

# **astrohoist** INC.

## **ASTRO SERIES 85**

### **OPERATING INSTRUCTION MANUAL**

For Models

E1000, E1500, 3E1500, EB1500,  
EDV1000, A900, A1800

PATENTS 4194415, 4555091, 4611787  
OTHER PATENTS PENDING

#### **LISTINGS & APPROVALS**

Underwriters Laboratories, Inc.

Canadian Standards Association

State of New York Department of Labor

Board of Standards and Appeals-NYC

MEETS OR EXCEEDS CURRENT  
ANSI & OSHA SAFETY STANDARDS

All persons operating this equipment must read and understand this manual. Any operation in violation of these instructions is at the operator's own risk.

ASTROHOIST reserves the right to make changes/modifications to their hoists. Users of this equipment should request current operating information prior to using this equipment.

Keep this manual with the Hoist at all times.

## 1. SAFETY SUMMARY

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EVERY YEAR SOME WORKERS ON SWING STAGES WERE CARELESS OR TRIED TO OPERATE EQUIPMENT THAT THEY DIDN'T UNDERSTAND. SOME FELL AND DIED OR BECAME DISABLED. DON'T BECOME ONE OF THEM.

These instructions are not all inclusive. It is impossible for ASTROHOIST to know, review, and instruct on every possible way this equipment may be used, and on all possible hazardous situations. Therefore, it is very important that anyone who uses this equipment in a way which is not covered by these instructions satisfy himself that it will not jeopardize the safety of himself or others, or cause damage to the equipment.

1. BEFORE using this equipment, read and understand this manual.
2. USE ONLY the wire rope, clamps, thimbles, and other hardware recommended for this equipment. RETIGHTEN J-CLAMPS AT THE START OF EACH WORK SHIFT.
3. NEVER use sandbags, liquid filled containers, or any other kind of free flowing material as counterweight on roof beams.
4. MAKE CERTAIN the roof, parapet, or cornice you plan to use will support the load of the rigging and suspended platform. Do not attach to a weak or questionable structure.
5. ALWAYS CHECK the soundness of all rigging before using this equipment. Go UP and DOWN a few inches several times near ground level to check operation of the equipment.
6. DO NOT overload the hoists, platforms, or rigging. DO NOT exceed the rated capacity of any component.
7. SAFETY harnesses or belts, lanyards, rope grabs, and independent drop lines must be used at all times. ATTACH the drop lines to a structural member of the building, never to a part of the rigging.
8. NEVER operate an electric hoist in an explosive atmosphere such as around refineries, chemical plants, grain elevators, or coal mines and coal handling equipment.
9. WORK from the deck of the work cage or platform ONLY. DO NOT stand on guardrails, toeboards, or other objects on the platform. DO NOT use ladders or boxes to get to higher elevations. DO not lean out or stand outside of the hoist at the end of the platform unless end rails are in place.
10. BE SURE that roof rigging tiebacks are as strong as the hoisting ropes, are installed without slack at right angles to the face of the building, and are secured to a structural member of the building.
11. NEVER USE aluminum platforms around caustic materials, acids, or acid fumes. Use wood or other approved platforms when caustic materials are present.

**PREVENT ACCIDENTS**



12. ALWAYS use the troubleshooting guide in this manual (page 15) to solve problems that may develop with the hoist. Understand the problem before attempting repairs. Repairs of any internal parts of the hoist should ONLY be made by people trained and authorized to do so. NEVER do maintenance or make repairs while the unit is suspended.
13. MAINTAIN CAUTION while using hoist. Maintain clearances and make sure there are no obstructions that interfere with free vertical travel.
14. DO NOT use kinked, bird caged, undersize, or damaged wire rope. PROTECT wire rope from sharp or abrasive edges of building. DO NOT use wire rope that has been exposed to fire, excessive wear, corrosive atmosphere, chemicals, or passage of electric current.
15. NEVER operate a work cage or platform without guardrails, midrails, and toeboards in place. Use all personal safety equipment.
16. MAKE CERTAIN the electrical cord or air supply line is long enough to permit full travel of the suspended equipment. Use electrical cable restraining devices (Kellum Grips) to protect connections from tension.
17. ONLY use the operating switch by hand. DO NOT block or lock the operating switch in a running position.
18. INSPECT the wire rope before rigging. Handle, inspect, and maintain wire rope carefully during and after each job.
19. USE CAUTION about grounding. Avoid arcing when using electrical equipment. Whenever welding, insulate wire rope with a split rubber hose about five feet above and below the hoist.
20. KEEP all people away from under suspended equipment. If necessary, provide protection below the suspended equipment to prevent injury to people from falling objects.
21. DO NOT change, remove, or substitute any hoist parts.
22. CARE must be used when using the hoist in freezing temperatures where water or moisture can enter the hoist's overspeed brake or traction assembly. Take special precautions.
23. ALWAYS OPERATE the platform in a LEVEL position.
24. NEVER work alone on a suspended platform.
25. HARD HATS must be worn at all times when servicing, erecting, disassembling, or using this equipment.
26. COMPLY with all Local, State, and Federal safety codes and regulations that pertain to suspended access equipment.

