



# Spider Staging

*Operating, Assembly, Service  
and Inspection Manual*



## FORWARD

NOTICE TO THE USER AND OWNER. *THE FOLLOWING MATERIAL HAS BEEN PREPARED AS AN AID TO HELP YOU IN THE SAFE USE AND APPLICATION OF YOUR SPIDER STAGING EQUIPMENT. EVERY PERSON WHO WILL BE ASSOCIATED WITH SPIDER STAGING EQUIPMENT SHOULD READ AND UNDERSTAND ALL THE PERTINENT MATERIAL IN THIS MANUAL. PLEASE ADHERE STRICTLY TO ALL LOCAL, STATE AND FEDERAL REGULATIONS PERTAINING TO THE USE OF THIS EQUIPMENT.*

## ATTENTION

USERS — ASSEMBLYMEN — RIGGERS — EMPLOYERS — OWNERS AND OTHERS WHOM IT MAY CONCERN

THIS EQUIPMENT IS USED OFF THE GROUND IN HIGH OR DANGEROUS PLACES. THEREFORE, ANYONE USING THIS EQUIPMENT IS EXPOSED TO A HAZARDOUS WORKING ENVIRONMENT.

NEITHER THE MANUFACTURER NOR ITS DISTRIBUTORS CAN KNOW OF, ANTICIPATE OR WARN AGAINST ALL DANGERS THAT EXIST OR CAN EVER ARISE. BE ALERT TO RECOGNIZE ALL DANGERS, KNOWN AND UNKNOWN.

THIS EQUIPMENT CAN BE SERIOUSLY WEAKENED BY A VARIETY OF THINGS, INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:

IMPROPER, INADEQUATE OR INCOMPLETE ASSEMBLY / FIRE / ACID AND OTHER CHEMICALS / CONTACT WITH ELECTRICAL CIRCUITS / CORROSION / ELECTROLYSIS / WEATHER / CARELESS HANDLING OR MAINTENANCE / MISSING PARTS / IMPROPER USAGE OR RIGGING / IMPROPER, INADEQUATE OR INCOMPLETE REPAIRS OR REPLACEMENTS / DAMAGE IN ANY WAY.

THE EQUIPMENT MUST BE USED AND RIGGED IN COMPLIANCE WITH ALL APPLICABLE CODES AND SAFETY RULES AND REGULATIONS. DO NOT REPAIR WITHOUT MANUFACTURER'S WRITTEN AUTHORIZATION.

## INSPECTION

- INSPECT COMPLETELY AND THOROUGHLY ALL PARTS AND FASTENERS AS OFTEN AS POSSIBLE.
- INSPECT FOR DAMAGE, CORROSION, LOOSE OR MISSING PARTS, PROPER ASSEMBLY, WEAR.

DO NOT USE THIS EQUIPMENT IF IT IS BENT, BROKEN, DAMAGED OR WEAKENED IN ANY WAY. DO NOT USE EQUIPMENT IF IN DOUBT. SHOULD YOUR INSPECTION FIND A CONDITION YOU ARE DOUBTFUL OF OR DO NOT UNDERSTAND, CONSULT YOUR EMPLOYER OR THE MANUFACTURER OR HIS AUTHORIZED REPAIR AND MAINTENANCE REPRESENTATIVE. REMOVE WEAKENED EQUIPMENT FROM SERVICE IMMEDIATELY.

## WARNING

THIS EQUIPMENT SHOULD NOT BE USED BY PERSONS EFFECTED BY BUT NOT LIMITED TO THE FOLLOWING:

ILL HEALTH, NOT OF SOUND MIND OR BODY, UNDER THE INFLUENCE OF ALCOHOLIC BEVERAGES OR DRUGS, ACROPHOBIA, EPILEPSY, FAINTING SPELLS, SUICIDE TENDENCY, DESPONDENCY, OR PRONE TO ACCIDENTS.

IMPROPER USE, TREATMENT OR MAINTENANCE OF THIS EQUIPMENT CAN RESULT IN INJURY OR DEATH OF THE USER OR OTHERS IN THE VICINITY OF USE.

## IMPORTANT: READ!

O.S.H.A. Requirements from Safety and Health Regulations for Construction volume 37, Number 243, Part II:

Subpart C—General Safety and Health Provisions

1926.20 General safety and health provisions.

(a)—Contractor requirements.

- (1) Section 107 of the Act requires that it shall be a condition of each contract which is entered into under legislation subject to Reorganization Plan Number 14 of 1950 (64 Stat. 1267), as defined in § 1926.12 and is for construction, alteration, and/or repair, including painting and decorating, that no contractor or sub-contractor for any part of the contract work shall require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety.

(b)—Accident prevention responsibilities.

- (1) It shall be the responsibility of the employer to initiate and maintain such programs as may be necessary to comply with this part.
- (2) Such programs shall provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons designated by the employers.
- (3) The use of any machinery, tool, material, or equipment which is not in compliance with any applicable requirement of this part is prohibited. Such machine, tool, material, or equipment shall either be identified as unsafe by tagging or locking the controls to render them inoperable or shall be physically removed from its place of operation.
- (4) The employer shall permit only those employees qualified by training or experience to operate equipment and machinery.

§ 1926.21 Safety Training and education.

(a)—General requirements. The Secretary shall, pursuant to section 107(f) of the Act, establish and supervise programs for the education and training of employers and employees in the recognition, avoidance and prevention of unsafe conditions in employments covered by the act.

(b)—Employer responsibility

- (1) The employer should avail himself of the safety and health training programs the Secretary provides.
- (2) The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.
- (3) Employees required to handle or use poisons, caustics, and other harmful substances shall be instructed regarding the safe handling and use, and be made aware of the potential hazards, personal hygiene and personal protective measures required.

volume 39, number 125          Part II

Subpart D 1910.28 Safety requirements for scaffolding

Paragraph (i) Single-point adjustable suspension scaffolds.

- (6) The hoisting machines, cables, and equipment shall be regularly serviced and inspected after each installation and every 30 days thereafter.
- (9) Equipment shall be maintained and used in accordance with the manufacturers' instructions.

For up-to-date and complete O.S.H.A. requirements refer to The Department of Labor. REMEMBER: No amount of safety rules and regulations can take the place of common sense.

*All photos are illustrative only. Products must be used in conformity with safe practices and applicable codes and regulations. All Spider equipment that is UL listed is so labeled.*

# INDEX

## STAGING EQUIPMENT

	PAGE	Inspection Schedule		
		Daily	30 days	6 months
<b>OPERATING INSTRUCTIONS:</b>				
<i>General</i> .....	6			
<i>Model ST-17 and ST-18</i> .....	6			
<i>Model ST-19A and ST-19E</i> .....	6			
<i>Model ST-26</i> .....	8			
<i>Model ST-27</i> .....	9			
<b>INSPECTION AND SERVICE</b>				
<i>Wire Rope</i> .....	11	x	x	x
<i>Wire Rope Guide</i> .....	13	x	x	x
<i>Tension Holder</i> .....	13	x	x	x
<i>Wire Rope Drum &amp; Automatic Brake</i> .....	14		x	x
<i>Level Wind System</i> .....	15		x	x
<i>Transmission</i> .....	16		x	x
<i>Overload Shut Off</i> .....	17		x	x
<i>Motor Control Switch</i> .....	18		x	x
<i>Electric Hoist</i> .....	18			
<i>A.C. Motor</i> .....	18	x	x	x
<i>Primary Brake</i> .....	18	x	x	x
<i>Power Supply</i> .....	19	x	x	x
<i>Air Hoist</i> .....	20			
<i>Motor</i> .....	20	x	x	x
<i>Oiler &amp; Filter</i> .....	20	x	x	x
<i>Frame</i> .....	20		x	x
<b>ACCESSORY ITEMS ASSEMBLY INSTRUCTION</b>				
<i>Fly Decks</i> .....	21	x	x	
<i>Fly Deck and Swing Stage Assembly</i> .....	21	x	x	
<i>Swing Stage Platform</i> .....	23			
<i>Cable Truss Platform</i> .....	23	x	x	x
<i>Ladder Type Planks</i> .....	27	x	x	x
<i>Rail Clamps</i> .....	30	x	x	
<i>Roller Assembly</i> .....	30	x		
<i>Philly Wall Bumper</i> .....	30			
<i>Adjustable Face Roller</i> .....	30			
<i>Adjustable Wall Bumper Roller</i> .....	31			
<i>Ground Dolly</i> .....	31			
<i>Arc Guard Kit</i> .....	31	x	x	
<i>Tool Box</i> .....	32	x	x	
<i>STORING and TRANSPORTING</i> .....	32			
<i>TROUBLE SHOOTING</i> .....	33			

## RIGGING EQUIPMENT

<i>General Instruction, Inspection &amp; Service</i> .....	34	x	x	x
<i>Assembly Instructions</i> .....	34			
<i>Adjustable I-Beam Clamp SA 1039 &amp; SA 1040</i> .....	34			
<i>Adjustable I-Beam Roller SA-1003</i> .....	34			
<i>Cable Clamps</i> .....	36			
<i>Channel Beam Hook SA-1579</i> .....	36			
<i>Channel Beam Roller SA-3152</i> .....	36			
<i>Channel Section Roller SA-1007</i> .....	37			
<i>Cornice Hook SA-1017 &amp; SA 1021</i> .....	38			
<i>Portable Roof Outrigger SA-1084 &amp; SA-1088</i> .....	39			
<i>Rigging Hook SA-1001 &amp; SA-1073</i> .....	41			
<i>Shackle</i> .....	42			
<i>Tank Top Roller SA-1004</i> .....	42			
<i>Transfer Chain SA-1002</i> .....	43			
<i>Truss Outrigger SA-1009</i> .....	44			

# STAGING EQUIPMENT

## OPERATING INSTRUCTIONS

### General

1. With the unit resting upright on the ground directly under the rigging points, connect it to the proper power supply. The fairlead side (frontside) should be placed toward the face of the structure. This will offer greater stability for the workers plus minimize the amount of thrust out required by the rigger.
2. Release the tension holder by pulling the handle down.
3. Operate the control handle in the "Down" position and at the same time pull the wire rope off of the drum and through the guide.
4. Run out as much wire rope as necessary to reach the rigging point. When moving the switch to the "Off" position, maintain a pull on the wire rope until the tension holder can be tightened. Inspect the wire rope drum to make sure that the remainder of the wire rope is stored neatly.
5. Refer to the rigging section of this booklet for rigging instructions. After the wire rope is attached to the rigging, the control handle is operated in the UP direction to wind the wire rope back on the drum. Again be sure that the wire rope is stored neatly on the drum.
6. When the staging is suspended, the tension holder should be released. Before ascending be certain that all safety regulations are complied with and that a proper safety line and attaching assembly are being used.
7. Refer to the operating instructions for your particular Model Staging for additional instructions.

### Model ST-17, ST-17-1, ST-18 and ST-18-1 (Fig. 1)

These units are of the same basic appearance with the difference being that the ST-17 and ST-17-1 are air powered while the ST-18 and ST-18-1 are electric. Also the ST-17 and ST-18 have a 350 foot capacity wire rope drum while the ST-17-1 and ST-18-1 have a 1,000 foot capacity.

### Operating Instructions

Other than the general instructions, the only unique feature is the walk-through gate. When the stage is being used in connection with a fly deck or swing stage platform, the gate can be open to provide access from the platform to the Spider. Gates must be closed on open sides.

1. On the side that the platform is attached, remove the two counter-sunk screws from the top hand rail.
2. Push the gate forward and pull up on it to unlatch it from the handrail.
3. Pivot the gate down and insert the latch into the slot in the midrail. **Be sure to secure the gate with the flat head screws.** Rail is now a diagonal brace.
4. When using the Spider as a single line unit be sure that the gates are installed in the closed position.

### Model ST-19-A and ST-19 E (Fig. 2)

The model ST-19, both air and electric powered, has a 350 foot drum capacity. The unit can be disassembled to allow it to pass through small openings. It can be used as a single line unit by itself or with fly decks or it can be assembled as part of a swing stage.

### Operating Instructions

Follow the general operating instructions.

### Disassembly Instructions

If the stage is to pass through a restricted opening, it might be necessary to disassemble the unit at least part way. Do not disassemble more than necessary. It might only be necessary to remove the handrails and pass the unit through the opening like a chair through a door.

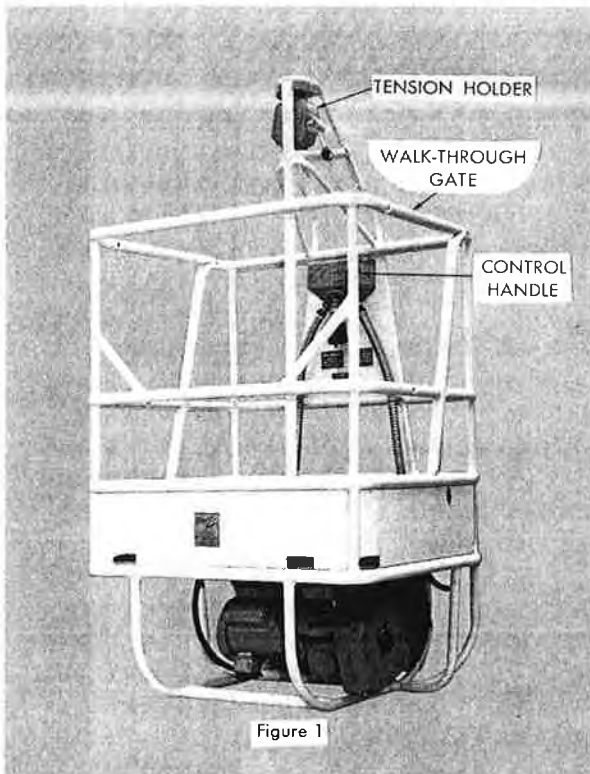


Figure 1

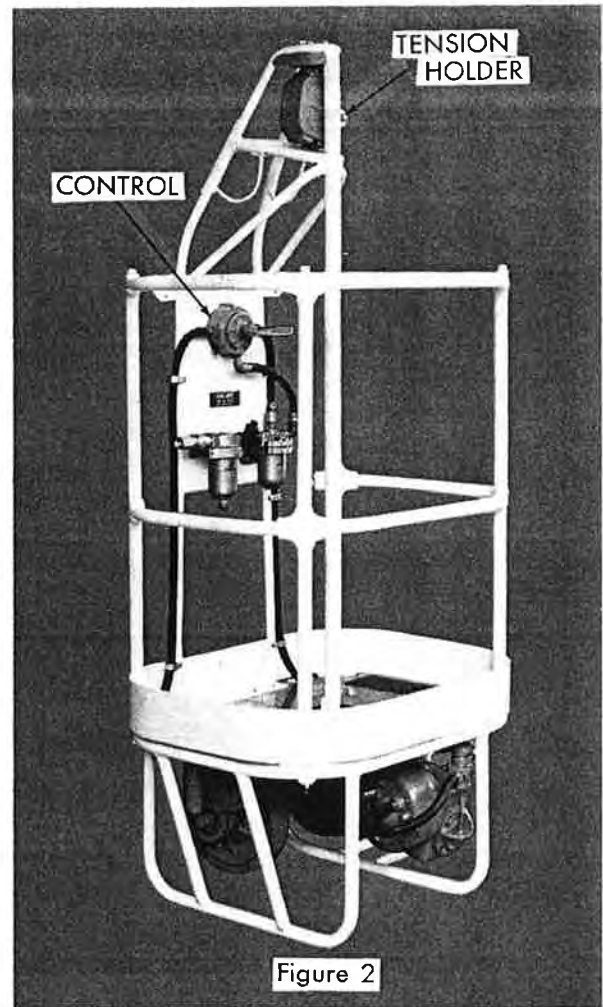
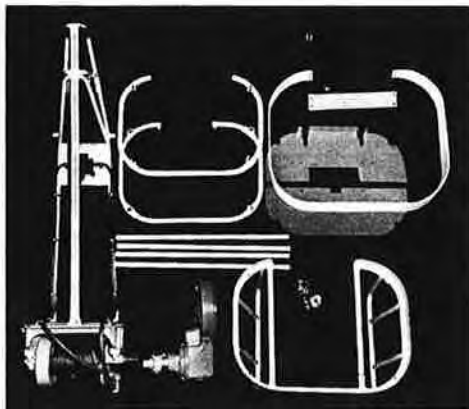


Figure 2



1. To disassemble, with the unit sitting upright on the ground remove the four corner post bolts.
  2. Remove the four bolts that hold the top rail to wire rope guide assembly.
  3. Remove the toeboard by removing the fastener.
  4. Disconnect the air hose or electric couplings from the power unit.
  5. Remove the clips supporting the power supply line under the floorboard by removing the screws.
  6. Remove the fasteners that hold the right frame base to the left.
  7. Remove the six  $\frac{3}{8} \times 1$ " bolts, flatwashers and lockwashers that connect the floor board to the drum base.
  8. Remove the bolt that holds the power unit to the drum shaft and slide the power unit away from the drum. Note the spacer that is left on the drum shaft next to the pillow block bearings. Be sure the spacer is in place for reassembly.
  9. Remove the six bolts holding the tripod guide assembly to the drum base.
- The assembly procedure is essentially the reverse order. Be sure to reassemble completely before using the stage. Check all the parts to make sure they are properly in place and all the fasteners are properly secured.

