel should never be on platform while it is being transferred.
2. Transfer of platform suspension rope, supporting equipment, or structure must be performed with the platform resting securely on the ground or on full length supporting surface. Never attempt transfer with the platform partially or completely suspended by the wire ropes.
3. After paying out sufficient rope, move the platform and top rigging to new work location. **DO NOT PULL ON STIRRUP OR USE HOIST TO MOVE PLATFORM Laterally.** Reinstall the rigging (and any guy ropes), tie backs and counterweights, etc. as required to provide safe rigging.
4. Actuate Sky Climber Alpha 1500 Hoists to take up slack rope until platform is just fully supported by suspension ropes.
5. If a wire-winder is used to store excess tail rope, check to ensure that the rope is wound cleanly without knots or loop twists before going aloft.
6. Test rigging as described in Step 7 of Section 3.4.2 before going aloft.



# SECTION 9

## GIVE TO SCAFFOLD ERECTOR & USER OR POST ON JOB

### Developed for Industry by SCAFFOLD INDUSTRY ASSOCIATION, INC. CODE OF SAFE PRACTICES FOR SUSPENDED POWERED SCAFFOLDS

It shall be the responsibility of all employees and users to read and comply with the following common sense rules which are designed to promote safety in the erection and use of suspended powered scaffolds. These rules do not purport to be all inclusive nor to supplant or replace other additional safety and precautionary measures to cover usual or unusual conditions. If these rules conflict in any way with any state, local or federal statute or regulation, said statute or regulation shall supersede these rules and it shall be the responsibility of each employee and user to comply therewith.

#### A. GENERAL RULES:

1. POST THESE SAFETY RULES at every job site in a conspicuous place and make certain that all persons who will erect, use, relocate, or dismantle suspended systems are fully aware of them and other governing codes.
2. READ, UNDERSTAND AND FOLLOW THESE RULES and manufacturers' instructions located in manuals supplied with and on plates posted on scaffolding equipment
3. CONSULT YOUR SUSPENDED POWER SCAFFOLD EQUIPMENT SUPPLIER when in doubt.
4. OPERATE SAFELY — NEVER TAKE CHANCES.

#### B. EQUIPMENT:

1. Use only suspended scaffolding system and personal safety equipment designed for the specific job operation.
2. Use equipment only in manner specified by equipment manufacturers.
3. Never use equipment that does not function properly.
4. Clean and maintain equipment as specified by equipment manufacturer. Contact supplier for required service.
5. Never alter, remove or substitute components of a scaffold system.
6. Make sure that platforms have toeboards, rails and other enclosure items which meet governing requirements, and are properly installed and secured.

#### C. INSPECTION:

1. Inspect all suspension and operators' safety equipment, before installation, each day before use and after moving to new drop location, for damage and that it meets manufacturer's operational performance and safety standards.
2. Inspect wire rope each ascent and descent to insure that it has not been damaged.

#### D. INSTALLATION:

1. Safe rigging installation is your responsibility.
2. Roof irons, hooks, parapet clamps, outrigger beams, or other rope supporting devices shall be capable of carrying the maximum applied loads with a safety factor of not less than 4:1. The strength of the building or structure to which such equipment is to be attached or on which it will rest, must be verified by a competent person prior to installation.
3. Tiebacks having strength equivalent to the hoisting ropes shall be installed without slack at right angles to the building and be firmly secured to a structurally sound portion of the structure. This structure shall have the capability of supporting the maximum suspended load with a safety factor of not less than 4:1. In the event that the tieback cannot be installed at right angles to the structure face, two tiebacks, without slack, shall be attached to each rope supporting device to prevent movement in any direction.
4. When outrigger beams are used for rope support, the inner end shall be restrained against vertical movement so that the beam is capable of supporting safely the maximum applied rope load with a safety factor of not less than 4:1. If counter-weights are used for beam restraint, they shall be of a non-flowable material, shall carry a weight value and be securely fastened to the beam.

5. When using traction type hoisting machines make sure that the wire rope is long enough to reach from the highest point of support to the lowest point of building structure plus rigging reeving lengths as defined in the hoisting machine manufacturer's instructions.
6. When using drum wrapping hoisting machines make sure that at least four wraps remain on the drum at the lowest point of descent, and the end of the rope is securely attached to the drum.
7. On two point suspension scaffolds make sure that the stirrups are directly under the suspension points.