## PREVENT ACCIDENTS

27. ONLY authorized, properly trained, and physically fit personnel shall operate this hoist. Operator must not be subject to seizures or loss of control, and must not be under the influence of alcohol or drugs.
28. When not in use, store hoist and stage beyond reach. Protect from unauthorized use. Always unplug power cord.



**WARNING:** If the hoist is suspended in the air and the motor runs but the wire rope does not move through the hoist, STOP the hoist immediately! Damaged wire rope may be jammed inside the hoist. Any attempt to move the hoist up or down could result in damage to the equipment and/or injury or death to yourself or others.

## PREVENT ACCIDENTS

### 2. RIGGING



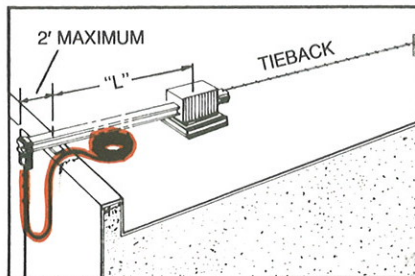
**WARNING:** Rigging is the responsibility of the user. Do not attempt to rig a job unless you know how. Contact your State Safety Inspector or a professional rigger for rigging requirements and to answer any rigging questions you may have. USE TIE BACKS AT ALL TIMES AND BE CERTAIN THAT THE CAPACITY OF THE RIGGING SYSTEM IS AT LEAST FOUR TIMES THE HOIST'S RATED CAPACITY. Failure of rigging could result in serious injury or death.

1. BEFORE selecting and installing a rigging system make sure the cornice, parapet wall, or roof structure will support the weight of both the suspended load and rigging equipment. If in doubt, have a qualified rigging company install the system. Make sure the suspension wire rope remains vertical and that the suspension points are directly above the hoist entry guides or lead-in devices of the hoist at all times.
2. ASTROHOIST recommends the use of two wire ropes with each hoist. The second wire rope must also be attached to a structural member of the building and protected from sharp edges.



### 3. COUNTERWEIGHTED OUTRIGGERS

Make sure the roof is strong enough to support the counterweights. Out-rigger beams should always be installed horizontal. Use bearing blocks on the roof to spread the load of the counterweights. Always tie back the outrigger to a structural member of the building.



If the platform accidentally catches on a part of the building, the hoist will pull down on the rigging with its full force. This force can be up to three times the rated capacity of the hoist. Therefore, the counterweights and rigging must support four times the rated capacity of the hoist.

### Distance vs. Weight Chart:

- Measure overhang distance. **OVERHANG MUST NOT EXCEED TWO FEET!** Use chart below for correct counterweights.
- Counterweights must be attached to the outrigger beam. Removal should be prevented by a padlock or similar device.
- Never use sandbags, liquid-filled drums, or other flowable material as counterweights.
- Measure the length "L" of the beam from the pivot point (outer support) to the center of the counterweights. (See diagram.) For lengths of "L" between figures on the chart, use the next higher weight.

### WEIGHT CHART:

The charts below are based on a TWO-FOOT OVERHANG and a four-to-one safety factor, and are the weights required for EACH beam. (See diagram above.)

CHART A - 1,000 lb. capacity hoist.

CHART B - 1,500 lb. capacity hoist (Use 3/8" diameter wire rope)

L(ft.)	4	5	6	7	8	9	10	11	12	13	14
CHART A 1000 lb. CAP. HOISTS											
COUNTER WEIGHTS (LBS.)	2,000	1,600	1,350	1,150	1,000	900	800	750	700	650	600
CHART B 1500 lb. CAP. HOISTS											
COUNTER WEIGHTS (LBS.)	3,000	2,400	2,000	1,750	1,500	1,350	1,200	1,100	1,000	950	900

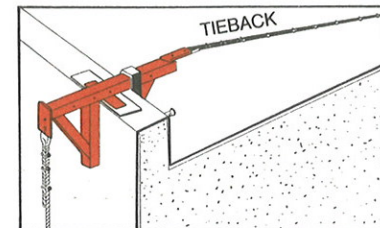
NOTE: For smaller overhangs (measured in feet), or other capacity hoists, the pounds of counterweight may be calculated using the following:

$$\text{COUNTERWEIGHT} = \frac{4 \times \text{HOIST RATED CAPACITY} \times \text{OVERHANG}}{L}$$

NOTE: Use hoist rated capacity in pounds, and overhang and L in feet.

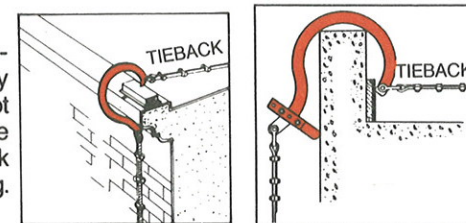
### 4. PARAPET CLAMPS

Never attach to a parapet or similar type structure without a complete inspection and investigation of its structural strength. Do not attach to a weak or questionable structure. Always tie back the parapet clamp to a structural member of the building.