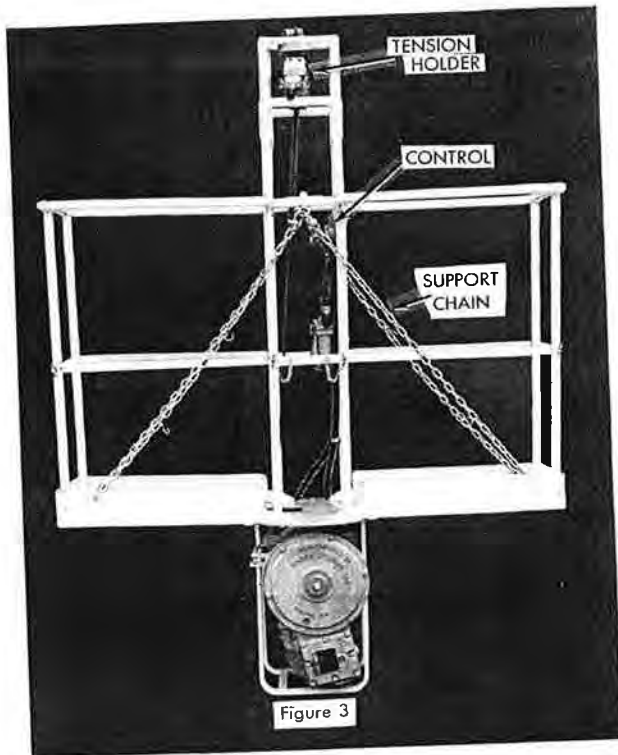


Figure 3

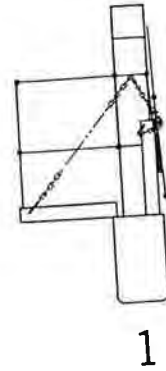


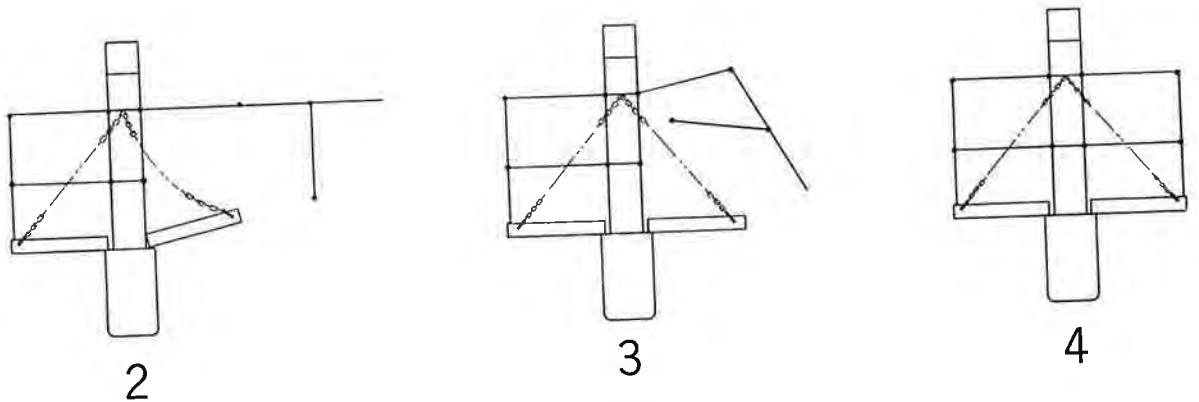
Figure 4

**Model ST-26 (Fig. 3)**

The model St-26 is an air-powered single line unit that can fold up to pass through a restricted opening with dimensions as small as 14 x 18 inches or 18 inches in diameter. The wire rope drum has a capacity of 235 feet.

**Operating Instructions**

Follow the general operating instructions.



**Assembly Instructions (Fig. 4)**

1. To assemble from the folded position, undo the "S" hook from the support chain.
  2. The handrail assembly will pivot up while the deck assembly pivots down.
  3. The top rail is held out horizontally while the upright corner posts are indexed to a vertical position and come to rest on the deck assembly.
  4. The midrail is indexed horizontally. The ends of the midrail fit over the sockets located on the wire rope guide assembly at the midrail level. One side of the midrail fits over one socket and then with one hand on the guide support the other side of the midrail is pulled out just far enough to clear the socket.
  5. Install the four hitch pins in the holes located in handrail and midrail at the sockets.
  6. Install the two bolts at the deck level into the vertical handrail posts.
- The method of folding is essentially the reverse of the preceding instructions.

If it become necessary to remove the handrails and deck assemblies:

1. With the hitch pin and bolts removed from the handrail assembly, pull out on the handrail at the guide support until it clears the socket.
2. To remove the deck sections, first remove the screw pin shackles that connect the support chains to the deck.
3. Remove the cotter pins from hinge pins and slide the hinge pins out of the hinge. The reassembly is essentially the reverse order. Be sure that the cotter pins and screw pin shackles are replaced.

**NOTE:**

Upon reassembly it is important that the support chains support the deck equally. If one or both chains are slack when the deck is folded down, remove the screw pin shackle and twist the chain one or two revolutions and reconnect it. Repeat this until the slack has been removed from the chain.

**Model ST-27 (Figs. 5 & 6)**

The model ST-27 is a two line electric unit with a working area that measures 4x5, 5x7 or 5x11 feet. The wire rope drum capacity is 350 feet or 1000 feet for the ST-27-1.

**Operating Instructions**

Refer to the general operating instructions. The ST-27 does have accessory equipment and it can be disassembled for transporting through doorway openings.

**Disassembly Instructions**

1. The handrails are attached to the deck sockets by a bolt and a set screw. Remove the bolts and loosen the set screw and the handrail corner clips and the handrail sections can be removed.
2. The deck wing sections can be removed by removing the four large hex head bolts from the splice plates and slide the wing sections away from the center section.

**Accessory Equipment**

**The Fall Safe Rope Grab** offers a 5/16 inch safety line independent of the two working suspension lines. It bolts onto the model ST-27.

**Stabilizing Bar** is designed to stabilize the platform when it is in its working position in an elevator shaft. The bar is inserted into the top rail or the midrail. The stabilizer can be pushed out against the structural steel and locked with the set screw clamp located on the hand rail. Before moving vertically be sure to retract the stabilizer to prevent it from getting hung up.

**Wall Rollers**—The wall rollers function much the same as the stabilizing bar except they are to be used against a concrete wall.

**Canopy**—The canopy offers overhead protection for the workers. (Fig. 7)

**IMPORTANT**

When using the canopy a third 5/16 wire rope safety line rigged to some structure other than the suspension line rigging should be employed. The workers should then connect their safety belt lanyards to the wire rope guide support tripod. Refer to the Fall Safe Rope Grab above.

**Canopy Assembly Instructions**

1. Remove the bolts from tool tray one at a time and install the canopy upright clamp.
2. Connect the T halves at the horizontal roof support with the coupler.
3. The clips go around the horizontal stabilizer and are bolted to the roof at the holes provided. Be sure to place the flat washers on top of the roof to support the bolt head.
4. Each half of the canopy is installed on either side of the tripods. The pegs on the bottom end of the upright post go into holes provided in the floorboard.
5. After each half has been erected they can be connected together with the cross bar through the sockets toward the top of the uprights. Secure the set screws in the sockets.



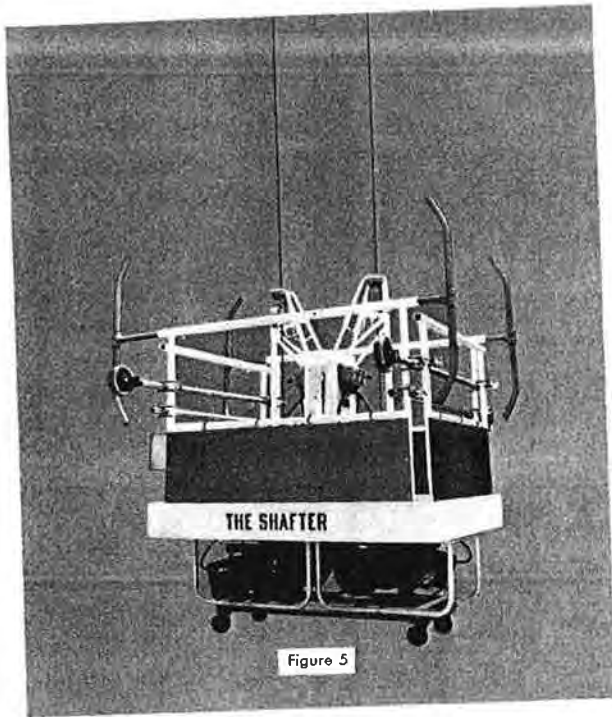


Figure 5

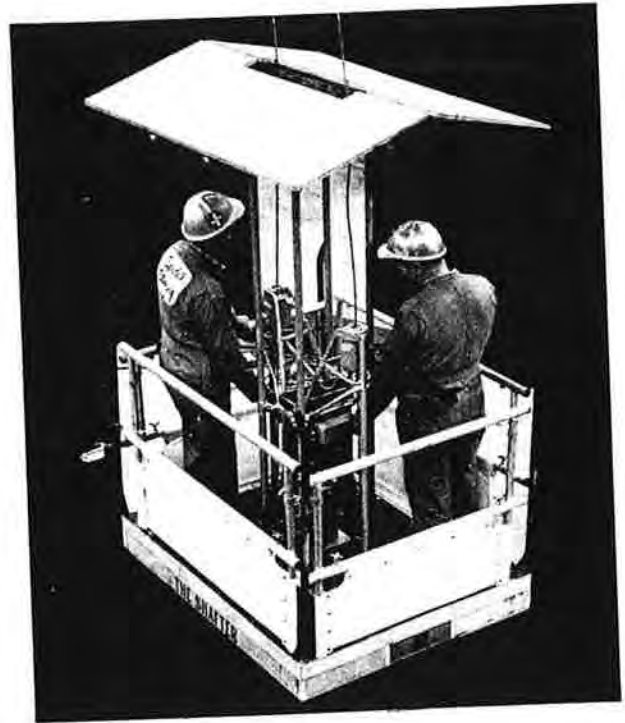


Figure 7

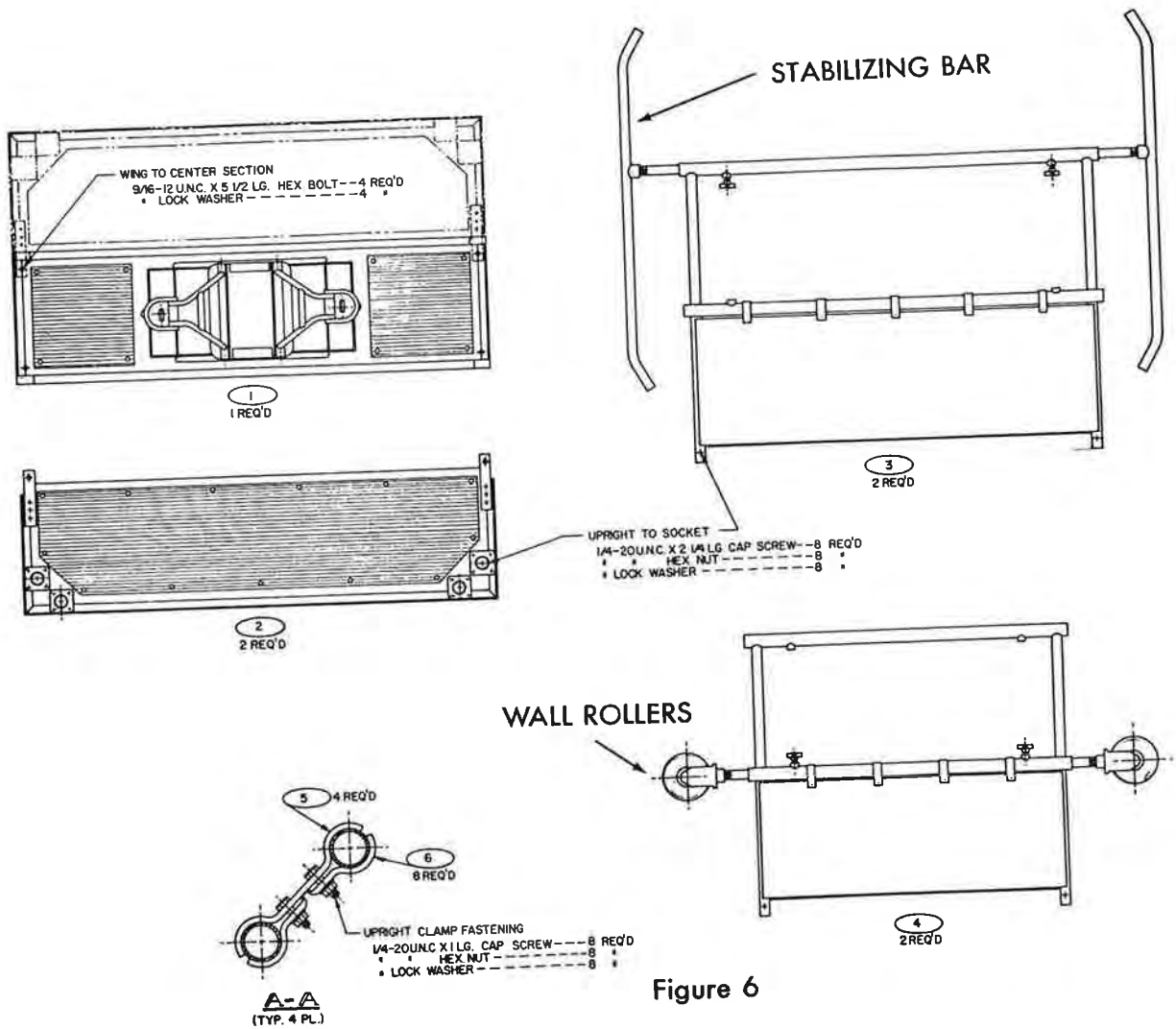


Figure 6

## INSPECTION & SERVICE

### **Wire Rope (Fig. 8)**

The suspension wire rope used on Spider Staging equipment should be 5/16 inch diameter, 6x19 fiber core seale construction, improved plow steel with a minimum rated breaking strength of 8,400 pounds. The wire rope must be equipped with a Spider Staging cable drum hook (Part No. SA-1027) on one end with an 18 inch eye formed by a locked-in splice on the rigging end.

### **Inspection**

Handbooks on "care and inspection of wire rope" are available upon request from most manufacturers of wire rope.

1. A detailed inspection should be conducted by a trained and knowledgeable person when the equipment is first rigged and every time it is rerigged. This inspection should be at least every 30 days and sooner for applications where the need presents itself.
2. Inspection should be made by the operator each working drop while he is operating the equipment. He should visually examine the external surface for rust, lack of lubrication, broken wires, kinks, crushed spots or other deformations. **DO NOT USE IF IN DOUBT.** Should the wire rope inspection find a condition that is doubtful, consult a trained and knowledgeable person immediately.
3. A record should be kept in a convenient location that indicates the date of installation, date of inspection and lubrication as well as the identification of the inspector.

### **Service**

1. Lubricate the wire rope as often as necessary to prevent rust. Use a penetrating corrosive-resistant type lubricant to insure that the core remains lubricated.
2. Keep the wire rope properly wound on the drum. Do not allow the wire rope to become slack on the drum. Use the tension holder to keep the wire rope properly wound when changing rigging locations.
3. Do not kink or bend the wire rope over a sharp edge.
4. Keep clear of all power lines including arc welding leads. The wire rope will conduct electricity even when rigging is insulated because the equipment is independently grounded.
5. Rig properly to avoid damage to the wire rope. The wire rope should be allowed to pass straight through the wire rope guide at all times to avoid excessive wear. The wire rope guide should not be pulled into the structure as the stage approaches the rigging. Severe pull-in will cause high pressure contact of the rope against the guide resulting in weakening and breaking of the individual wires. The wires will have a bright shiny appearance.
6. Do not attach snap-on tools to the wire rope.
7. Cable clips are not recommended for use on the suspension wire rope. They are not as strong as a lock-in splice and they can become loose. Also they will not pass through the wire rope guide and can be pushed up the wire rope by the stage resulting in damage and weakening of the wire rope.

### **Wire Rope Drum Hook Installation**

#### **Drawing 8A**

### **Replacement of the Wire Rope and Wire Rope Guide Pins (Fig. 9)**

With the Spider on the ground, run the power unit in the down direction while pulling the wire rope through the fairlead until all of the wire rope is off of the drum.

The drum hook is easily removed if slot in the drum flange is positioned at about seven o'clock view from the power unit end.

Once the drum hook is free and can be pulled away from the drum flange, then the slot in the flange should be rotated to the six o'clock position. In this position, the drum hook can be threaded through the hole in the drum flange. Be sure to keep your hands and articles of clothing away from the moving drum at all times.

To get the drum hook through the fairlead, it will be necessary to remove the tension holder cam and one half of the tension holder.

Two of the three bolts on the tripod top hold the two 3/8-inch diameter guide pins in place. They should be loosened and the pins removed.

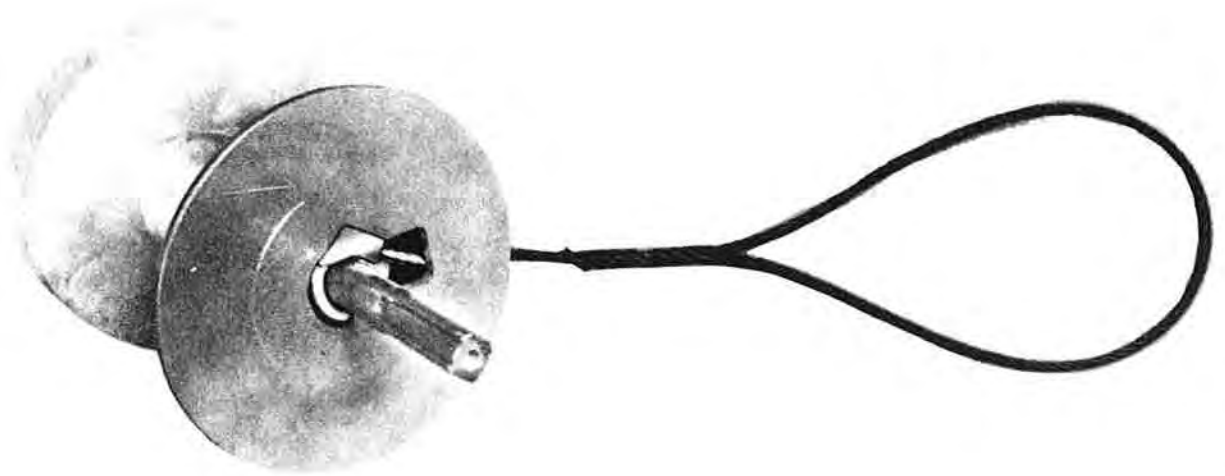
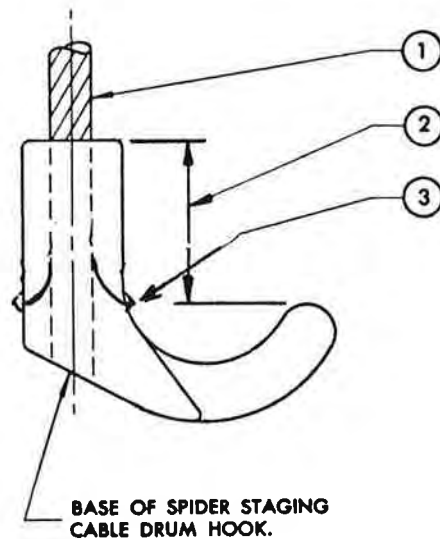


Figure 8

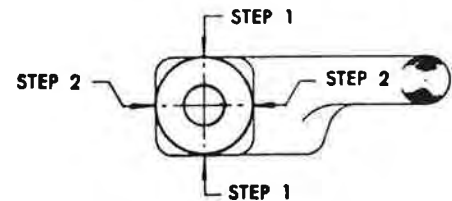


① INSERT WIRE ROPE FLUSH WITH BASE OF HOOK.