#### E. WIRE ROPE:

1. Use only the wire rope and fittings specified by the hoisting machine manufacturer.
2. Use the number of wire rope clamps and tighten clamps in accordance with hoisting machine manufacturer's instructions. Before commencing work operations, preload wire rope with maximum work load, then retighten clamps to manufacturer's torque specifications. Check clamp tightening daily.
3. Inspect wire rope for damage daily. Do not use kinked, bird-caged, corroded, undersize, or damaged wire rope.
4. Clean and lubricate wire rope in accordance with manufacturer's instructions.
5. Handle wire rope with care — coil and uncoil properly. Do not drop coiled or uncoiled wire rope on ground from any height.
6. Do not expose wire rope to fire, undue heat, corrosive atmosphere or chemicals, to passage of electrical currents.
7. When welding on suspended scaffolds protect the wire rope from the welding torch or electrode. Make sure the platform is grounded and stray electrical currents cannot pass through the suspension rope to ground through the upper rope support or by contact of the rope with building structure or the ground.

#### F. SAFETY:

1. Always use safety belts attached to shortest effective lanyards and rope grabbing device to lifeline rigged to a separate building support point capable of carrying loads defined in governing regulations.
2. When working or riding on suspended scaffolds maintain the lanyard attachment to the lifeline at the highest point compatible with work movement.
3. The weight of men, work materials and components mounted on the scaffold must not exceed the manufacturer's rated loads.
4. Two or more scaffolds must not be combined into one by lapping platforms on one stirrup.
5. Do not overload the support rope.

**THESE INSTRUCTIONS SHALL REMAIN WITH THE UNIT  
ADDITIONAL COPIES OF THIS MANUAL ARE AVAILABLE  
CONTACT SKY CLIMBER, INC.**

## **DAILY CHECKLIST**

1. Connect to proper power source.
2. Check "J" clamps to insure they are tight.
3. Check cornice hook, parapet clamp or outrigger to make sure that it is secured and tied back.
4. Visually inspect wire rope. Do not use kinked, bird caged or otherwise damaged rope.
5. Whenever using less wire rope than the total drop, make sure bitter end is looped and secured with a "J" clamp.

**Do not use Sky Climber Hoists or equipment which is damaged or worn beyond normal tolerances. Remember: Safety is important - Use common sense - Don't take chances.**

**WEAR YOUR SAFETY HARNESS - CONNECT TO YOUR DROP LINE**

---

**SKY CLIMBER®**

**WORLDWIDE SALES, RENTAL and SERVICE**

**CORPORATE OFFICE FOR  
SKY CLIMBER, INC.**

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**PHILADELPHIA  
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215/627-2390 (Phil.)**

**SAN FRANCISCO  
415/692-4173**

**TAMPA  
813/247-5521  
800/329-5521**

**WASHINGTON, D.C.  
301/350-8550 (D.C.)  
301/792-4442 (Balt.)**

**NOTE:** The Alpha 1500 Hoist is designed for use only with a Type II Sky Lock®.

The Sky Lock brake is installed above and attached to the Sky Climber® Alpha 1500 Hoist with coupling links. The Sky Lock brake may also be attached to other types of hoists, to platforms as part of a secondary wire rope installation, or to other equipment which may require the use of a dynamic braking device. Always use a wire rope of the correct diameter (3/8"), construction and length. Consult Sky Climber, Inc. for use of the Sky Lock brake in other than Sky Climber hoist applications.

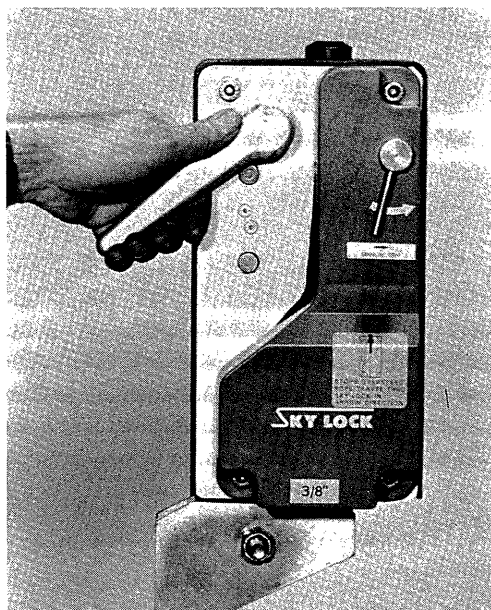
### 3.3.2 OPERATION

Should the Sky Lock brake engage due to an overspeed condition, do not attempt to release or reset it. Instead, remove all personnel from suspended equipment, and lower it to the ground by means other than the hoist. Then contact your nearest Sky Climber representative.