### 5. ROOF HOOKS

Use correct size hook which fits overhang or wall thickness. Completely inspect the wall or cornice. Do not attach to a weak or questionable structure. Always tie back the hook to a structural member of the building.



**WARNING:** Rated capacity of the outrigger beam, parapet clamp, or roof hook must be at least equal to the rated capacity of the hoist.

- Always check the rigging before using the equipment. Be sure J-clamps (first grips) are properly tightened. Place a load equal to the weight of all men and equipment, that will be on the platform, on one end of the platform and run the hoist up and down a few inches near ground level. Run the same test with the same load at the other end of the stage.
- Always provide a separate dropline for each man that will be on the platform. The drop line and tie off point must hold 5400 lbs. The tie off point must be a structural member of the building, not any part of the rigging. The drop line must not be in contact with rough or sharp edges.



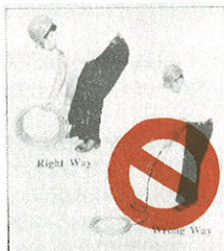
### 3. WIRE ROPE

1. Use only 5/16" to 3/8" diameter 6 x 19 Seale, right regular lay, improved plow steel, preformed, IWRC or fiber core, bright or galvanized finish. Wire rope requires lubrication. Under normal conditions, lightly lubricate the wire rope with a wire rope lubricant monthly or more often if necessary.

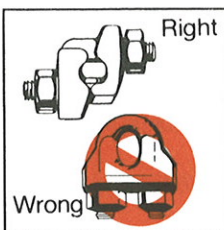
2. Prepare the end of the wire rope for insertion into the HOIST. If using IWRC wire rope, cut back the steel center at least 2" to allow for independent movement of the core. Braze and rough shape the end of the wire rope to form a smooth bullet shape, no longer than 1/2". If the bullet is too long, the end will be stiff and reeving difficult. DO NOT cool the end of hot wire rope in water or oil. This makes the end brittle and may result in the bullet breaking off. Oil the bullet end after it is cool to prevent rusting.



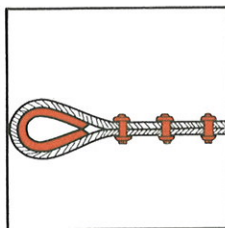
3. Always uncoil and carefully examine the wire rope before use. Kinked, bird caged, worn, or damaged wire rope cannot be repaired and must be replaced. The proper method of uncoiling wire rope is shown.



4. Use only proper diameter J-type wire rope clamps (fist grips). Do not use "U" type wire rope clamps which crush the wires and damage the rope. Tighten 5/16" J-clamps to 30 ft.-lbs. and 3/8" J-clamps to 45 ft.-lbs.

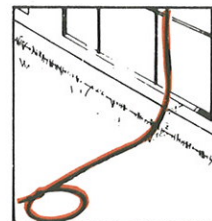


5. Use a heavy-duty thimble and three J-type wire rope clamps on all attachments, including tie-backs. With the wire rope looped around the thimble, attach the first clamp as close as possible. Leave the nuts loose. Attach the second clamp approximately 7" from the thimble. Tighten moderately. Install a third clamp midway between the other two clamps. Slide the first clamp against the thimble and take up the slack in the rope. Tighten all nuts evenly to torque value recommended by clamp manufacturer. (See #4 above.)

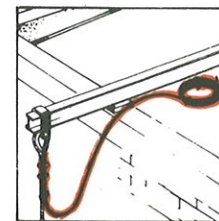


**WARNING:** Because wire rope stretches when a load is suspended from it, the diameter is reduced and the J-clamps may loosen. Therefore, always retighten nuts on all clamps once a load has been applied and at the start of each work shift.

6. Be sure there is enough wire rope to reach the lowest level of travel.



7. Store extra wire rope on roof, coiled and tied.



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

8. Wire rope begins to wear the moment it is put into use. Wire rope which is left in use beyond its useful life endangers people and property. Therefore, wire rope must be regularly inspected to be sure it is in good condition. Wire rope MUST be taken out of service when ANY of the following are seen:
  - 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 indicate an abnormal condition, possibly fatigue, and other broken wires not visible.
  - C. Kinked, crushed, bird caged, or any other damage resulting in distortion of the rope structure.
  - D. Evidence of heat damage from any cause.
  - E. Evidence of rope damage from corrosion.
  - F. Noticeable rusting, corrosion, pitting, or more than two broken wires in the vicinity of end attachments.
  - G. Evidence of core failure (lengthening of a rope lay and a reduction in rope diameter).
  - H. Reduction of wire rope diameter to 0.290" for 5/16" diameter rope and 0.352" for 3/8" diameter rope. Measure the diameter across the outer limits of the strands, not the valleys, when the rope is under load.