② SWAGE THIS AREA WITH A STD. 3/8 ESCO SWAGING DIE OR EQUAL (NOTE SWAGING PROCEDURE).

**CAUTION!**

HOOK MUST BE COMPLETELY INSERTED IN DIE TO OBTAIN MAXIMUM STRENGTH. PROTRUDING SWAGING MARKS WILL APPEAR ON HOOK IF THE HOOK IS NOT PROPERLY INSERTED. PROTRUSIONS WILL PREVENT HOOK FROM ENTERING DRUM SOCKET.



**- SWAGING PROCEDURE -**

LOOK IN THE YELLOW PAGES, UNDER "WIRE ROPE" FOR THE NAMES OF RIGGING LOFTS HAVING SWAGE PRESSES IN YOUR AREA.

SPIDER STAGING DRUM HOOK MAY BE SWAGED BY ANY PRESS WITH A STRAIGHT-CHANNEL DIE HAVING A 3/4" DIAMETER CHANNEL.

PRINTED IN U.S.A.

Figure 8 A

For the ring guide. Remove the two bolts from the top block. The three ring guides can be pushed out of the top block and hook is threaded through the bottom block, rings and then the top block. For reassembly, be sure to thread the top block and then the three rings onto the wire rope first. The ring is marked TOP to designate which side is up. (Fig. 26)

Now the drum hook can be threaded through the fairlead.

In the pin guide, the third pin should be replaced. The top block will have to be removed by removing the three hex head bolts that hold it to the bottom block.

The 1/4 inch diameter pin can be replaced in the block and the tripod can be reassembled.

The new wire rope can be installed essentially in the reverse order that the old one was removed. Be sure to install the three new guide pins and reassemble the tension holder. The tension holder handle goes on such that the tension holder tightens when the handle is pushed up.

With the drum hook properly reinstalled, the wire rope is wound onto the drum by running the power unit in the up direction. Be sure that the first wrap of wire rope lays against the drum flange and that every wrap after that lays against the previous wrap. It is important that the slack wire rope be tightly wound on the drum. A simple method to hold tension on the rope while winding onto the drum is to sandwich it between two blocks of wood at the top of the fairlead. A C-clamp works nicely to clamp the blocks of wood together to apply tension to the rope. Tighten the clamp occasionally as the rope passes through and wears into the blocks. This will insure an even spooling. (Fig. 10)

For I.W.R.C. wire rope care should be taken to prevent birdcaging caused by clamping too tight.

#### **Wire Rope Guide (Fig. 9)**

The purpose of the guide is to stabilize the suspended stage with the minimum adverse effects on the wire rope. The use of hardened steel as a guide material minimizes the friction and consequently the wear of both the wire rope and the guide. The guide also has no moving parts that can become fouled.

#### **Inspection and Service**

The hardened steel can be easily inspected by the operator for signs of wear or other damage that might result in damage to the wire rope. The guides should be replaced immediately upon the first signs of wear or damage. The guides should be replaced when the wire rope is replaced. Refer to the wire rope section for wire rope and guide replacement instructions.

#### **Tension Holder (Fig. 9)**

The tension holder is a device intended to keep the wire rope tight on the drum when it becomes necessary to slacken the rope from the rigging. It is necessary to keep the wire rope evenly spooled on the drum to insure proper level winding. For operating instructions, refer to the General Instructions for Staging Equipment.

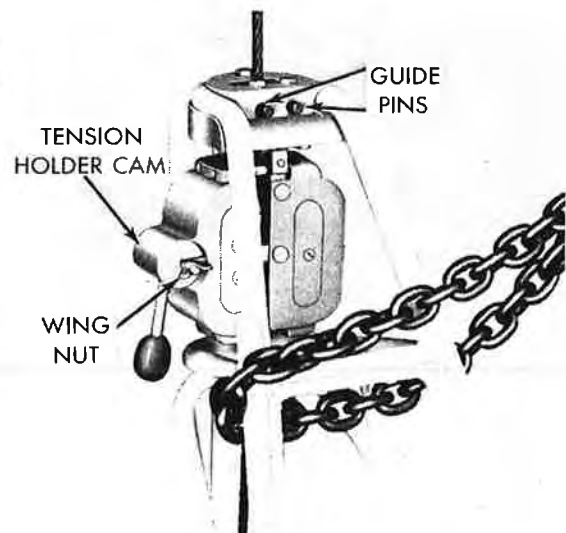


Figure 9

D  
G

DIE TO  
4G  
OK IF THE  
USIONS  
UM SOCKET.

R "WIRE  
3 LOFTS  
AREA.

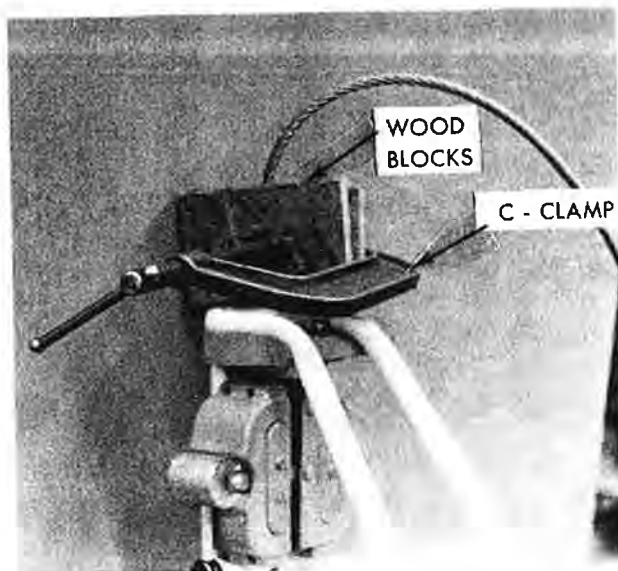


Figure 10

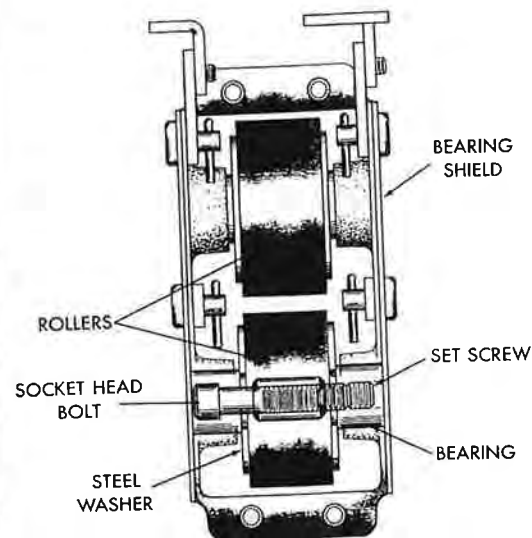


Figure 11

### **Inspection**

The rubber rollers can be visually inspected daily without disassembling the tension holder. Definite signs of wear will call for a more thorough inspection. At the first signs of wear and at least every 30 days, remove the wing nut from the locking cam and remove the pin and cam from the assembly. Note how the two steel straps protrude through the roller assembly for reassembly purposes. The roller assembly can now be pulled away. Examine the four rollers for deep grooves or flat spots. Spin each roller to make sure the bearings are free and properly lubricated. If no further service is required, the roller can be reassembled. The cam goes on so that when the handle is pushed up the roller tightens on the wire rope.

### **Service (Fig. 11)**

If the bearings are in need of lubrication, remove the four bearing shields located on each side of the roller assemblies and pack the bearings with a good bearing grease. Replace the shields. If it is necessary to replace either the bearings or the rollers, remove the remaining half of the roller assembly by loosening the two bolts on the bottom side of the guide block and the third bolt on the top of the block. With the bearing shields removed, remove the set screw from the bearing and hold the roller from turning while loosening the socket head screw located in the bearing. The replacement parts are available from your Spider Staging representative.

Reassembly is essentially the reverse of disassembly. When the roller is replaced in the housing, be sure to center the two steel washers on each side of the roller around the center line of the roller. The bearings are inserted through the housing and seated into the washers. The screw passes through the one bearing, the washers and roller and then screws into the opposite bearing. Be sure to pack the bearings with grease before assembling the bearing shields.

### **Wire Rope Drum and Automatic Emergency Brake (Fig. 12)**

The wire rope drum is constructed of aluminum with a steel shaft. The drum accumulates the wire rope while the staging is being raised. The automatic emergency brake is totally enclosed in one end of the drum and is designed to stop and hold the downward descent of the stage if there should be a transmission failure. If for any reason the brake should be applied, it can be reset automatically by running the transmission in the up direction. The brake should then be inspected according to the inspection procedure.

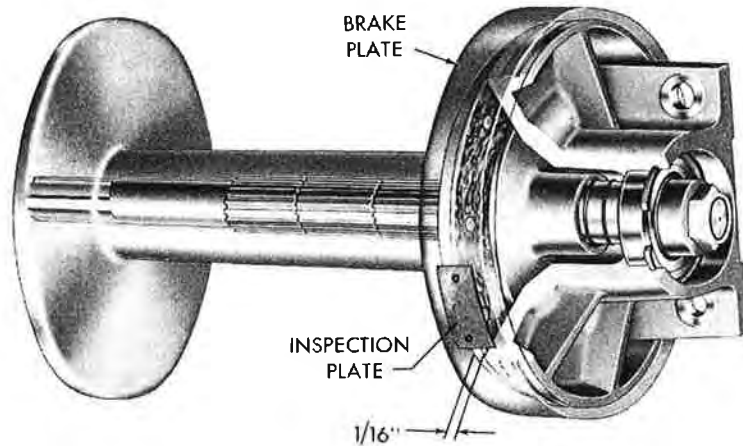


Figure 12

**Inspection**

The inspection of the drum and brake should be done by a trained and knowledgeable person. Every time the wire rope is replaced, the drum should be examined for signs of damage that would impair its proper use.

Before the staging is sent to the job site and every 30 days thereafter, the automatic brake should be inspected by removing the inspection plate located on the drum flange opposite the transmission. With the inspection plate removed, the brake disc is visible inside. Move the disc back and forth to make sure it moves freely. As the brake plate is rotated in one direction, it will move laterally toward the bearing housing. When released, it should return to its seated position automatically. The brake plate should be about 1/16 inch, away from the bearing housing when it is in its seated position. The inspection hole cover can be used as a feeler gauge but be sure to clean it of excess paint or contaminants first. Be sure to replace the cover and gasket with the two screws when the inspection is completed.

Inspect the seal between the bearing housing and the cable drum to make sure it is in place.

**Service**

If the wire rope drum or automatic brake are in need of attention, contact your local Spider Staging representative.

**Wire Rope Level Wind System (Fig. 13)**

The purpose of the level wind is to spool the wire rope evenly on the drum. The level winding system works on the principle of keeping the wire rope perpendicular to the drum by allowing the drum to tilt. A spring controls the amount of drum tilt.

The wire rope must be evenly spooled on the drum before ascent to insure proper level winding.

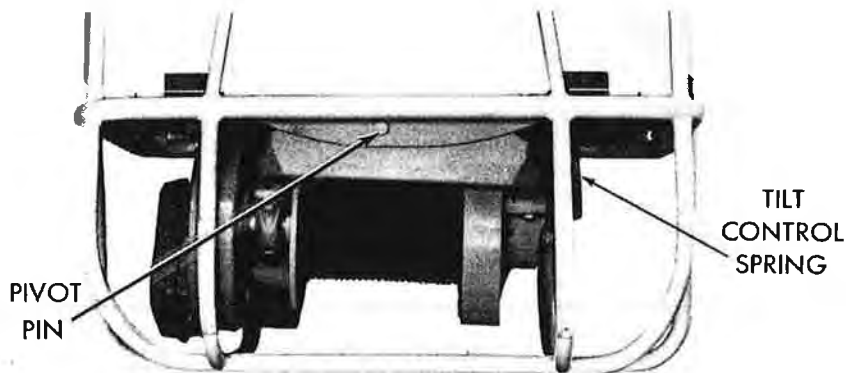


Figure 13

**Inspection and Service**

Daily, the operator should inspect the wire rope spooling on the drum to insure that it is stored neatly at all times. If the wire rope is allowed to go slack or become unevenly wound on the drum, the level wind system will not function properly. Every 30 days or sooner if events call for it, inspect the drum base for any signs of damage. Check the two pivot pins for wear and be sure they are properly secured with the snap rings. Check the tilt control spring assembly to insure that it resists the tilting of the drum.

If the drum base or tilt control spring assembly should require servicing, contact your local Spider Staging representative.

**Transmission (Figs. 14, 15, 16)**

Both the air and electric units have a worm gear transmission.

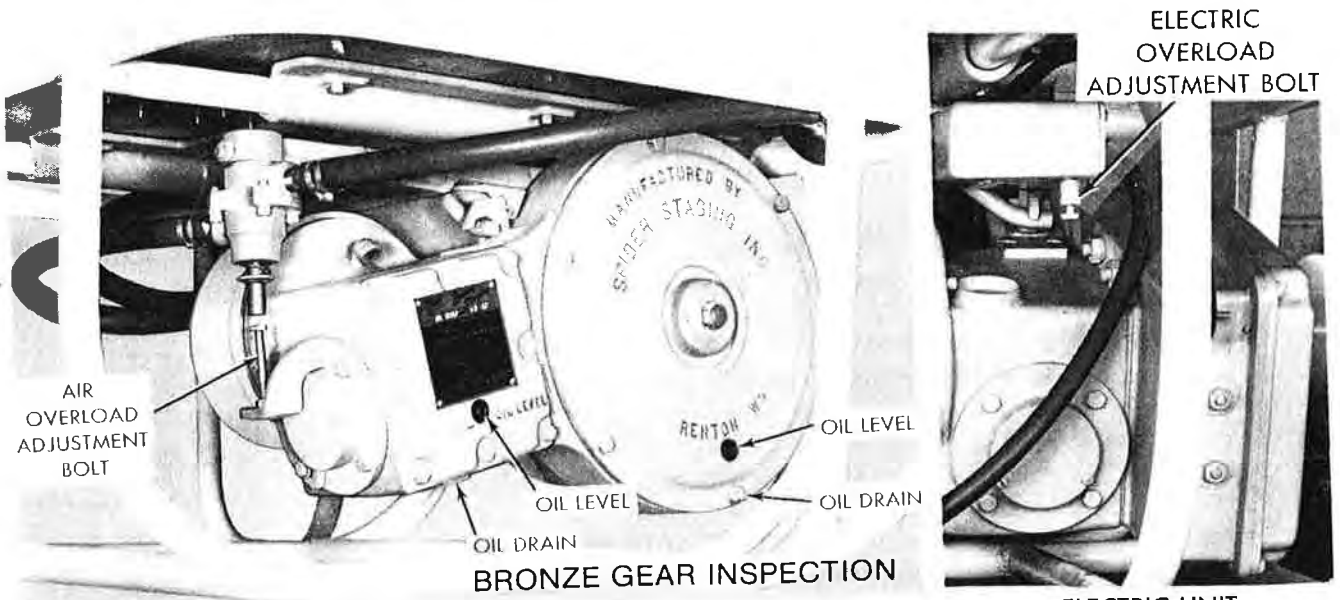


Figure 14 AIR UNIT

ELECTRIC UNIT  
Figure 32

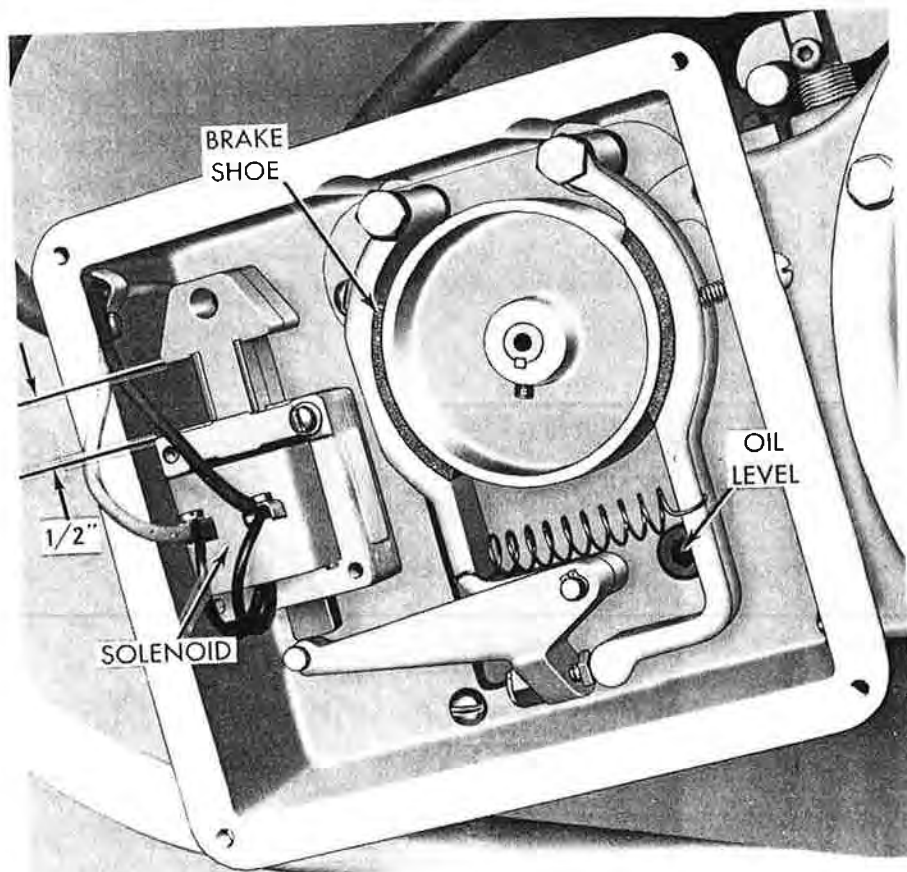


Figure 15

Figure 16



Figure 14A

**Inspection (Fig. 14A)**

Every week inspect the oil level in both sections of the transmission through the oil level inspection hole. If the oil level should be below the hole, then replenish the oil with Mobil 600W Cylinder Oil. At the same time the bronze gear should be inspected. On electric models, lay the Spider Staging down on its fairlead side and remove the drain plug and observe the outer edge of the teeth of the bronze gear. The sharper the edge, the thinner the tooth, which indicates wear. A comparison of the outer edge of the teeth of a new gear with those of a worn gear will readily demonstrate the ease of detecting to what extent wear has occurred on a bronze gear. The width of a new gear tooth is approximately 1/16 inch. The bronze gear on the air powered stagings can be inspected from the filler hole. Tip the staging in order to keep the oil from draining out. If the tooth is worn to a narrow edge, the gears must be replaced. Contact your Spider Staging representative.