Sky Lock brakes may also be engaged by:

- a. Turning manual trip lever.
- b. Sudden movement of men on platform or repeated vibration.

In the event the Sky Lock brake engages for reasons other than overspeed, check condition of equipment and wire rope below the Sky Lock brake. If satisfactory, operate hoist in UP direction 3 to 4 inches to relieve load on the Sky Lock brake, then turn reset handle clockwise as indicated on the Sky Lock brake decal, until Sky Lock brake resets. (See Figure 3.7)



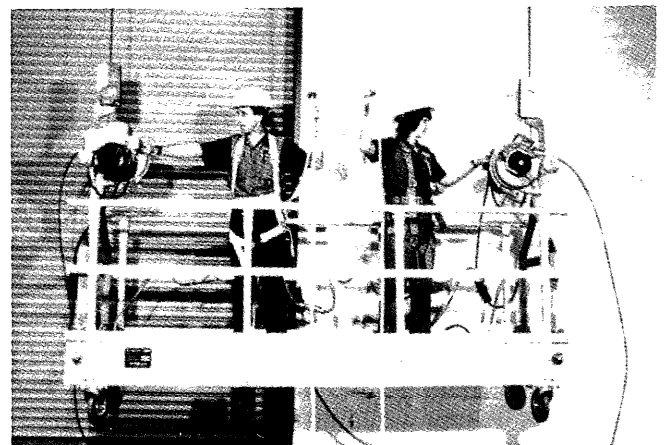
**Figure 3.7**

## 3.4 HOIST INSTALLATION AND REEVING

### 3.4.1 GENERAL

These mounting and reeving instructions are directed to the reeving of an electric Alpha 1500 Hoist mounted on the stirrup of a stage. These same instructions are generally applicable to the reeving of Alpha 1500 Hoists mounted on work cages, bosun chairs and other work platforms.

Read and understand the paragraphs describing operation of the hoist before attempting reeving. Prior to reeving, test the Sky Lock in accordance with pre-reeving inspection, Section 5.4.2.1; and inspect the Hoist in accord with Section 5.5. Figure 3.8 illustrates a typical assembly with safety equipment.



**Figure 3.8**

Install rigging as described in Section 7.0, or arrange for rigging to be installed by your local Sky Climber Office.

### 3.4.2 PROCEDURE

**STEP 1:** Lay out swing stage and assemble stirrups. Be sure to install end guard rails if stirrups are located more than 18" from end of platform. Install guard rails, toeboards and screening as required by governing safety codes. Tighten bolts. Figure 3.9 illustrates a typical assembly.



**Figure 3.9**

**STEP 2:** Lift the Hoist, insert stirrup strap into recess in stirrup, and retain by use of the Grade 5 retaining bolts and lock nuts provided. Tighten nuts securely.

**STEP 3:** Test Sky Lock® operation following pre-reaving inspection procedures in Section 5.4.2.1.

**STEP 4:** Assemble the Sky Lock brake to the Hoist, making certain that the coupling links are properly assembled to provide clearance for the straight passage of wire rope without interference. The Sky Lock brake must be reset by turning the reset handle clockwise. See Figure 3.10.

**STEP 5:** Connect power.



**Figure 3.10**

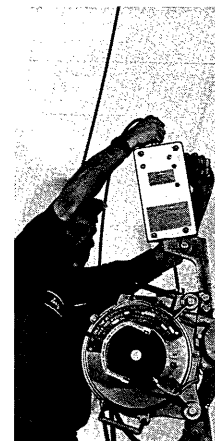
**STEP 6:** With the Sky Lock brake, Hoist, and stirrup maintained in the vertical position, thread the prepared tip (see Section 4.1.2) of the wire rope through the reset Sky Lock brake, past the coupling link and into the entrance guide. See Figure 3.11. Push rope into the unit until it stops. Then move the directional switch in UP direction, while maintaining downward pressure on wire rope, until self-reaving starts. See Figure 3.12.

**! WARNING:** Keep hands clear of pinch point where wire rope enters Sky Lock brake and Hoist entrance.

**CAUTION:** Be sure that exit guide is clear, and that the wire rope can run freely away from the Hoist.



**Figure 3.11**



**Figure 3.12**

## STEP 7: Test


### A. Load Test

Place a load equal to the weight of all men and loose equipment that will be on the platform at one end of the stage.