**NOTE:** Exposure of the wire rope to fire, undue heat, passage of electrical current, or to corrosive atmospheres or chemicals may render the rope unsafe for use. Acids will corrode and reduce the strength of both the inner and outer strands. If conditions warrant continued use, the wire rope should be washed with a neutralizing solution and relubricated at the end of each day. When in doubt, replace the wire rope.

## 4.1 SPECIFICATIONS

MODEL	LIFT CAPACITY	MOTOR	AMP DRAW* OR CFM REQ.	CIRCUIT BREAKER RATING REQ. (FOR 2 HOISTS)	VOLTAGE** REQ. AT HOIST	SPEED	HOIST WEIGHT
E1000 SINGLE PHASE ELECTRIC	1,000 lbs.	1.2 hp 220 vac	5-6 amps	20 amps	190V	35 ft/min	123 lbs.
E1500 SINGLE PHASE ELECTRIC	1,500 lbs.	1.5 hp 220 vac	7-9 amps	25 amps	200V	35 ft/min	125 lbs.
3E1500 THREE PHASE ELECTRIC	1,500 lbs.	1.5 hp 208/240 vac	4-5 amps	20 amps	190V	35 ft/min	127 lbs.
EB1000 BATTERY POWER	1,000 lbs.	1.5 hp 12 vdc	60 amps	N/A	Two 12 V batteries 90 A-H each	35 ft/min	146 lbs.
EDV1000 SINGLE PHASE ELECTRIC	1,000 lbs.	1.3 hp 110/220 vac	14/7 amps	30/20	100/200 V	35 ft/min	142 lbs.
A900 AIR POWERED	900 lbs.	1.5 hp	30 cfm 100 psi	N/A	N/A	up to*** 35 ft/min	105 lbs.
A1800 AIR POWERED	1,800 lbs.	4.0 hp	60 cfm 100 psi	N/A	N/A	up to*** 35 ft/min	110 lbs.

\* Figures shown are for a running hoist. Amp draw when motor is starting will be considerably higher.

\*\* Minimum voltage required while hoist is running.

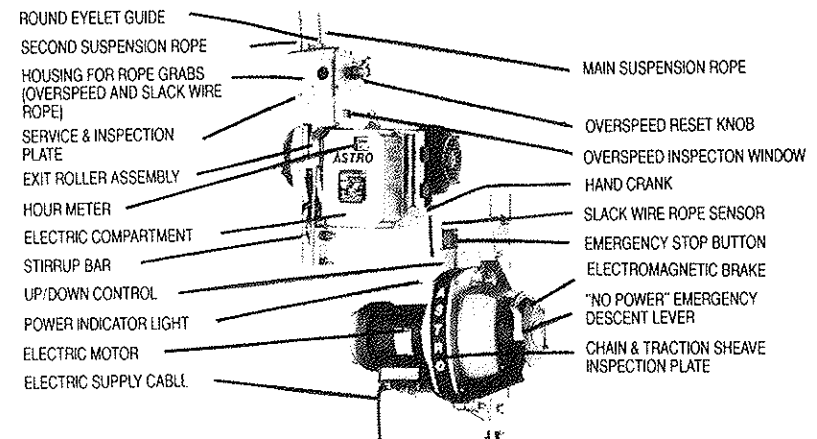
\*\*\* Load dependent.

NOTE: Automatic thermal overload protection is provided on electric models (automatically resets when motor cools).

CAUTION: You must rig to ensure a 4:1 safety factor of HOIST RATED LIFT CAPACITY. Tie back to a sound structural point at all times.

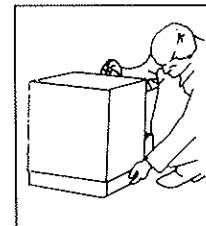
## 4.2 HOIST DESCRIPTION

The ASTROHOIST is a self reeving scaffold hoist. It uses a single wrap traction sheave and a roller chain traction. Multiple steel wire rope sizes can be used. Power is supplied by an electric or air motor through efficient QUADRANT drive. In the event of power loss, slow and controlled descent is provided by manually releasing the "no power" emergency descent lever.

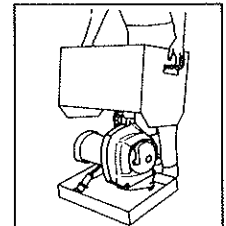


## 4.3 SET-UP AND REEVING

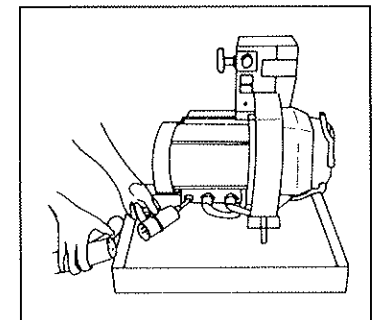
1. Unlatch four latches holding box cover.