Every 6 months drain all the oil from both sections of the transmission and replace with new Mobil 600W Cylinder Oil. **Use no substitutes.** One quart will fill both sections.

**Overload Shut Offs (Figs. 14 & 15)**

The over load shut off is intended to limit to 1,000 pounds the amount of load that can be applied to the wire rope. The purpose of this limiting condition is to preserve the safety factor on the wire rope and rigging and to prevent overworking the hoist motor.

**Inspection**

Every 30 days or before installation on a new job, a trained and knowledgeable person should inspect the overload shut-off for proper operation.

1. With all the wire rope stored neatly on the drum and the free end rigged to a beam of adequate strength, load the staging with the rated working load as shown on the load rating plate.
2. When connected to a proper voltage or air supply, the staging should lift the load.
3. With the addition of another 100 pounds the overload shut-off should prevent the upward travel of the staging.
4. A good method of loading the staging is to use men whose weight is known. The test should be conducted with the staging not exceeding 4 feet from the ground.

**Servicing**

1. If the shut-off actuates at too light a load, then the adjustment bolt will have to be adjusted up for the electric unit and down for the air unit. The opposite is true for too heavy a load.
2. To adjust bolt on the electric stages, hold the round actuating stem with a wrench by the flat spot. Loosen the jam nut with another wrench. For the air hoist, the jam nut can be loosened directly.
3. Index the adjustment bolt no more than one revolution at a time in the desired direction until the proper setting is achieved.
4. Reset the jam nut.
5. If the overload assembly is in need of further servicing, contact your Spider Staging representative.



### **Motor Control Switch (Figs. 17 & 17A)**

The motor control is for choosing the direction of travel of the staging. Move the handle up for up travel and down for down travel and return to the center to stop the stage.

#### **Electric Stage**

The electric powered stage has a rotary drum reversing switch for the control. The handle is set in an offset slot in the control housing to help prevent the operator from accidentally or otherwise moving the handle from one direction to the opposite direction without giving the motor adequate time to stop. This can cause damage to the motor as well as an impairment to the control of the motor.

#### **Air Stage**

The air powered stage has a four-way rotary valve with two stop positions. The valve is totally sealed to prevent it from becoming contaminated.

#### **Inspection and Service**

Daily—The operator should test his control switch in both directions before the start of each work shift. Any unusual behavior in the operation of the control will call for a further inspection by a trained and knowledgeable person.

Every 30 Days or Before Being Sent Out on a New Job—

1. With the proper power supply connected to the stage, operate the switch in both directions and note if the drum turns in the corresponding direction. Be sure to prevent the wire rope from going slack on the drum when doing this.
2. Examine the handle and control assembly to make sure it is properly secured and not damaged or in a condition that would impair its proper and intended use.

If the control assembly is in need of further service, contact your Spider Staging representative.

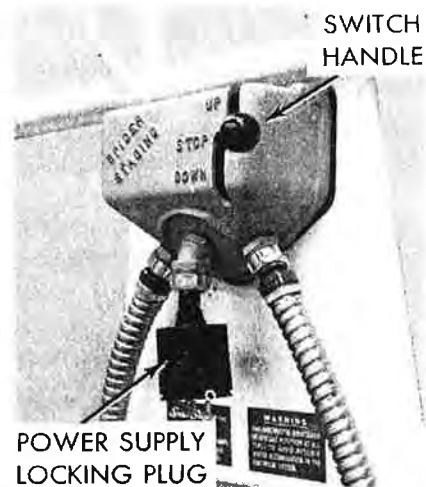


Figure 17

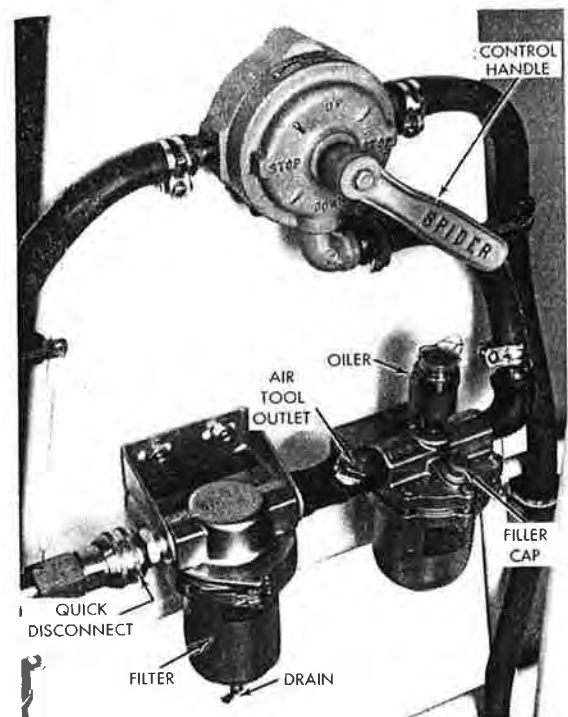


Figure 17A

### **Electric Hoist**

#### **A.C. Motor**

The motor on the electric hoist is a capacitor start, induction run motor requiring either 115 volts or 230 volts A.C., single phase depending on the model designation. If the motor fails to run, refer to the trouble shooting section of this booklet. The motor should be inspected daily during the operation of the hoist for any unusual conditions or noise that might prompt further inspection.

#### **Primary Brake (Fig. 16)**

The primary brake is automatically operated when the control switch is turned to OFF. The brake actuation is designed to stop the rotation of the electric motor and prevent drifting when the control switch is turned to OFF.

### **Inspection**

Daily—The operator should be aware of any unusual conditions that might occur during the operation of the stage. If the unit is making a buzzing sound or if the stage requires 1½ inches or more of travel before stopping, this is an indication that further inspection is necessary. **DO NOT CONTINUE TO USE THE STAGING IF AN UNUSUAL CONDITION EXISTS.**

**Every 30 days—A trained and knowledgeable person should inspect the stage.**

1. With the supply cord disconnected, remove the brake cover.
2. Examine the brake lining for the amount of wear. The lining is approximately 3/16 inch thick when new. When half of the lining is gone, the shoes should be replaced or the rivets will scrape on the brake drum.
3. Push solenoid plunger down to see if the mechanism is operating freely. With the plunger held down, the brake shoes should just release the drum. Keep the plunger and frame seating surfaces as well as the airgap clean and free of oil and grit. Dirty surfaces cause solenoid noise and possible failure. The plunger gap should be ½ inch. (see Fig. 16)
4. Replace the cover and connect the supply cord.
5. Operate the switch on and off and listen for the click of the solenoid. If a distinct buzzing sound should come from the solenoid when it is energized, then the plunger is not seating properly and this could cause the solenoid to burn out.
6. If the primary brake assembly is in need of repair, contact your Spider Staging representative.

### **Power Supply (Electric) Fig. 17)**

The available power supply of either 115 volts or 230 volts single phase at the control assembly plug must be maintained when the staging is picking up its maximum intended load.

The model designation plate indicates the required voltage for the staging. The power supply locking plug on the control assembly will also be an indication of the voltage requirement.

### **Inspection**

Daily—The operator can tell if the staging is not getting the proper power supply. If during the operation of the stage the motor pulsates or makes any unusual noises, further inspection by a trained and knowledgeable person will be necessary.

Every 30 days or when installing on a new job, the installation should be inspected by a trained and knowledgeable person.

1. Examine the plugs on the stage and the supply cord to make sure that they are the proper NEMA standard for the voltage being supplied. The plugs should be the proper voltage and be rated at 20 amps for G.E. and 15 amps for DYNA motors.
2. Examine the plugs and rubber boots for any signs of damage that might impair their proper use.
3. Use as short a supply cord as necessary to do the job. Use no less than 10 gauge wire.
4. Always connect the supply cord to a good source of voltage and make sure it is protected by a 20 amp fuse or circuit breaker. Make sure that no other machines are drawing from the same supply. This may cause a motor to burn out due to voltage fluctuations.
5. If running the stage from a motor generator, use a minimum of 2,500 watts per staging.
6. If a transformer is to be used, use no less than a 1.5 KVA. Be certain that the output voltage is proper and it is properly fused.
7. Check the voltage and amperes at the control while the motor is running and lifting its maximum intended working load. The voltage should not vary from the rated voltage by more than 10%. A 10% reduction in voltage will result in a 20% loss of power. Too high or too low a voltage can cause the motor to burn out. The amperes should not exceed that given on a motor designation plate. Wire rope length should be kept at a minimum if a low voltage condition exists that cannot be remedied easily.

## **Air Hoist**

### **Motor**

The air motor is a totally enclosed vane type motor rated at 1¼ H.P. with 120 psi and 60 cfm air. The air hose supply line should be a minimum of ¾ inch I.D. to get maximum H.P.

### **Inspection and Service**

Daily—The operator should refer any unusual behavior such as loss of power to a trained and knowledgeable person for further inspection. Refer to the trouble shooting section of this booklet.

Every 30 days or before the installation at a new job site, the motor should be inspected by a trained and knowledgeable person.

1. The fasteners on the cover should be secure. Do not overtighten.
2. Inspect the housing for any signs of damage.
3. Make sure the air hoses are properly secured and not damaged.

If the air motor is in need of further service or repair, contact your Spider Staging representative.

### **Oiler and Filter (Fig. 17)**

The filter helps to remove dirt and water from the incoming air supply. The oiler supplies a metered amount of lubricant for the motor.

### **Inspection and Service CAUTION: Disconnect Air Line First**

Daily—The operator should drain the filter at least once a day and more frequently if necessary. To drain, loosen the thumb screw located on the bottom of the filter. After the water has drained, reset the thumb screw. The oiler should be inspected daily. Remove filler cap on top of the oiler assembly. Fill with Mobil Almo Oil No. 525.

Every 30 days or sooner if adverse conditions exist the filter screen should be removed and cleaned. When operating under extreme conditions, such as sandblasting, the filter should be cleaned daily.

Release the clip at the top of the filter bowl and remove. Loosen the baffle at the bottom of the screen. The screen can be removed and cleaned in a thinner or solvent. Blow the filter dry and replace. Do not overtighten the baffle. The oil flow should be metered to deliver three drops of oil per minute. The oil flow can be viewed through the glass tube at the top of the oiler. To adjust the flow rate, remove the wire and the plastic cap from the top of the oiler. The adjusting screw is located under the cap. With a screw driver, increase the rate of flow by turning the screw counterclockwise and decrease the flow by turning it clockwise. Be sure to purge the air hose of any contamination before using.

### **Frame**

The frame is constructed of high strength aluminum alloys and the welded joints are done by a heliarc process under controlled conditions.

### **Inspection and Service**

Daily—The operator should report to a trained and knowledgeable person the first signs of damage. Refer to the "Attention" bulletin in the Foreword of this booklet or posted on the Spider Staging equipment for an indication of a few ways the equipment can be damaged.

Every 30 days or before installing on a new job, inspect the frame thoroughly for damage. Wire brush or scrub the excess paint away from suspected joints and inspect for cracks. For a unit equipped with floor mats, the mats can be removed and cleaned off or replaced.

## **CAUTION**

The frame is constructed from a tempered metal. Do not use heat to clean off excess paint. If repairs are to be made by welding, they should be done by a trained and knowledgeable person and meet the manufacturer's minimum design specifications. Contact your Spider Staging representative.

## ACCESSORY ITEMS

### **Fly Decks SA-1050 & SA-1051**

The fly decks can be installed on a single line Model ST-17 or ST-18 series Spider, or used in conjunction with a swing stage platform. They have a rated working load of 250 lbs. each.

#### **Assembly Instructions for Fly Decks Model SA-1050 and SA-1051**

##### **To single line ST-17 and ST-18 (Fig. 18 & 19)**

1. With the two halves disconnected at the turnbuckles, loosen the large hex nut on the rod through the bottom rail until the shoulder of the nut is about 1½ inches away from the end of the rail.
2. Loosen the turnbuckles until they are fully extended.
3. With the Spider upright on the ground, place one deck on each side. Push each rod nut into the rail so that hook on the rod extends out.
4. Tilt the fly deck up and push the rod through the opening in the toeboard. Index the hook of the rod until it fits into the hole in the floorboard plate.
5. The cables go over the top rail of the Spider. Pull the turnbuckle and the thimble eye together on the tripod side and connect with the bolt.
6. Tighten the turnbuckle as far as it will go. Connect the other side and turnbuckle until about one inch of the bolts are taken up.
7. Examine the rods to make sure they are properly locked into the floorboards. Tighten up rod nuts until they are secure. Do not over-tighten. Over-tightening may result in damage to the Spider or fly decks.
8. The turnbuckle should now be tightened until the frame of the fly deck comes to the top rail of the Spider.

##### **Fly Deck and Swing Stage Application to ST-17 or St-18 (Fig. 20)**

1. Assemble the swing stage platform to the Model ST-17 or ST-18 series Spiders according to the instruction in the swing stage platform section of this booklet.
2. When attaching one fly deck only to a Spider swing stage assembly, it is necessary to utilize the extra piece of wire rope that has the piece of rubber hose on it. This piece goes under the platform attachment fingers and up through the hole provided in the toeboard of the Spider (Fig. 21)
3. With one fly deck section at each end of the platform and one turnbuckle per section, loosen the turnbuckle until it is extended to its maximum length.
4. Follow the instructions for the single line application previously given, except to attach the fly deck cable to the cable leading under the platform fingers. Attach the two thimbles together first using the screw pin shackle, then attach the turnbuckle to the other thimble eye with the bolt. Tighten the turnbuckle, then the rod nut. Do not over-tighten the rod nut.

### **Demountable Fly Deck Models SA-1052 and SA-1053**

The demountable fly decks are for use with a single line Model ST-19. They have a rated working load of 250 lbs. each.

#### **Assembly Instructions: (Fig. 22 & 23)**

1. Fit the two halves of the floorboard sections together on the ground with one set on each side of the Spider, with the turnbuckle on the cable being on the *opposite side from the tripod*.
2. Fit the diagonal braces into the diagonal sockets in the floorboard sections.
3. Install the top handrail with the diagonal sockets going on the diagonal braces and the turnbuckle *on the tripod side*.