Have a co-worker go to the area where the rigging is located and watch it for malfunction or slippage while the following test is run:

1. Raise the hoist and platform about 2 feet off the ground and stop it.
2. Lower the platform about 1 foot and stop it while it is still in the air.
3. Repeat this procedure two times. Visually inspect all bolted connections on the rigging supports and suspended equipment.

Run the same test with the same load on the other end of the stage.

 **WARNING: Serious injury or property damage may result from falling objects during the above Test. Be observant and prepared to quickly move away from likely impact zone.**

### B. Controlled Lowering Test

Test the Controlled Lowering system by raising suspended equipment about 2 feet off the ground, then manually releasing and re-engaging main Hoist brake using Controlled Lowering Handle. See Section 3.1.3 and 3.2.3.

### C. Sky Lock® Trip & Load Tests

Test Sky Lock trip performance as described in Section 5.4.2.1.

Test Sky Lock load supporting performance as described in Section 5.4.2.2.

## SECTION 4 - WIRE ROPE

### 4.0 WIRE ROPE

**⚠ WARNING:** Always wear gloves to protect hands when working with wire rope.

Wire rope used for hoisting personnel must be treated with extreme care. It must be properly maintained or its useful life will be shortened.

Wire rope is an expendable item and begins to wear the moment it is put into use. A wire rope which is left in service beyond its useful life endangers personnel and property. Therefore, wire rope must be periodically inspected to be sure that it is in good condition. Ropes which show signs of wear or deterioration must be replaced immediately to avoid personal injury and property damage.

Always use a wire rope of the correct diameter (3/8"), construction and length.

### 4.1 SPECIFICATIONS AND PREPARATION

#### 4.1.1 SPECIFICATIONS

Use only 3/8" wire rope obtained from Sky Climber, Inc. Use of other wire rope may impair the safety of personnel and Hoist performance.

**⚠ WARNING:** Use of wire rope obtained from sources other than Sky Climber, Inc. could result in serious personal injury and/or property damage.

#### 4.1.2 PREPARATION

Prepare wire rope ends as shown in Figure 4.1, by brazing both ends to aid in reeving and to avoid unlaying. A pointed tip works best.

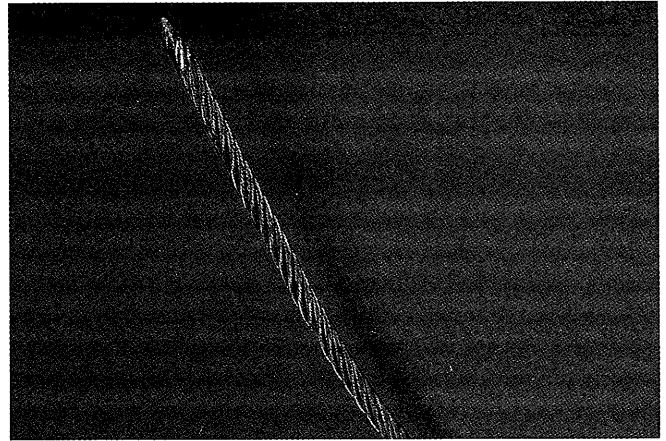


Figure 4.1

### 4.2. HANDLING/ USE/ STORAGE

Wire rope shall be stored in a coil as shown in Figure 4.2 or on a drum. Stored wire rope shall be protected from physical abuse, inclement weather and corrosive materials.

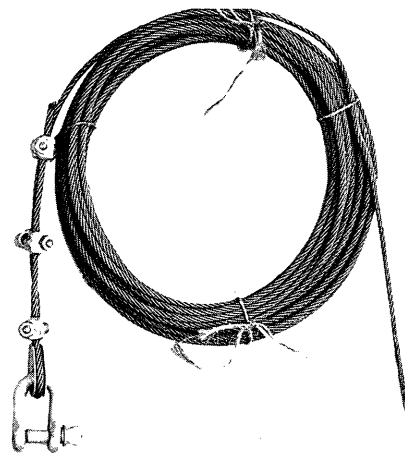


Figure 4.2

Do not drop wire rope from top of structure. Wire rope shall be lowered hand-over-hand.

Unreeling or uncoiling of wire rope shall be done as shown in Figure 4.3. Use extreme care to avoid kinking or inducing a twist.