2. Lift cover and place it aside.

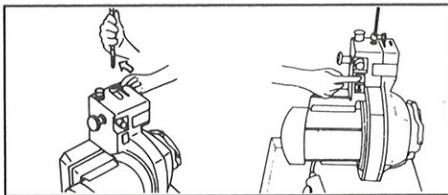


3. Connect the hoist to the power supply. All electric hoists have a twist lock plug. The pilot light will indicate that the hoist is receiving power. The electrical supply must have sufficient capacity and the circuit breakers or fuse must be properly rated. The minimum circuit breaker ratings and electric motor voltage requirements at the hoist are listed in the specifications on page 8.

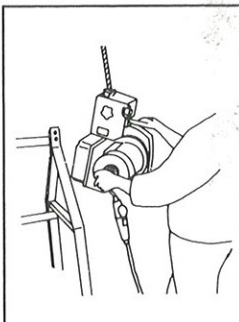




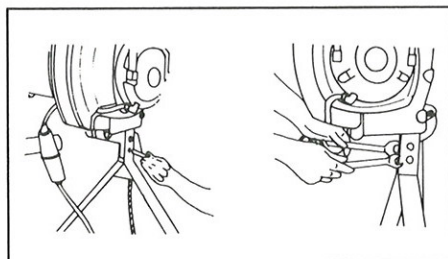
4. Check that the overspeed reset knob is reset. While holding round eyelet guide vertical, push the main suspension wire rope "bullet" end into the hoist. Operate the hoist in the UP direction by pushing the UP button. The hoist will self-reeve the wire rope.



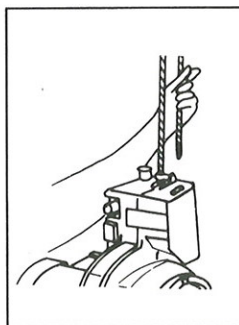
5. Unbolt the stirrup bar from its support in the box. Operate the hoist in UP direction by pushing the UP button. The Hoist can be guided out of box and bolted to the stirrup.



6. Bolt the ASTROHOIST firmly to the stirrup in correct vertical position (electric motor and controls facing towards the center of the stage). **USE ONLY GRADE 5 BOLTS!**



7. The second wire rope can now be pushed through the slack wire rope entry guide. Push wire rope through mechanism. Suspend a 25 lb. weight to the tail end of the second wire rope to keep it tight when traveling upward.



NOTE: When set-up and reeving is complete, be sure to carry out all the daily tests listed on Page 12 to ensure correct operation.

## 4.4 OPERATION

**! WARNING:** Before you operate this hoist you must read and understand this manual and follow its instructions. Do not operate this hoist unless you are properly trained, are physically fit, and are authorized to do so. Failure to comply with these instructions could result in serious injury or death.

DO NOT operate hoist if adjustments or repairs seem necessary, or if any warning, operating, or capacity instructions are unclear, or damaged. Report any problems to your supervisor and also notify the next operator when changing shifts.

NEVER operate an electric hoist or any other electrical equipment in an explosive atmosphere such as around refineries, chemical plants, grain elevators, or coal mines or coal handling equipment.

For normal UP or DOWN motion of the electric powered hoist, press the UP or DOWN directional control button. The buttons are spring loaded and return to the OFF position when pressure is released. This makes the brake go on. If the hoist does not stop right away, press the emergency stop button.

CAUTION: Extreme CARE must be used when the hoist is used in freezing temperatures where water or moisture can enter the hoist's overspeed brake or traction assembly. The emergency stop brake must be checked frequently when operating in these conditions. (See #2 on page 12).

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

In case of a power failure, use the "no-power" emergency descent control to go down to a safe level. Do not use the crank handle. You can be injured by using the crank handle to go down. Use the crank handle only if you must go up.

For "NO POWER" emergency descent, carefully release the primary brake by pulling the "no power" emergency descent lever slowly AWAY from the hoist. Hoist should descend at a slow, controlled speed. If descent speed is not slow and controlled, immediately release the descent lever. When using the emergency descent system, always disconnect the power supply, and make sure the crank handle is in its stored position. TO STOP the hoist, LET GO of the "no power" emergency descent lever.

Cranking to go upward is difficult and slow and should only be done when you can not reach a safe level going downward by using the "no power" emergency descent lever. If you must crank to go upward, do so very carefully. Never crank against the full pressure of the brake or it will be damaged.

To crank upward, remove the plastic plug cover and put the crank handle in the slot in the primary brake. Hold the crank handle tight. Very slowly release the primary brake pressure (with the emergency descent lever) until you are able to turn the crank handle in the up direction (clockwise). ALWAYS RELEASE THE BRAKE LEVER TO APPLY THE BRAKE BEFORE RELEASING THE CRANK HANDLE or the hoist will start descending and the crank handle will spin.