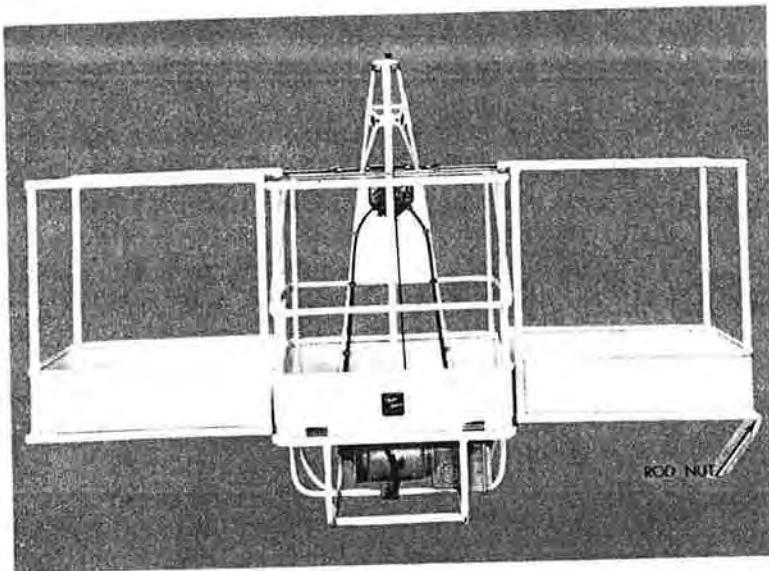


Figure 18

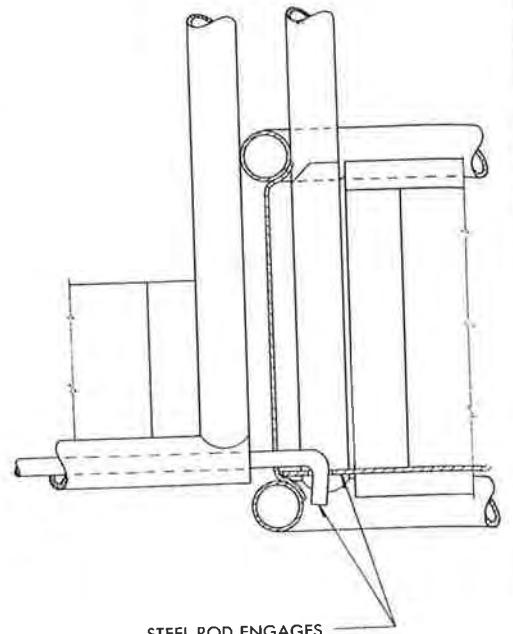


Figure 19

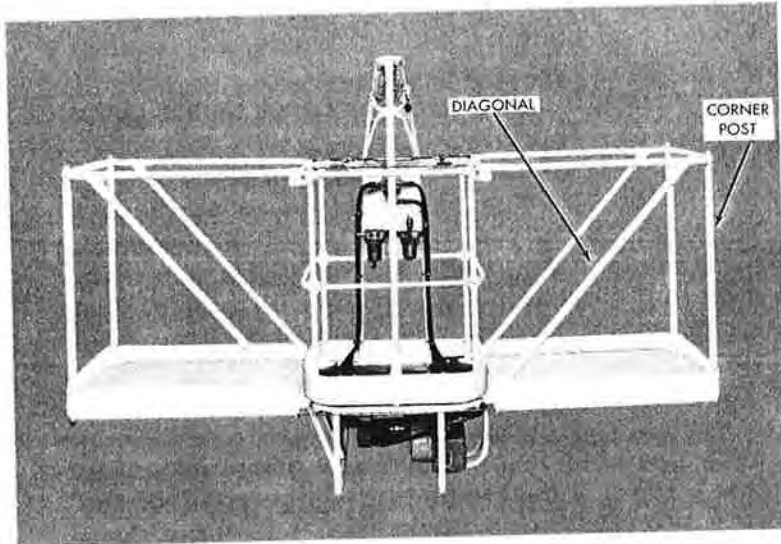


Figure 22

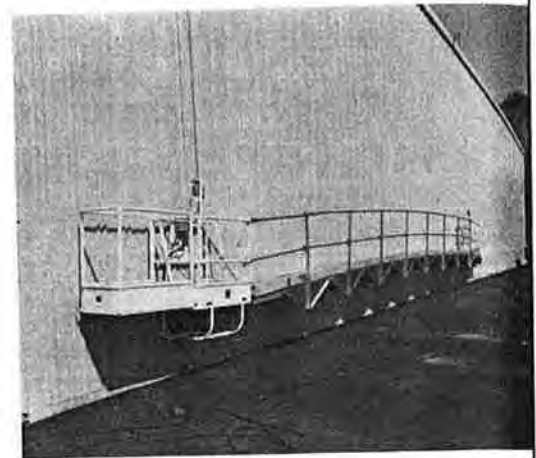


Figure 20

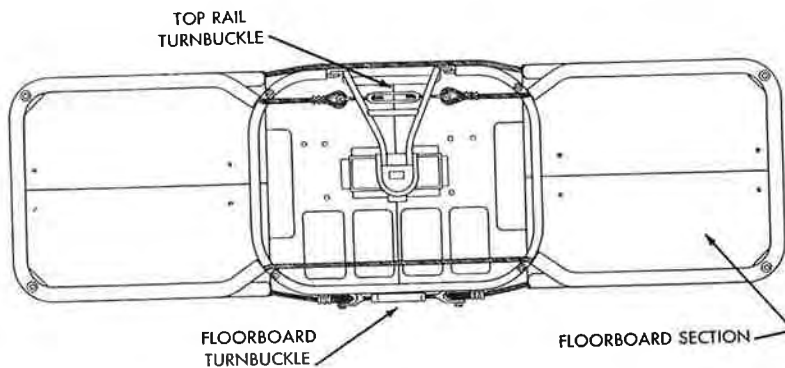


Figure 23

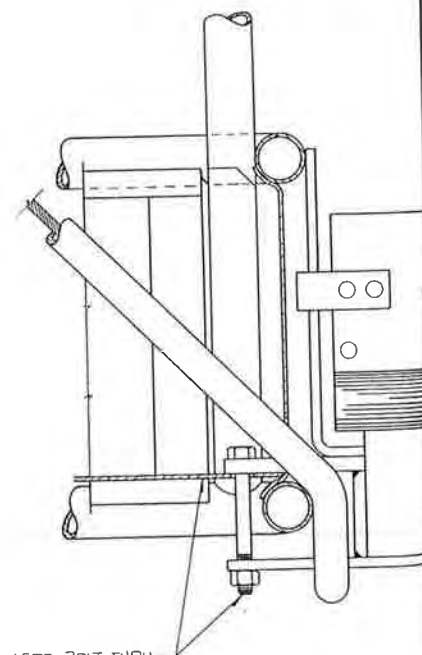


Figure 21

4. Install the corner post with the long through bolt and nut.
5. Tilt each section up and rest the angle support on the floorboard under the toeboard so that the notches in the angle are located with the corner post of the Spider. Fasten the turnbuckle and cable eye of the floorboard sections together, and tighten up on the turnbuckle.
6. Connect the turnbuckle and the cable eye of handrail sections together so that cable is over the top of Spider handrail and the turnbuckle is on the inside of the tripod.
7. Tighten the top turnbuckle until the handrails of the fly deck sections join with the handrails of the Spider. Finish tightening the bottom turnbuckle until the angle support is seated against the floorboard rail. Do not over tighten.

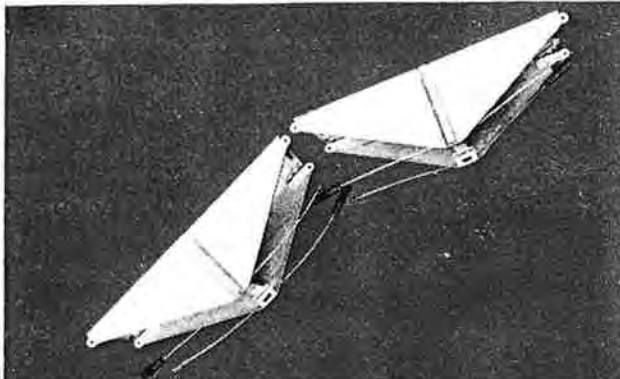
### **Swing Stage Platforms**

#### **Spider Staging Cable Truss Platform**

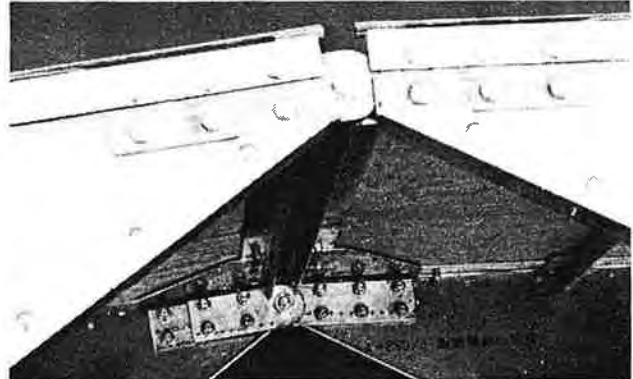
This platform will attach to any pair of single line Spider units and can be erected to any length from 4 feet to 36 feet.

From 4 feet to 28 feet in length the platform has a 750 lbs. rated working load. From 28 feet to 36 feet it has a 500 lbs. rated working load. Do not overload the platform. **Do not extend beyond 36 feet.**

### **Assembly Instructions**



1. Place platform sections on their sides.



2. Join coupler plates with section bolts on both sides.

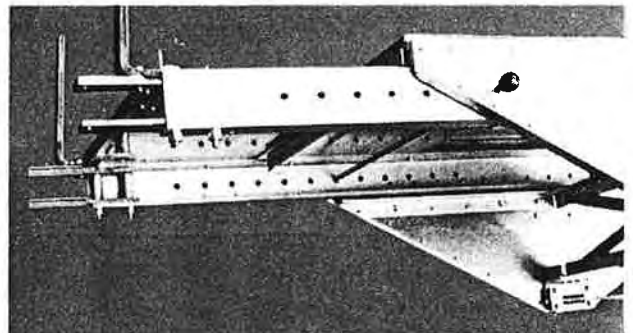
Leave nuts finger tight. (see fig. 9)



3. Peel retaining spring back with index finger, holding cable coupler in other hand.

Place end of cable ferrule into end of spring retainer.

With cable ferrule pushed all the way into coupler, let retaining spring snap back into place, and pull ferrule into place at end of coupler.



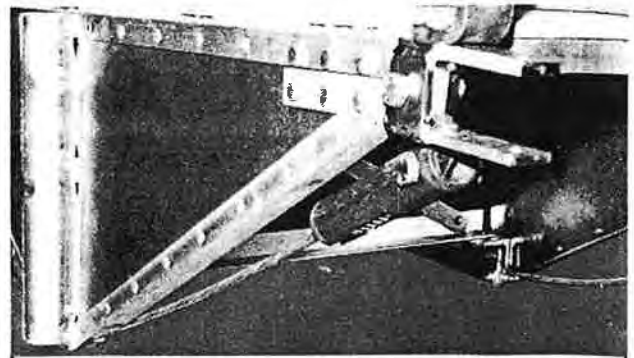
4. If an adjustable end section is to be used, adjust the section to the desired length and secure by installing steel pin in the appropriate hole.

Right platform to its working position.



5. If no adjustable section is used, install appropriate finger bracket on free cables at last section in span.

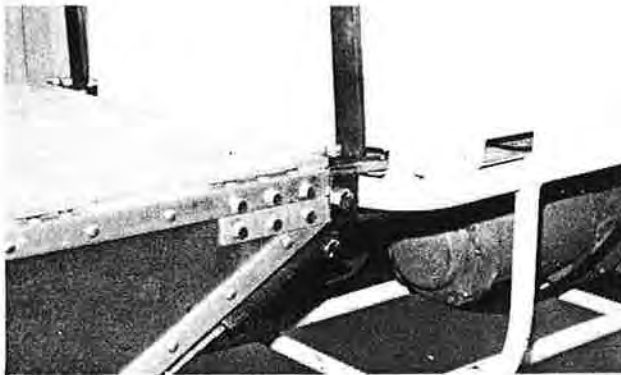
Place ferrule in the finger with coupler attachment, install cable coupler over pin in the other finger bracket.



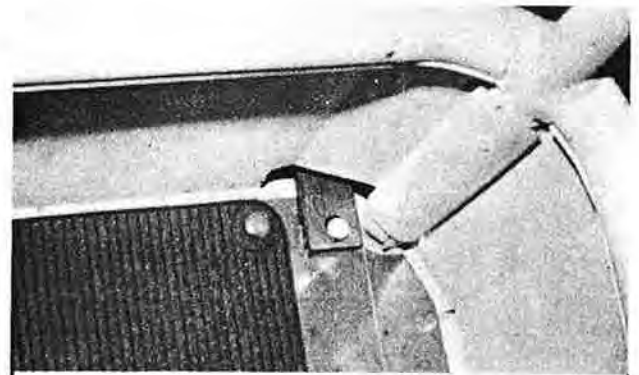
6. Remove cable from slot in the aluminum angle, attach cables, and place finger bracket on coupler plate. Install bolt and nut.

**ST-17 or ST-18 and Cable Truss Platform Assembly**

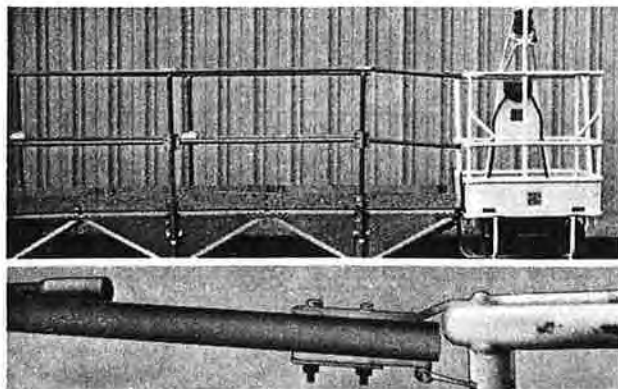
To assemble to an ST-17 or St-18 the assembly can be made direct.



7. Place fingers through openings in toeboard of Spider.



8. Install bolt through finger and hole in floor board and secure nut. Do not overtighten nut. Bolts are  $\frac{3}{8} \times 3\frac{1}{2}$ "



9. Install toeboards, then handrail up-rights.

Install handrails to uprights with bolts and nuts, secure socket set screws. Adjust rail clamp snug to Spider rail. Tighten section bolts and nuts.

Note: It is preferable to rig the fairlead side toward the surface that is to be worked on except when working under an overhang.

**ST-19 and Cable Truss Platform Assembly (Fig. 24)**

**First assemble the platform adaptor bracket SA-1065 to the Model ST-19.**

1. Note that there is a left and a right hand bracket. On the left hand stage the three attachment holes are located farther from the cross bar than the right. The right hand of the swing stage is determined when facing the control panels.
2. Each bracket has three  $\frac{3}{8}$ -16 by 1½-inch hex bolts. Remove the appropriate bolts in the floorboard and install the bracket with the new bolts with flat and lockwashers, then repeat for the other Spider.
3. Assemble the platform to the Spider in the same way as Models ST-17 and ST-18 except the finger bolts go through the holes in the bracket.

**Model ST-26 and Cable Truss Platform Assembly (Fig. 25)**

Attach the platform adaptor bracket SA 1085

1. The bracket can be installed with the deck either folded up or removed.
2. Remove the three bolts on one end of the bracket and remove the three spacers.
3. Slide the bracket around the wire rope guide frame legs on either the left or right side of the control valve. The heavy aluminum bar goes on the outside.
4. Replace the spacers and the bolts.

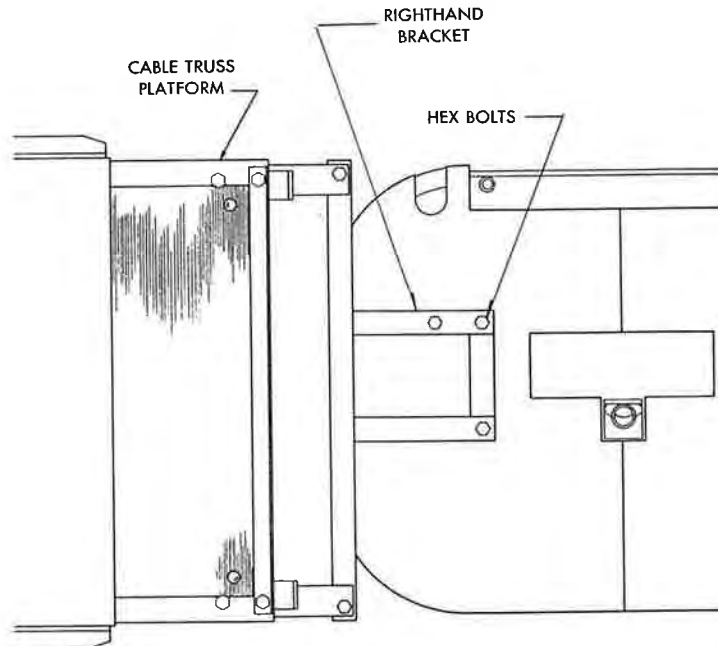
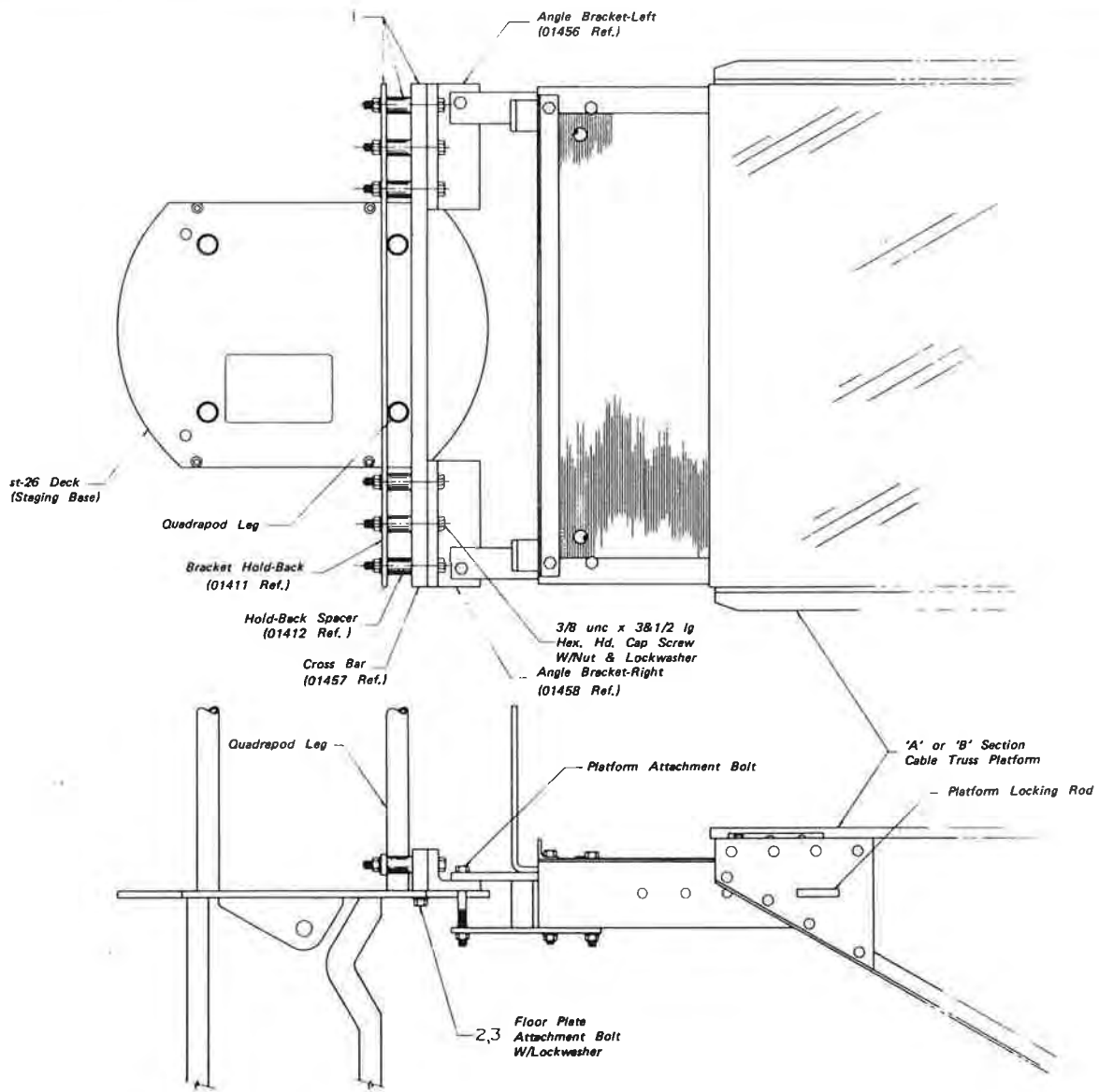


Figure 24

alu-  
lace  
stall

and  
Do  
3½"





THIS DRAWING AND ALL DIMENSIONS THEREON ARE THE PROPERTY OF SPINER STAGING SALES CO. AND MAY NOT BE REPRODUCED OR USED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF SPINER STAGING SALES CO. MEMPHIS, TENN.

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

5. Bolt the bracket to the floor plate with the two bolts through the holes in the plate and into the cross bar.
  6. Repeat for the other unit.
  7. Assemble the platform in the same way as for Models ST-17 and ST-18 except the finger bolts go through the holes in the bracket.
  8. The handrail bracket clamps onto the wire rope guide frame with handrail clamps.
- Ladder Type Aluminum Planks To Model ST-17 or ST-18 (Fig. 26)**

The combination bracket SA-1082 is required. This bracket assembly is designed for a plank width of 12 through 28 inches with rail depth of 3¾ to 6 inches.