## 4.5 DEREEVING

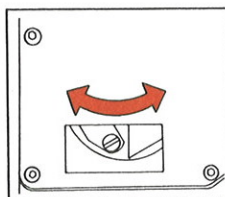
1. **MAIN SUSPENSION WIRE ROPE:** When dereeving the ASTROHOIST, the wire rope will normally wind out of the ASTROHOIST when the machine is run in DOWN direction. However, if the wire does not wind out automatically, the wire must be helped out. Grab the wire above the entry guide, hold the overspeed reset knob in the reset position and pull the suspension wire out.
2. **SECOND WIRE ROPE:** When the ASTROHOIST is on the ground and the main suspension wire rope is slack, pull the round eyelet guide to release the jaws holding the second wire rope. Then pull the wire rope out.

## 5. DAILY TEST REQUIREMENTS

The following tests must be performed at the start of each work shift. If the hoist fails any of them, DO NOT USE IT until it is repaired.

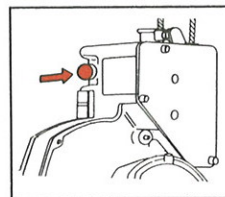
1. **OVERSPEED ROPE GRAB:** While powering the ASTROHOIST UP and DOWN approximately 3 feet, look through the window to see that the parts are moving freely. This flywheel rotation must be checked under load and must turn smoothly.

Test the overspeed safety by pulling the last 18 inches of wire rope out fast enough to activate the safety. To reset the overspeed, turn reset knob counterclockwise.

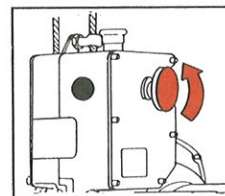


2. **EMERGENCY STOP BRAKE**

Push the UP button and raise the platform approximately three feet. While pushing the DOWN button, push the red emergency stop button. The hoist should quickly stop. The UP and DOWN buttons should not work now. Now release the "no power" emergency descent lever to make sure that the overspeed safety is locked onto the suspension rope.

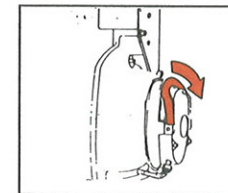


TO RESET the emergency stop brake, move the hoist upwards a few inches by pushing the bypass button while pushing the UP button, or by using the crank handle. (See page 11). Replace crank handle properly before operating the hoist or the "no power" descent lever.



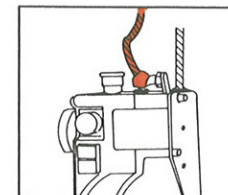
3. **"NO POWER" EMERGENCY DESCENT**

Raise hoist UP approximately 3 feet. Disconnect power supply. During this test and before actually using the emergency descent, CAREFULLY release the "NO POWER" emergency descent lever. Hoist should descend at a slow, controlled speed. Any overspeed indicates that the emergency descent system is not working properly and should not be used. When using emergency descent system, be sure crank handle is in its stored position (see 6. below).



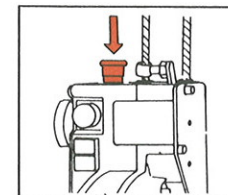
4. **SLACK ROPE DEVICE**

Lower platform to ground level. Slacken the main suspension rope. Pull on second suspension rope to ensure that grab jaws are locked onto it. Jaws should release when main suspension rope becomes tight again.



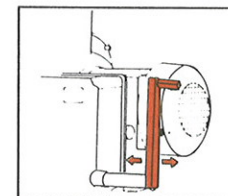
5. **TOP LIMIT SWITCH** (Use is optional).

Run hoist in UP direction and depress top limit switch. Hoist should stop running.



6. **CRANK HANDLE**

Be sure the crank handle is properly in place or the hoist will not run in either direction. Never use the emergency descent if the crank handle is in cranking position. Always disconnect the power supply before using the crank handle. Failure to follow these instructions may result in bodily injury.





## 6. DAILY INSPECTION & MAINTENANCE REQUIREMENTS

**CAUTION:** Never attempt any maintenance or repair while unit is suspended in the air.

Inspect the wire rope, power supply, rigging, platform, and machine to assure they are not damaged, are in proper working order, and that bolts, nuts, and clamps are tight and well secured.

Check that the stirrup bar attachment is secured with Grade 5 capscrews.

Run the machine up and down about 2 feet several times near the ground. When wire rope is in the machine, it must be moving whenever the hoist is running. If rope doesn't move, STOP machine immediately. The rope may be blocked or jammed. The problem must be corrected or severe damage to the wire rope or hoist may result.

**NOTE:** When using hoist in dirty environments such as epoxy, paint, cement, sand blasting, or in rusting conditions, inspect the operation of the hoist and overspeed device frequently during each day. Protective covers supplied by ASTROHOIST may be used for protection in such environments.