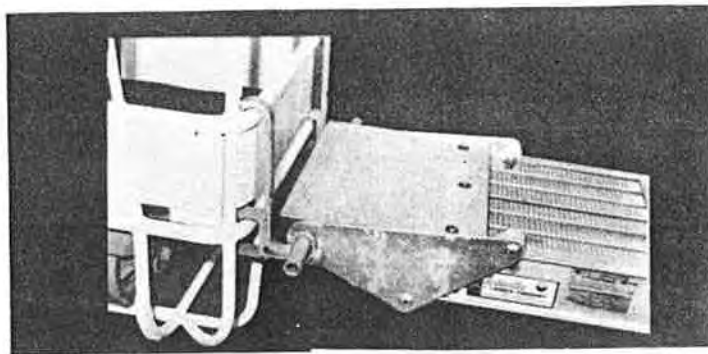


Figure 26

**Assembly Instructions Ladder Adaptor Assembly**

1. Place the two Spiders under their rigging points and the aluminum plank between them on the ground.
2. With the clamping screws and clamping bar removed, place the triangular plate on the outside of the plank rail, with the two studs on top and bottom of the side rails and the hole in the plate at the end of the plank.
3. The clamping bar fits over the two studs on the inside of the plank rail and the clamping screws screw onto the studs. The easiest way to set the top clamp is to pull the stud away from the rail far enough to allow clamp screw handle to clear the plank deck. Screw the clamp in until just before it clamps the rail.
4. With the top stud resting on the top of the rail, pick up the plate until the bottom stud is against the bottom of the rail. With the edge of the hole in the plate about 1 inch away from the end of the ladder, tighten the bottom clamp securely and then the top clamp. The handle of the top clamp should end up laying flat on the plank deck to keep it out of the way.
5. Repeat the procedure for the other three attachments. A piece of ¾" marine plywood decking or a material of equivalent strength should be cut to cover the open area between the plank floorboard and the staging. The piece should be cut to overlap the side rails and the deck of the plank. The material can be held down with bolts, flat washers and lock nut through the plank decking.

**ST-17 & St-18 Adaptor assembly**

6. The Spider attachment bracket fits on the Spider frame by first removing the two ¾ bolts from the fingers. The hooks fit over the skirting rail and the fingers fit into the holes in the skirting at the floorboard level. Place the bolts back into the fingers from the top and secure with the nut. Do not over tighten.
7. Remove the U-bolts and the bar from the bracket.
8. Remove the bolt and nut from one end of the bar and slide the bar through the holes in the plate attached to the plank. Replace the bolt and nut in the end of the bar.
9. Note the two grooves in the bar line up with U-bolts. Pick the plank up and set the bar down on the Spider brackets. Place the U-bolts over the bar at the groove location and through the holes in the bracket. Secure the U-bolts with the lockwashers and nuts.

10. Repeat this process for the other end. Erect the handrail uprights and handrails according to the plank manufacturer's instructions. The tubular handrail can be clamped to the Spider with handrail clamps. See the handrail clamp section of this booklet for assembly instructions.

*Transporting and Storage*

11. If it is necessary to separate the Spiders from the plank, remove the bolts from the fingers and lift up on the end of the plank removing the attachment bracket from the Spider. Leave the bracket assembly assembled to the plank. The plank can be re-assembled to the Spider in the reverse procedure.

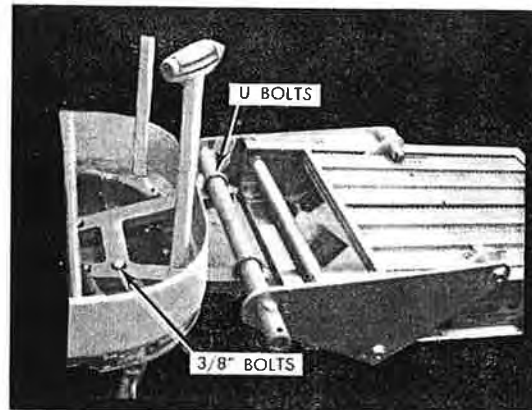


Figure 27

**Ladder Type Aluminum Plans To Model ST-19 (Fig. 27)**

Use the attachment bracket SA-1091. This bracket is designed for plank width of 12 to 24 inches and with rail depth of  $3\frac{3}{4}$  to 6 inches.

**Assembly Instructions**

1. Follow the steps 1 through 5 in the Ladder to Model ST-17 instructions for assembling the plank adaptor bracket to the plank.
2. The Spider attachment bracket attaches to the Spider with three  $\frac{3}{8}$ x2 inch bolts provided with each half.
3. Remove the appropriate three bolts from the floorboard of each Spider and install the bracket with new bolts with flat washers and lock washers.
4. Remove the U-bolts and the round bar. Slide the bar through the holes in the plank bracket.
5. Pick up the end of the plank and rest the bar on the Spider bracket. The U-bolt locating registers on the bar should line up with the holes in the Spider bracket. Replace the U-bolts over the bar and secure with the nuts and lockwasher.
6. With both ends of the plank assembled, install the handrail and toeboards according to the plank manufacturer's recommendations. The tubular handrail can be secured to the Spiders with handrail clamps. Refer to the handrail clamp instructions in this booklet.

**Ladder Type Aluminum Plank to Model ST-26 (Fig. 28)**

Use bracket assembly SA-1092. This bracket assembly is designed to accommodate a 12 inch to 24 inch wide plank with a rail depth of  $3\frac{3}{4}$  to 6 inches.

**Assembly Instructions**

1. Assemble the platform attachment bracket to the platform as in the instructions 1 through 5 of the Ladder Plank to Model ST-17 section.
2. The two square metal bars that make up the Spider attachment bracket mount to the floorboard with the four  $\frac{3}{8}$ " bolts and lock nuts provided. The pipe bar protrudes away from the control panel side of the stage. The wing deck can be either folded up or removed.
3. The two brackets join together in a similar fashion as described in plank attachment to a Model ST-19 instructions 5 through 7.

ails  
be  
this  
  
the  
the  
re-  
  
to  
for  
olts  
he  
nk  
olt  
et.  
ng  
ed  
nis  
  
e a  
s 1  
he  
les  
up  
ent

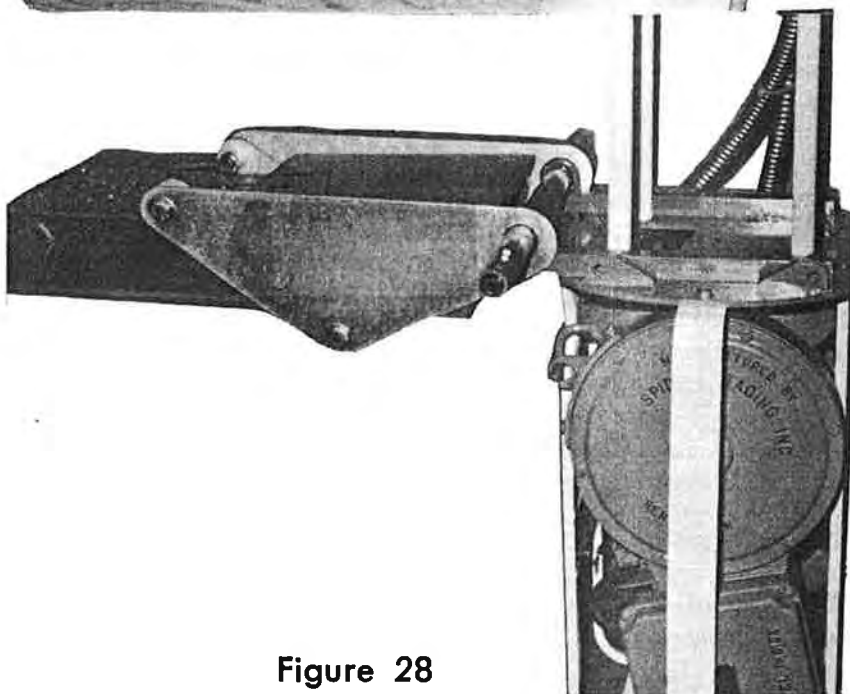
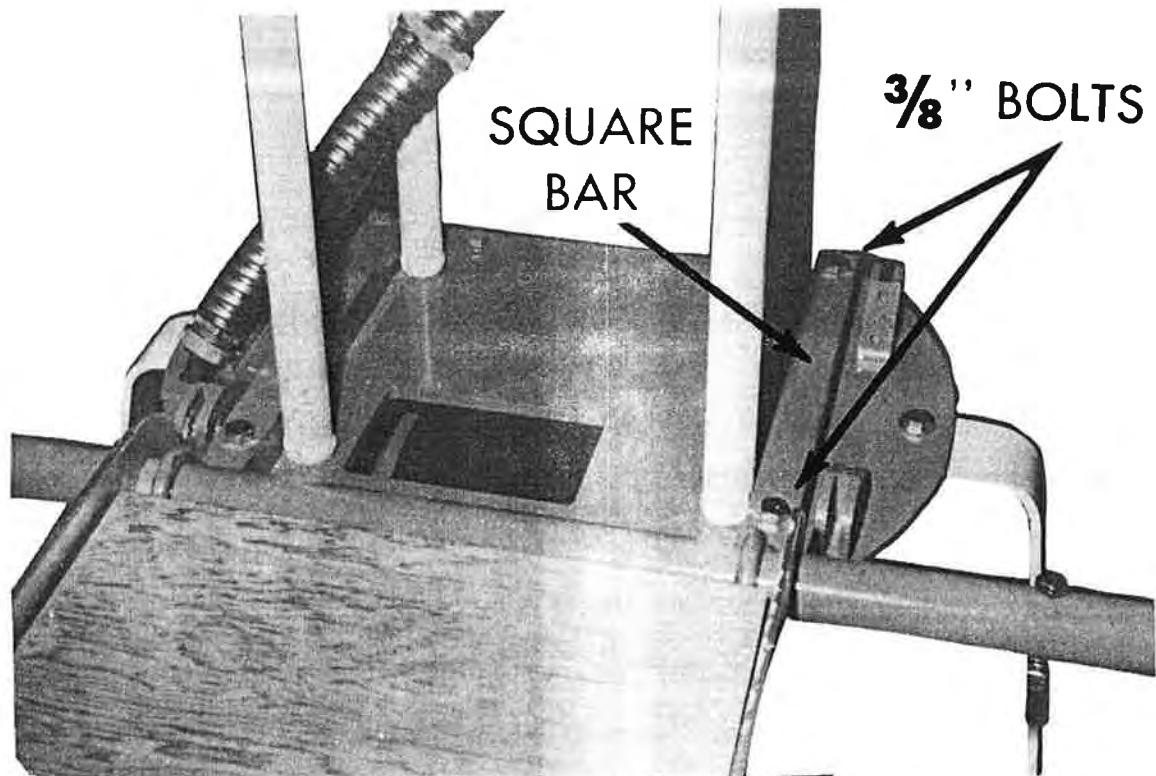


Figure 28

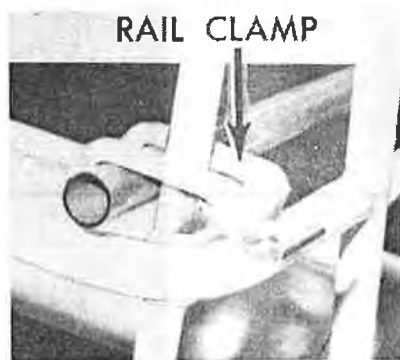


Figure 29

### **Swing Stage Platform Inspection**

- Inspect completely and thoroughly all parts and fasteners as often as possible.
  - Inspect for damage, corrosion, loose or missing parts, proper assembly, wear.
- Do not use this equipment if it is bent, broken, damaged or weakened in any way. Do not use equipment if in doubt. Should your inspection find a condition you are doubtful of or do not understand, consult your employer or the manufacturer or his authorized repair and maintenance representative. Remove weakened equipment from service immediately.

### **Rail Clamps SA-1045 (Fig. 29)**

The handrail clamp is useful for joining two pieces of 1¼ inch diameter tubing either parallel or perpendicular to each other.

#### **Installation**

1. Loosen the tie handle enough to allow it to fit over the two pieces of tubing being joined.
2. Hold the two pieces together while hooking the clamp over the one tube and screwing the handle in until the saddle is seated over the other tube. Continue to turn the handle until the clamp is secure.

#### **Inspection**

1. Inspect the clamp daily to insure that it is properly secured.
2. Never use a bent or damaged clamp. Check the threads on the tee handle to make sure they are not fouled or damaged so as to prevent the clamp from being properly installed.

### **Roller Assemblies**

#### **Philly Wall Bumper Roller SA-1035 (Fig. 30)**

This roller is designed to attach to any side of a model ST-17 or ST-18 Spider.

#### **Installation**

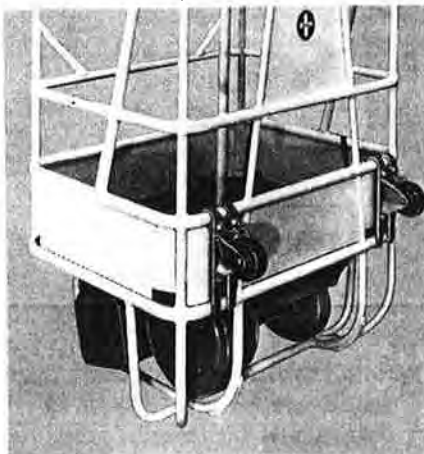
1. Loosen the tee handle far enough to allow the roller bracket to fit over the skirting rail of the Spider.
2. Tighten the handle securely while making certain that the swivel pad on the handle is properly seated against the skirting and rail.

#### **Adjustable Face Roller SA-1036 (Fig. 31)**

This roller can be used on a model ST-17 or ST-18 and can be attached to the top rail, midrail or corner upright post.

#### **Installation**

1. Slide the tee section of the roller assembly under or over the desired handrail.
2. Secure the roller assembly to either the handrail or corner post with four handrail clamps. Handrail clamp instructions are available in this booklet.

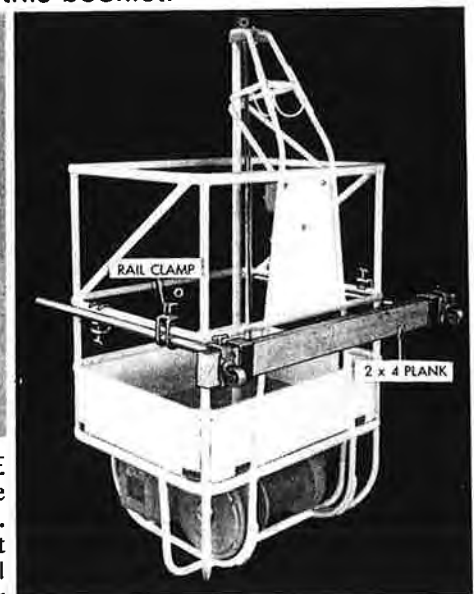


**Figure 30**



**THREE, FOUR, AND FIVE FACE ROLLERS (SA-1036)**—For use against relatively fragile structures. Wide rollers distribute weight evenly to prevent structural damage. Set includes two roller brackets, four rail clamps, and rollers.

**Figure 31**



**Figure 32**

### **Adjustable Wall Bumper Roller SA-1037 (Fig. 32)**

The adjustable wall bumper roller allows the operator to adjust the distance the rollers are to be set away from the stage as well as the distance between the rollers. The roller assembly can be attached to any model Spider Staging with the use of handrail clamps.

#### **Installation:**

1. The bumper brackets can be attached to the top rail, midrail or corner post with handrail clamps. Refer to the handrail clamp section of this booklet for instructions. The brackets are assembled 2½ to 3 feet apart with the rectangular frame vertical.
2. A 2x4 plank long enough to support the rollers at the desired span is slid through each bracket. The plank should be of number one grade lumber with no knots or cracks.
3. The rollers slide over the end of the 2x4 plank and are clamped into place with the tee handle clamp.

### **Ground Dolly SA-1072 (Fig. 33)**

The ground dolly can be attached to a model ST-17, ST-18 or ST-27 and allows the staging to be rolled across hard smooth surfaces such as concrete or asphalt while on the ground. In attempting to roll across a tar roof or dirt, sheets of plywood or boards should be laid down.

#### **Installation:**

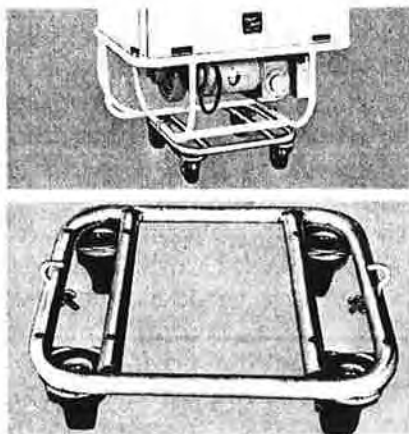
1. If the Spider is not in suspension but on the ground, it should be tipped over on its front or tripod side.
2. With the J bolt wing nuts loosened, the ground dolly attaches to the base of the Spider such that the J bolts clamp onto the base rockers.

### **Roller Inspection and Service**

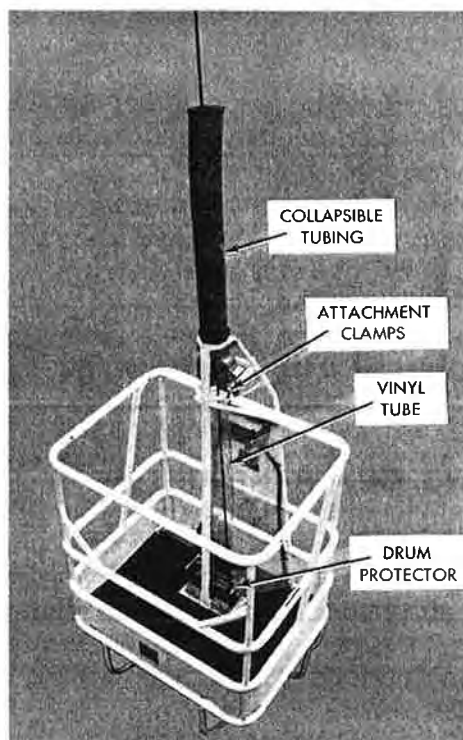
Daily—At the start of every work shift, inspect all rollers to make sure they are not damaged or broken and that all fasteners are present and properly secured. Do not use the equipment if it is in need of repair. Spare parts and repair service are available from your Spider Staging representative.

### **Arc Guard Kit (Fig. 34)**

The arc guard kit is intended to protect the suspension wire rope of any model Spider by greatly reducing the possibility of accidentally contacting the welding rod with the wire rope. Insulating the wire rope from structure being welded will not necessarily prevent damage if struck with the welding rod because the unit is grounded.



**DETACHABLE GROUND DOLLY (SA-1072)**—Constructed with heavy-duty rubber tired swivel casters. Ideal for moving equipment and materials as well as the Spider Staging.



**Figure 34**

**Figure 33**

**Installation:**

1. Pull the wire rope back through the tripod guide by removing the steel guides and one half of the tension holder as described in the wire rope replacement section.
2. Remove the existing toeboard around the wire rope opening in the floorboard.
3. Thread the wire rope through the drum protector and fasten the protector to the floorboard with the two sheet metal screws. It will be necessary to drill a 5/32" hole in the floorboard for each screw. The cutout in the aluminum angle is for the tripod post.
4. The wire rope is threaded through the clear vinyl tube so the attachment clamps are at the top.
5. The wire rope goes back through the cable guide and the guide and tension holder are reassembled.
6. The two attachment clamps clamp onto the diagonal brace of the tripod.
7. The collapsible tubing is threaded onto the wire rope. It might be necessary to hook onto the wire rope eye with a piece of wire or a screw driver to pull the wire rope through the top end of the tube.
8. The collapsible tubing rests on top of the wire rope guide when the staging is rigged.

**Inspection and Service:****Daily—**

1. Inspect at the beginning of every work shift for damage to the component parts. Do not use the equipment if it is in need of repair.
2. The clear vinyl tubing and clear plastic doors on the drum protector are for wire rope inspection. They should be kept clean with a detergent or paint solvent. DO NOT USE lacquer thinners.
3. The collapsible tubing is intended to allow the staging to be moved close to the rigging. The tubing should not collapse more than half its original length or it may be damaged.

**Tool Box SA-1038 and SA-2707 (Fig. 35)**

The SA-1038 tool box is intended for use with the ST-17 and ST-18 series Spiders. The SA-2707 is intended for the model ST-27 Spider. The tool box is for storage of small hand tools. The rated load of the tool box is 50 pounds.

**Installation:**

To install, hook the two steel straps over the top hand rail of the Spider. Insert the two ¼ inch bolts through holes in the straps so they pass under the handrail and into the tapped holes of the strap.

**Inspection and Service:****Daily—**

The box should be inspected at the start of each work shift for signs of damage and to insure that the fasteners are present and properly secured. Do not use the equipment if it is in need or repair.



Figure 35

**STORING AND TRANSPORTING**

Be certain to store and transport your Spider Staging equipment in the upright position. The primary consideration here is to avoid water accumulation in the electrical system and to avoid the possibility of oil leakage in the transmission.

Always store your equipment in a sheltered dry area. If the equipment is left out in the weather, be sure to inspect the wire rope and other components for rust and corrosion. After long periods of storage under any conditons, the equipment should be thoroughly inspected before being used.

Every 30 days of storage the staging should be connected to a proper power supply and run for at least a couple of revolutions of the drum in order to lubricate the gears.

## TROUBLE SHOOTING

### *Air Hoist*

1. Motor running slowly, losing power . . .

**Possible Causes:**

- a. Low air volume
- b. Lack of oil or too much
- c. Plugged air filter
- d. Swollen vanes, badly worn vanes, worn front rotor bearing.

**Remedies:**

- a. Check air supply at Spider. A gauge may be used in the line and a pressure of 90 psi should be maintained with the motor running and the control valve wide open. A lower reading indicates a need for a larger compressor or larger hose and fittings.
- b. Check lubricator—see that it is clean, full of oil, and properly adjusted (3-4 drops per minute).
- c. Disassemble and clean
- d. Return for service

2. Motor running sluggishly in **DOWNWARD** direction

**Possible Cause:**

- a. Over-supply of oil

**Remedy:**

- a. Check lubricator for proper adjustment (3-4 drops per minute). Then run motor in downward direction until it has discharged excess oil and is running normally.

3. Motor bound tightly—won't move in either direction. Upon disassembly no visible wear or indication of rubbing or scoring on any parts.

**Possible Cause:**

- a. Swollen vanes

**Remedy:**

- a. Same as item 1, remedy d. above.

### *Electric Hoist*

1. The unit will not run up or down.

**Possible causes:**

- a. Power supply not adequate
- b. Motor burnt out, short or open circuit
- c. Capacitor weak or burnt out

**Remedies:**

- a. Check the supply cord for breaks or improper connection. The cord should be a minimum of #10 wire. The voltage should be within 10% of nameplate rating with the motor running underload.
- b. Check the outside cover of the motor for discoloration or signs that the motor has been hot. With the switch in the up or down position and the supply cord disconnected there should be about one ohm resistance between the two power leads of the plug. If zero or infinite resistance then check the motor itself. If the reading is the same when the motor is disconnected and tested then the motor probably is burnt out. If the motor reads one ohm of resistance between the wires #2, 4, 10 and #1, 3 and 5 then the problem may be in the switch.
- c. Check for oil leaking from capacitor on motor. Change the capacitor.

2. The unit will run down but not up.

**Possible causes.**

- a. Overload switch
- b. Reversing switch
- c. Not adequate power supply

**Remedies:**

- a. Check the unit for overloading. Check the switch for improper adjustment.
- b. Check for a disconnected wire or signs that a contact is burnt.
- c. Check amperes and voltage at the reversing switch plug. They should be within 10%. If not, then a transformer or other corrective measures will have to be made.

NOTE: For lower power use trim wire rope length.



# SPIDER STAGING RIGGING EQUIPMENT

## GENERAL INSTRUCTIONS, INSPECTION AND SERVICE

The rigging device and the adjoining structure should be capable of supporting the maximum gross load of the Spider usually 1,000 pounds with a *safety factor of four*. The rigging device should be rigged so that the wire rope attachment is far enough from the structure to allow it to pass straight through the wire rope guide. A separate rigging method should be supplied for the workman's safety line.

### RIGGING EQUIPMENT INSPECTION:

1. Inspect the rigging assembly at the beginning of each work shift for indication of missing or improperly secured fasteners and bent, broken or otherwise damaged parts. Do not use equipment if it is in need of repair.
2. Spare parts for Spider Staging rigging devices are available from your Spider Staging representatives.
3. If repairs are to be made, they should be made by trained and knowledgeable people and the manufacturer's minimum design specifications must be adhered to.

### ASSEMBLY INSTRUCTIONS

#### **Adjustable I Beam Clamp SA 1039 and SA 1040 (Fig. 36)**

These two rigging devices having a maximum rated working load of 1,000 pounds and are intended to be used on the bottom flange of a horizontal I beam or structural T. The flange width should not be less than 1½ inches and not more than 4 inches for the model SA-1039 or 8 inches for the model SA-1040. It is important that the beam be capable of sustaining the maximum rated working load with a safety factor of four.

These devices should not be used on a vertical beam or in a manner that would place the suspension wire rope parallel to the beam.

#### **Assembly Instructions:**

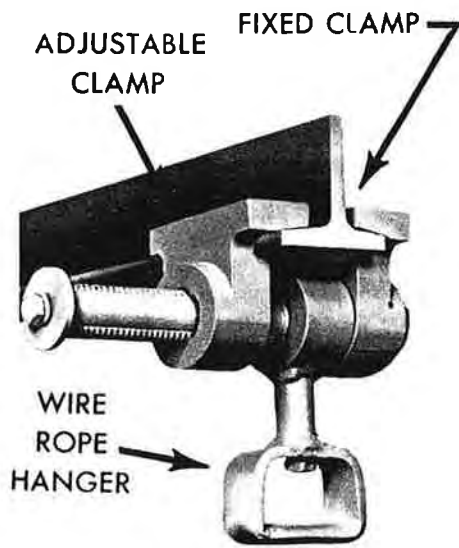
1. By holding the fixed clamp, the wire rope hanger can be indexed from vertical to horizontal.
2. The adjustable clamp can now be moved to allow the clamp assembly to clear the I beam flange.
3. Slide the fixed clamp over the flange and move the adjustable clamp over until it is fixed over the opposite flange edge.
4. Index the hanger back to the vertical direction thus locking the clamp in place.

#### **Adjustable I Beam Roller SA-1003 and SA-1003-22 (Fig. 37)**

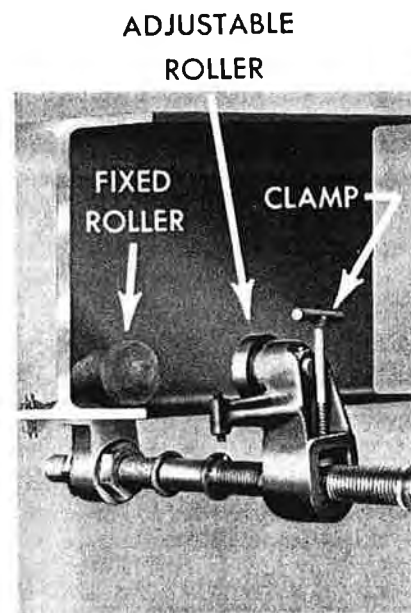
These rollers have a maximum rated working load of 1,000 pounds and are intended for traversing a horizontal I beam. The SA-1003 will fit an I beam flange width of 4 inches to 10 inches. The SA-1003-22 will fit an I beam flange width up to 16 inches and 1¾ inches thick. For thicker flanges see the thick flange adapter instructions in this section. The beam should be level as the **rollers do not have a brake to prevent them from rolling**. If the beam is sloping, be sure to follow the instructions in this section pertaining to this condition. The flange of the beam should be of consistent width with no cutouts or notches that would allow the roller to roll off. The end of the beam should be blocked, clamped or otherwise constructed as to prevent the roller from rolling off.

#### **Assembly Instructions:**

1. The dimensions of the beam should be known in advance. The flange width will be needed to determine the location of fixed roller.
2. In order to center the suspension point to the beam, the distance from the inside face of the roller bracket to the center of the bar should be half the width of the beam flange. The roller bracket can be adjusted by loosening the two big hex nuts on either side of the bracket. The nuts should be securely fastened after the adjustment is made.
3. The clamp on the adjustable roller bracket is loosened enough for the threads in the bracket to clear the threads in the bar. The 5/8" shackle for the suspension wire rope should be placed on the bar at this time, or the wire rope eye splice may be looped over the bar directly.
4. The bracket is extended out far enough to allow the rollers to clear the width of the flange.



ADJUSTABLE I-BEAM CLAMP - SA-1039



ADJUSTABLE I-BEAM ROLLER (SA-1003)

Figure 36

Figure 37

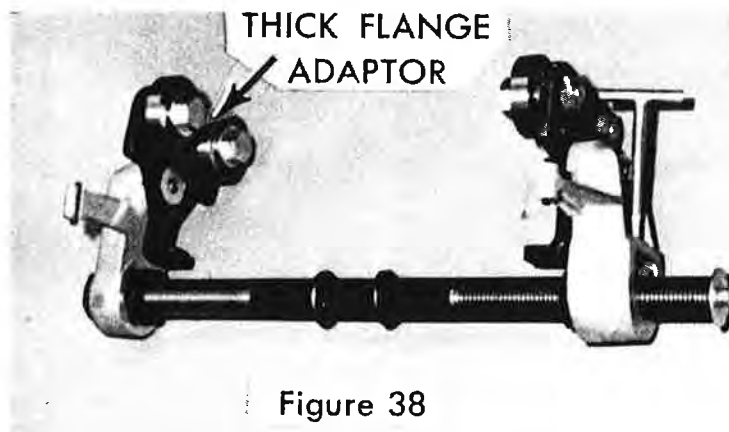


Figure 38

5. The fixed roller bracket is set against the flange edge first, then the adjustable bracket is brought against the opposite flange edge. There should be about  $\frac{1}{8}$ " to  $\frac{1}{4}$ " of clearance between the roller bracket and the flange after the clamp has been secured.
6. After installation, move the assembly back and forth on the beam to make sure it is properly installed.
7. The suspension wire rope eye is connected to the shackle if one is used. The shackle pin should be properly secured and wired to prevent it from coming undone.

**Thick Flange Adapter (Fig. 38)**

For flanges that are over  $1\frac{3}{8}$ " and up to  $2\frac{3}{4}$ " thick.

1. Loosen the set screw in the nut that holds the rollers on. Remove the nut and the socket head bolt from the bracket.
2. The flat head socket bolts go through the adaptor plate and the roller bracket in place of the original rollers. Secure the hex nuts and reset the locking set screws.
3. Assemble to the beam as previously described.

**Sloping Beam Rigging**

1. For gentle slope of 1 in 12 ( $5^\circ$ ) or less, fasten a line to the high end of the beam and to the Spider frame. When traveling down the beam, let out some line and re-secure to the frame. The line should be of adequate strength and long enough to cover the length of the beam.
2. For beams with greater slopes, the Spider suspension line can be fastened to the high end of the beam and a transfer chain can be used to attach the Spider to the I-Beam Roller or channel beam roller on the beam. As the weight of the Spider is transferred to the transfer chain and roller, the Spider will roll down the beam with the suspension line acting as a snubbing line. (Fig. 39)



Figure 40



Figure 39

**Cable Clamps (Fig. 43)**

The cable clamp is a convenient device for attaching safety tie-back lines, but the use of cable clamps is not recommend for use on the suspension wire rope. The clamp is rated at 80% of the wire rope rating when properly installed while a properly woven eye splice is rated at 89%. It is possible to misapply a cable clamp and they can also loosen up after they have been installed. The cable clamp can deform and weaken the wire rope. Always use the appropriate size clamp for the particular wire rope size being clamped. The appropriate size wire rope thimble should always be used as well.

**Installation Instructions:**

1. A minimum of three 5/16 inch clamps should be used when forming an eye in a 5/16 inch wire rope.
2. Form a loop in the wire rope at least 12 inches long and install the first clamp about 9 inches down. If the U-bolt type of clamp is being used, always place the base on the live or load carrying portion of the eye and the U bolt on the dead portion. Alternately tighten each nut securely.
3. Place the thimble in the eye and attach the second clamp as close to the thimble as possible.
4. Attach the third clamp between the other two. Torque all the nuts to 30 ft./lbs.
5. When the wire rope is carrying a load the nuts on the clips should be retorqued to 30 ft./lbs.

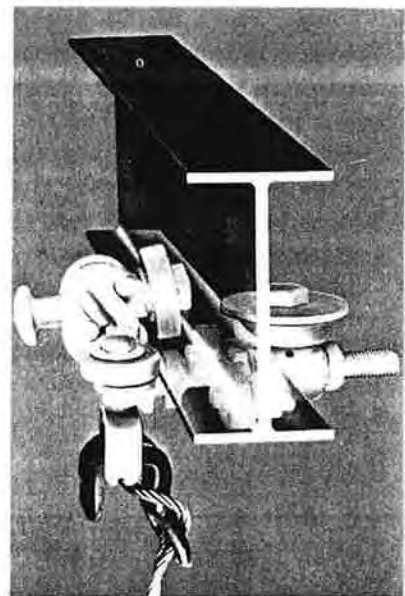
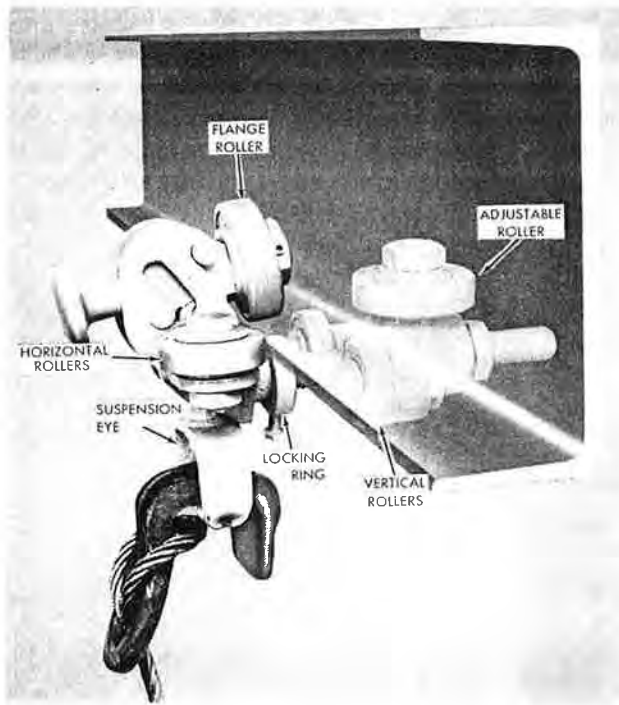
**Inspection:**

Retorque the clamps daily as it is possible they can loosen as the load is applied.

**Channel Beam Hook, SA-1579 (Fig. 40), and Channel Beam Roller, SA-3152 (Fig. 40)**

These rigging devices have a maximum rated working load of 1,000 pounds and are intended to be used on a structural channel section with depths from 6 inches to 15 inches. Both devices should be used on a level beam that has the web set vertically. **The roller is not equipped with a brake.** If the beam is sloping, refer to the instructions for the adjustable I beam roller.

As:  
1.  
2.  
3.  
Ch:  
The  
bea  
stru  
sha  
hor  
hav  
allo  
the  
refe  
bea  
roll  
rolli  
Ass:  
1. T  
2. T  
s  
p  
a:  
3. W  
a:  
4. S  
5. T  
ar  
st  
rc  
ec  
ac



CHANNEL SECTION ROLLER WITH SPECIAL HEEL BRACKET (SA-1008)

Figure 41

**Assembly Instructions:**

1. The hook and the roller assembly attach to the lower flange of the beam in the same manner. Hold the device horizontal with the opening toward the flange edge.
2. Index the device to the vertical position as it is being inserted over the flange.
3. The suspension wire rope eye can be coupled to the device with a 5/8 inch shackle.

**Channel Section Roller SA-1007 and SA-1008 (Fig. 41)**

The model SA-1007 is a rigging device intended to be attached to a horizontal channel beam with a flange width of 1 5/8 inches to 3 3/4 inches. The device should be used on structural steel channels only and not on formed sheet metal channels or channel shapes with a round heel. The SA-1008 is a rigging device intended to be attached to a horizontal I beam having a flange width of 2 1/4 inches to 4 inches. Both of these devices have a maximum rated working load of 1,000 pounds and are equipped with rollers to allow for horizontal travel along the beam. **The rollers are not equipped with brakes** and therefore the beam should be level with the web vertical. For beams running on a slope, refer to the adjustable I beam instructions for sloping beam rigging. The flanges of the beam should be uniform in width with no step downs, cutouts or other irregularities the roller to roll off. The ends of the beam should be restricted to prevent the roller from rolling off.