When operating air powered hoists, also check the following:

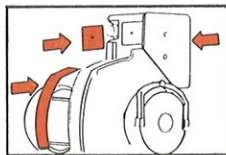
1. Make sure the lock pins are properly installed in the air line connection fittings.
2. Air compressor and hoses for leaks, kinks, blockage, or other damage.
3. Hose fittings and valves on the hoist for leaks and damage.
4. Lubricator oil adjustment for approximately six drops per minute.
5. Oil supply in lubricator. Use oil 80 to 150 SSU (SAE #5 or #10).
6. Open bleeder valve on the filter to expel any water.
7. Air lines should be blown out to eliminate debris and contamination before being connected to the hoist.

If any of the conditions described above are found, be sure to repair or adjust as necessary before using the hoist.

**CAUTION:** Plastic lubricator and filter components in air powered hoists may fail with chemical attack. Do not use hoists if the air compressor supplying the air uses a phosphate ester based compressor lubricant. Do not clean with solvents, thinners or carbon tetrachloride.

### EVERY TEN HOURS OF HOIST OPERATION INSPECTION REQUIREMENTS

Remove the inspection covers. Check for dirt and contamination in the hoist. Blow out with air or rinse with water. Inspect chain assembly, inlet guide and main housing for wear or damage. If any is found, DO NOT USE HOIST. Contact Service Department.



**CAUTION:** It is a MUST that ONLY authorized trained personnel make repairs!

## 7. TROUBLESHOOTING AT THE JOB SITE

1. NO POWER TO THE PLATFORM (HOIST POWER INDICATOR LIGHT NOT ON):
  - A. Power at junction box is off.
  - B. Circuit breakers in the building tripped or fuses blown (see Specifications on Page 8).
  - C. Plug and receptacle connectors not intact (on hoist, yoke, or extension cord).
  - D. Electrical cord is damaged.
  - E. Loose or damaged overspeed control cable connector.
  - F. Power indicator light bulb burned out.
2. HOIST DOES NOT RUN (HOIST POWER INDICATOR LIGHT ON):
  - A. Check for proper attachment of crank handle.
  - B. Check that the overspeed reset knob is reset.
  - C. Check that the brake and overspeed electrical connectors are tightly fastened.
  - D. If electric motor is hot, it is likely that the thermal overload switch has tripped. This may be caused by too low or too high voltage (see Specifications on Page 8). This also may be caused by long, continuous running periods with frequent stops/starts, high outside temperature, or the primary brake dragging. The electric motor must be allowed to cool down before the thermal overload device resets automatically. Depending upon the conditions, this may take thirty minutes or more.
3. WIRE ROPE WILL NOT REEVE THROUGH MACHINE:
  - A. Increase hand pressure while pushing the UP button.
  - B. Take the wire rope out, turn it and put it back in while pushing the UP button.
  - C. Poor bullet on end of wire rope. Prepare a new end on the rope.
  - D. End of wire rope is bent or kinked. Straighten or replace.
  - E. Dirt or other material in the hoist. Clean drive mechanism by blowing out with air or flushing with water.
4. HOIST MOTOR RUNS FREELY BUT HOIST WILL NOT LIFT:
  - A. Check to see that the tail line is free to move out of the hoist.
  - B. Check the wire rope for damage or wear. Replace if necessary. (see #8 on page 7.)
  - C. Wire rope may be jammed within the drive mechanism. This can be caused by kinks or damaged wire rope. Open chain inspection plate to verify. If a rope jam has occurred, DO NOT OPERATE HOIST. Call Service Department for assistance.
  - D. Check for any blockage of free movement of stirrup bar or chain linkage.
  - E. If the hoist runs DOWN but not UP, check the (optional) top limit switch.
5. HOIST HUMS, STARTS SLOWLY, OR IS SLUGGISH:

Check for proper voltage at hoist when running (see Specifications on Page 8). If voltage is too low:

  1. Run independent electrical cords to each hoist.
  2. Use a shorter electric power cord if possible.
  3. Use an electrical cable with larger conductors.
  4. Add a booster transformer at the building electric plug to increase supply voltage.

**6. OVERSPEED GRAB FLYWHEEL IS NOT TURNING:**

IF THE HOIST IS SUSPENDED IN THE AIR, PUSH THE EMERGENCY STOP BUTTON AND WAIT TO BE RESCUED. DO NOT USE HOIST UNTIL SITUATION IS CORRECTED.

If hoist is on the ground:

- A. Obstruction such as dirt or other material is in the overspeed safety. If possible, first disconnect electric power, then remove cover plate and clean assemblies.
- B. Main suspension wire rope may be worn smooth. If so, replace wire rope as soon as possible.
- C. Parts located in the hoist may be worn. Contact the Service Department.

**7. OVERSPEED SAFETY KNOB CANNOT BE RESET:**

If wire rope is reeved through the hoist, you must move the hoist upward first. Use the bypass switch or crank handle to travel upwards (taking the load off the grab jaws). Then reset by turning the reset knob counterclockwise. Be sure to replace crank handle before operating the hoist or using the "no power" emergency descent lever.

**8. SLACK WIRE ROPE MECHANISM NOT OPERATING PROPERLY (ON SECOND WIRE):**

- A. Clean and lubricate slack wire rope mechanism by removing cover plate.
- B. Check (slack wire rope) round eyelet guide for freedom of movement.
- C. Test to insure proper operation.

**9. HOIST DOES NOT STOP IMMEDIATELY WHEN "DOWN" BUTTON IS RELEASED:**

Brake needs repair. If the hoist is suspended in the air, travel downward to a safe level and have brake repaired by Service Department.

**10. GRINDING NOISE:**

IF THE HOIST IS SUSPENDED IN THE AIR, PUSH THE EMERGENCY STOP BUTTON AND WAIT TO BE RESCUED. DO NOT USE HOIST UNTIL SITUATION IS CORRECTED.

If hoist is on the ground:

- A. Check for damaged wire rope inside hoist. Replace wire rope.
- B. Check for dirt on the wire rope. Clean and lubricate wire rope.
- C. Check the motor fan for cracks or broken blades.
- D. Spur gears or gearbox may be inadequately greased. Call Service Department.

**11. AIR POWERED HOIST IS SLUGGISH OR WILL NOT RUN:**

- A. Air pressure or volume is too low. See specifications on page 8.
- B. Air lines, hoses, or fittings blocked, damaged, or leaking.
- C. Muffler plugged or frozen. Replace or remove muffler.

NOTE: When air operated hoists are not being used, the internal components must be well lubricated to avoid rusting. Disconnect air to hoist, apply several teaspoons of oil (see #5 on page 14) to inlet, reconnect air line, and run hoist for several seconds in each direction. In addition, for prolonged storage, plug the hoist inlet and place entire hoist in a sealed plastic bag.

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

Developed for Industry by  
**SCAFFOLD INDUSTRY ASSOCIATION, INC.**

**8. 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 the 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.



## 9. SUSPENDED SCAFFOLD CHECK-OFF LIST

YOU MUST BE ABLE TO ANSWER "YES" TO EVERYTHING ON THIS CHECK LIST.  
DON'T USE THE SCAFFOLD UNTIL YOU KNOW HOW. READ AND UNDERSTAND  
THE OPERATING INSTRUCTION MANUAL. KEEP A COPY ON THE STAGE.

### ROOF SUPPORT SYSTEM:

- ☐ The roof, parapet, and other building parts are strong enough.
- ☐ Someone who knows how has decided how many counterweights are needed for a *four to one* safety margin. The right number of weights are bolted to the beam and can't come off.
- ☐ Roof beams, clamps, or hooks are tied back to strong, safe parts of the building.
- ☐ Roof beams are strong enough and assembled right.
- ☐ If sockets and davits are used, they are installed correctly.

### SCAFFOLD PLATFORM:

- ☐ No parts (stirrups, deck, rungs, rails, welds & connections, toe boards, and guardrails) are damaged. They will not break or come loose.
- ☐ The load you are lifting is not greater than the ratings marked on the platform, hoists, and roofbeams.
- ☐ The stirrups are exactly under the roof supports and the wire ropes hang straight down.

### HOIST OPERATION:

- ☐ The instruction labels and signs on the hoists are not covered with paint. You have read and understand these instruction labels.
- ☐ The wire rope has been inspected. It is long enough to reach the ground. It is not damaged or rusty. The wire rope is clamped tight at the top. Any extra rope is coiled at the top to protect it from damage.
- ☐ If a second, safety wire rope is being used, check it the same way.
- ☐ As you first lift the load a few feet, make sure the hoist acts and sounds normal. Recheck all bolts and wire rope clamps.
- ☐ The electric cable or air hose is not damaged, and strain relief devices have been used at the connections.
- ☐ There is enough power and voltage at the hoists so the motors will work right and not be damaged when they lift the load.

### FALL ARREST SYSTEM (DROP LINES):

NOTE: Never allow anyone to step onto the scaffold until they are properly hooked up to their drop lines.

- ☐ Each person on the scaffold has a separate drop line system.
- ☐ Drop lines are inspected and fastened to strong places on the roof. Lines are protected from sharp corners (like roof edges).
- ☐ Rope grabs are tested and operate as they should.
- ☐ Harnesses or belts are inspected. Lanyards are attached correctly to the rope grabs and to the "D" rings at the center of the back of the harness or belt.

### ADDITIONAL CHECKS:

- ☐ The scaffold won't hit power lines or parts of the building.
- ☐ Don't use the equipment if the weather is bad.  
Inspect the rigging every day and especially after you move it.
- ☐ Keep the platform level as you go up and down.
- ☐ If the equipment does not move normally or if it makes any strange noises, *STOP WHERE YOU ARE.*  
Don't try to move it. Wait for help.

EVERY YEAR SOME WORKERS ON SWING STAGES WERE CARELESS OR TRIED TO OPERATE EQUIPMENT  
THAT THEY DIDN'T UNDERSTAND. SOME FELL AND DIED, OR BECAME DISABLED.

DON'T BECOME ONE OF THEM.