**Assembly Instructions:**

1. The roller has to be adjusted to fit the particular beam size that it will be rolling on.
2. To pull the vertically mounted flange roller out of the way, index the wire rope suspension eye from vertical to horizontal. The flange roller assembly can now be pushed down and forward until the two pins clear their set locations. The roller assembly can now be slid up and tilted back.
3. With the two horizontal rollers against the edge of the flange, the adjustable roller is adjusted to within 3/16 of an inch of the channel web. Secure the locating nuts.
4. Secure the vertical flange roller in essentially the reverse order as described in #2.
5. The nuts on the eccentrically mounted vertical rollers are loosened and the rollers are indexed until the vertical flange roller fits flat on the flange surface when the staging load is applied. In order to accomplish this, it will be necessary to adjust the rollers with no load so that the vertical flange roller rests on the flange so the outside edge of the roller is about .010 inch off of the flange. Tightening the nuts on the adjustable rollers securely after adjusting.

6. The locking ring will prevent the roller from falling off the beam when the staging weight is not hanging from the roller. With the set screw bolt loosened, the locking ring can be indexed on the shoulder. Pull the horizontal web roller down as far as it will go and then index the locking ring until the top edge of the roller is  $\frac{1}{4}$  inch above the corner of the channel. Tighten the set screw bolt.
7. The only way the roller assembly should be able to be removed from the beam now is to index the cable attachment from vertical to horizontal and while holding the assembly up with one hand push the flange roller down and forward until the pins clear the notches. Now the roller can be lifted up and tilted back allowing the roller assembly to be removed from the beam.
8. The assembly is reinstalled in the reverse order. When reinstalling on a beam other than the original, be sure the beam dimensions are the same or the roller is properly readjusted.

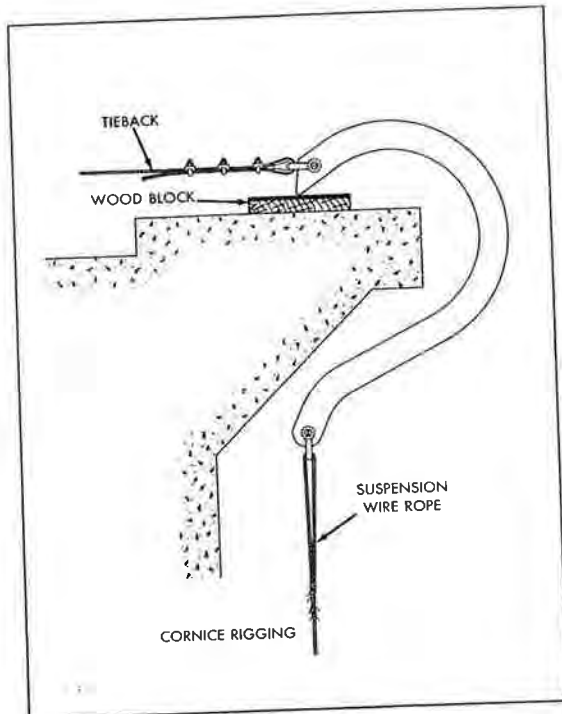


Figure 43

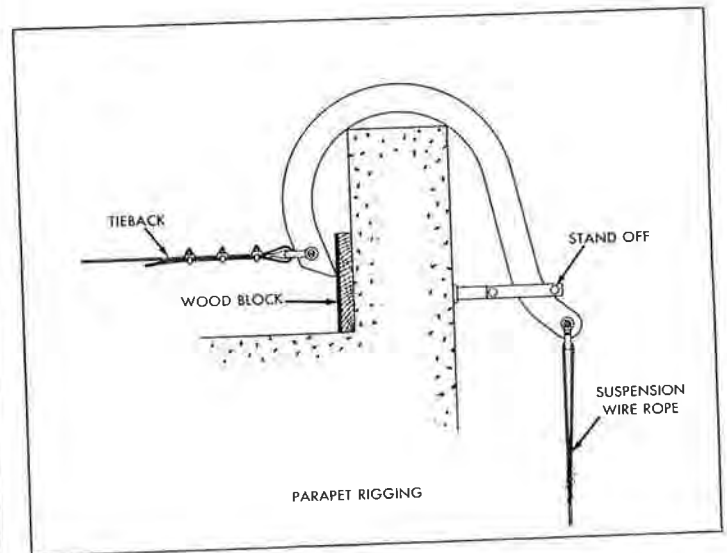


Figure 44

### **Cornice Hook SA-1017 and SA-1021 (Figs. 43 and 44)**

These devices are intended support for the vertically hung suspension wire rope of a staging from a cornice or a parapet wall of a building. The model SA-1017 will fit over a parapet or cornice with a thickness of up to 12 inches. The model SA-1021 can be used on wall thicknesses of up to 20 inches. Both models have a maximum rated working load of 1,000 pounds, and **It is important that the parapet or cornice be capable of sustaining the maximum rated load with a safety factor of four.**

#### **Assembly Instructions:**

1. The hook fits over the cornice or parapet wall with a block of wood planking between the point of the hook and the wall.
2. The suspension wire rope should be shackled to the hook and held out away from the wall far enough to allow it to pass straight through the wire rope guide of the staging. It might be necessary to use a standoff attachment on the hook to do this. The standoff is supplied with your Spider Staging Hook and clamps to the hook such as to hold the shackle away from the wall.
3. A tieback line of equivalent strength to the suspension wire rope from the hook to a structural portion of the building is necessary. It will be necessary to secure the tieback line with the use of cable clamps. Refer to the cable clamp instructions for assembly instructions.

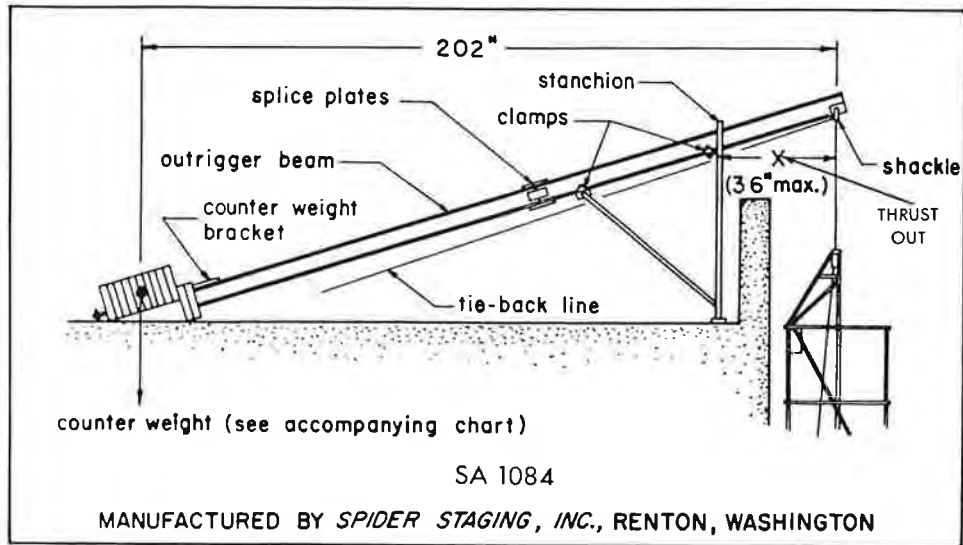


Figure 45

**Portable Roof Outrigger SA-1084 and SA-1088 (Figs. 45 and 47)**

This is a rigging device intended to support a vertically hung suspended wire rope of a staging from a flat roof or floor of a building. When properly counterweighted this device has a rated working load of 1,000 pounds. Care should be taken to insure that the building structure is capable of supporting the rated load plus the weight of the outrigger and counterweights.

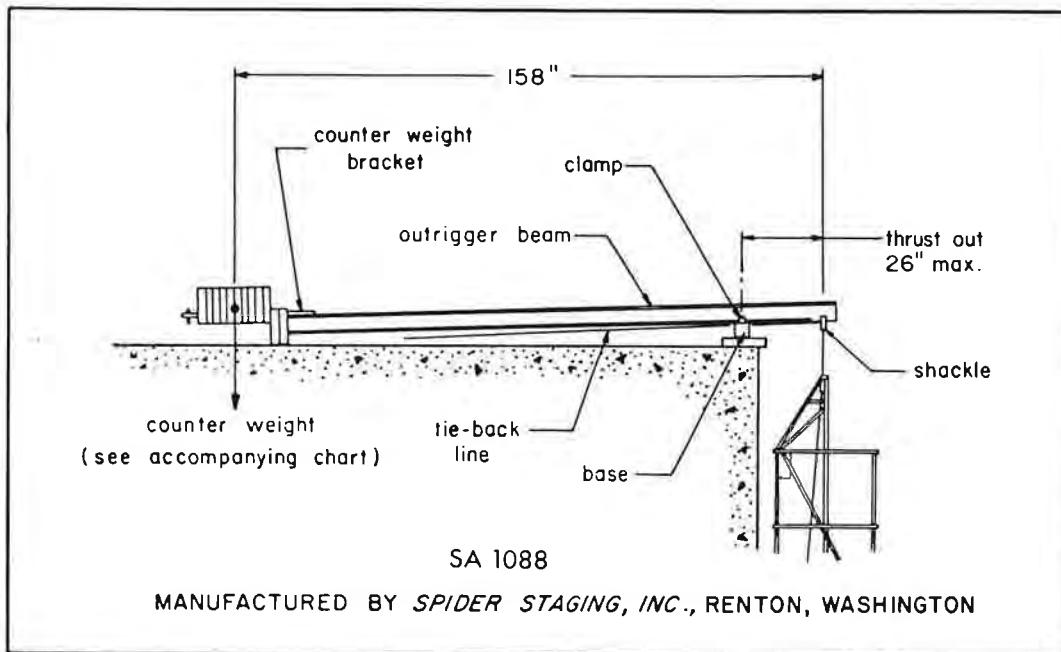


Figure 47

**Assembly Instructions for 16-foot Split Outrigger SA-1084**

1. Connect the two halves of the outrigger beam together with all the 1/2-16 NC x 1 1/2 Lg bolts required by the splice plate. The counterweight bracket goes up on one end and the 5/8 screw pin shackle hangs down on the other end.
2. If the stanchion is used, place it as close to the parapet wall as possible. The beam goes through the lowest position possible. The outrigger distance from the shackle to the stanchion should be kept as short as possible. Avoid cable guide pull in. DO NOT EXCEED 36 INCHES.
3. Tighten the clamps on the stanchion and the sway brace.

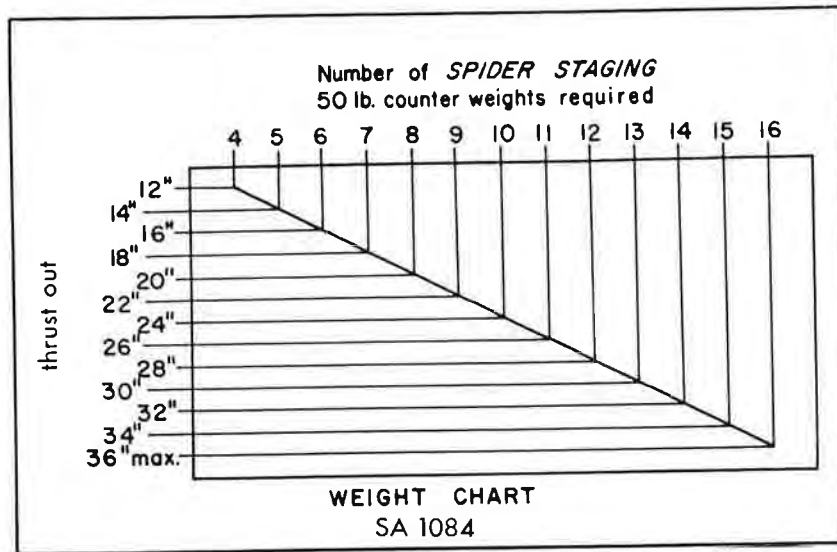


Figure 46

4. Determine the proper number of counterweights from counterweight chart decal. See Fig. 46. Place the first two counterweights down to support the end of the beam. The rest of the counterweights can be installed in the up position. Place the bolt and nut in the hole in the end of the bracket to insure the counterweights do not accidentally slip off.
5. The suspension wire rope is installed on the screw pin shackle. Be sure the screw pin shackle is installed in the hole provided at the end of the beam and that the pin is secured and tightened.
6. A safety tie-back line should be installed from the suspension rope eye to some substantial member of the building structure.

**Assembly Instructions for 12 Foot Outrigger SA-1088**

1. The wood block is clamped in place on the beam so there is enough thrust-out to allow the wire rope to pass straight through the Spider cable guide. DO NOT exceed 26 inches of thrust-out. The block should be placed about 2 inches back from the edge of the structure being rigged. If used on a building parapet wall, be sure the beam is supported by the block and not by the inside edge of the wall.
2. With the beam in place, obtain the proper number of 50 pound counterweights for the inches of thrust-out from the counterweight chart. (See Fig. 48) The first two counterweights should be threaded onto the bracket so they support the end of the beam. The rest of the weights can be threaded onto the bracket so they are up off the deck. When all the weights are installed, replace the nut and bolt on the end of the bracket so the weight cannot accidentally slip off.

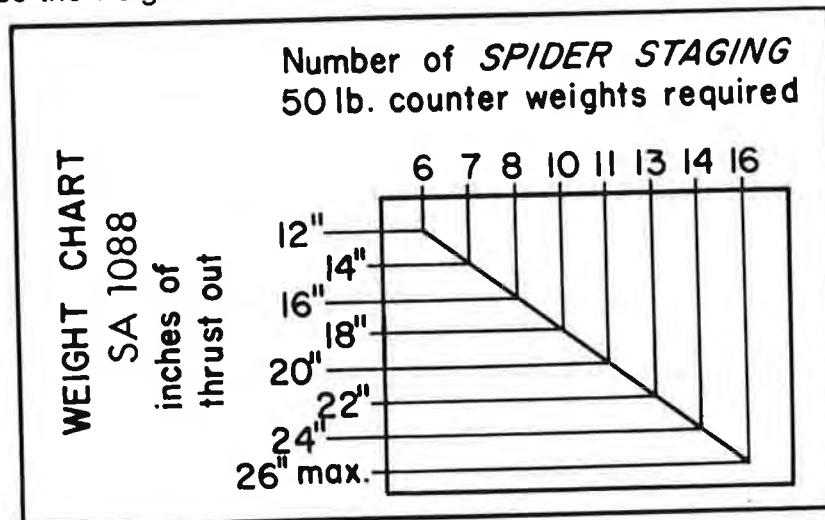


Figure 48

3. The suspension wire rope is installed on the screw pin shackle. Be sure the screw pin shackle is installed in the hole provided at the end of the beam and that the pin is secured and tightened.
4. A safety tie-back line should be installed from the suspension rope eye to some substantial member of the building structure.

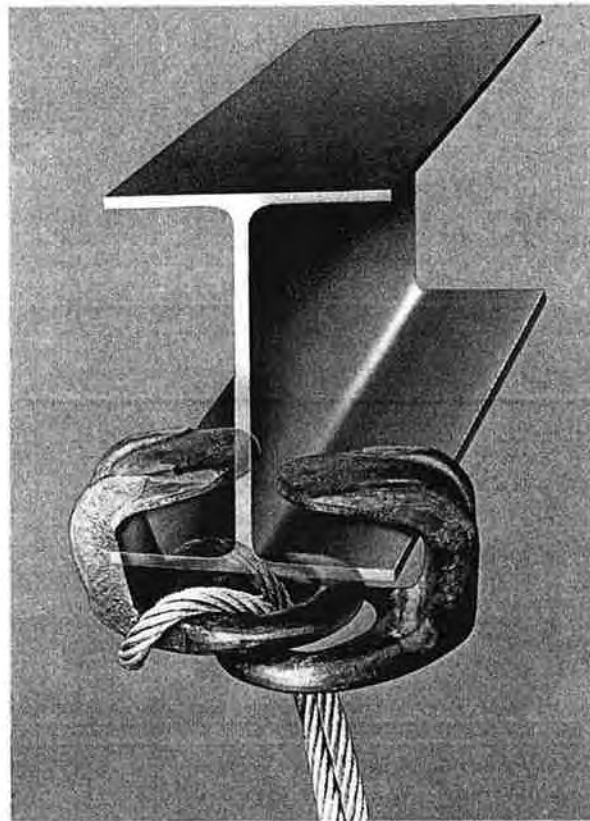


Figure 49

**Rigging Hook SA-1001 and SA-1073 (Fig. 49)**

These two devices are for structural steel applications, particularly I beam and H beams, and each has a maximum rated working load of 1,000 pounds. The two models are for different size beams. The SA-1001 is the larger of the two and can be identified by the slight dog leg shape of the eye. This hook should not be used on a beam with a flange width of less than 6 inches. The SA-1073 should not be used on a beam with a flange width of less than 4 inches.

**Assembly Instructions:**

1. Thread the eye of the wire rope up through both hooks.
2. The wire rope eye is pulled over the top of the second hook and seated into place in the back of the hook.

**Assemble to a Beam:**

3. To attach the hooks to a beam, the fixed hook is set over one edge of the lower flange of the beam while the sliding hook is set over the opposite edge. Pull down hard on wire rope to set the hooks in place.

**Single Hook Applications (Fig. 41):**

4. If the SA-1001 hook is to be used as a single hook for attaching to other beam rigging devices, the wire rope eye is threaded through the hook eye from front to back. The wire rope eye is then over the top of the hook and seated into place in the front of the hook. This particular method of hook attachment will cause the hook to roll in if the staging is run up against it.



**Shackle (Fig. 42)**

The shackle is a handy device for attaching the suspension wire rope eye to the rigging device when the rigging device does not provide for ready attachment. The  $\frac{5}{8}$  inch shackle is the minimum size that should be used and will fit most rigging devices.

**Installation Instructions:**

1. The wire rope can hang on either the shackle or the pin depending on the rigging device.
2. Be sure to screw the pin securely.
3. A piece of wire through the eye of the screw pin and around the shackle will help prevent the pin from becoming accidentally unscrewed.

**Tank Top Roller SA-1004**

This rigging device is intended to be used to support the suspension wire rope of a vertically hung staging from the roof of an atmospheric liquid storage tank. The maximum rated working load is 1,000 pounds.

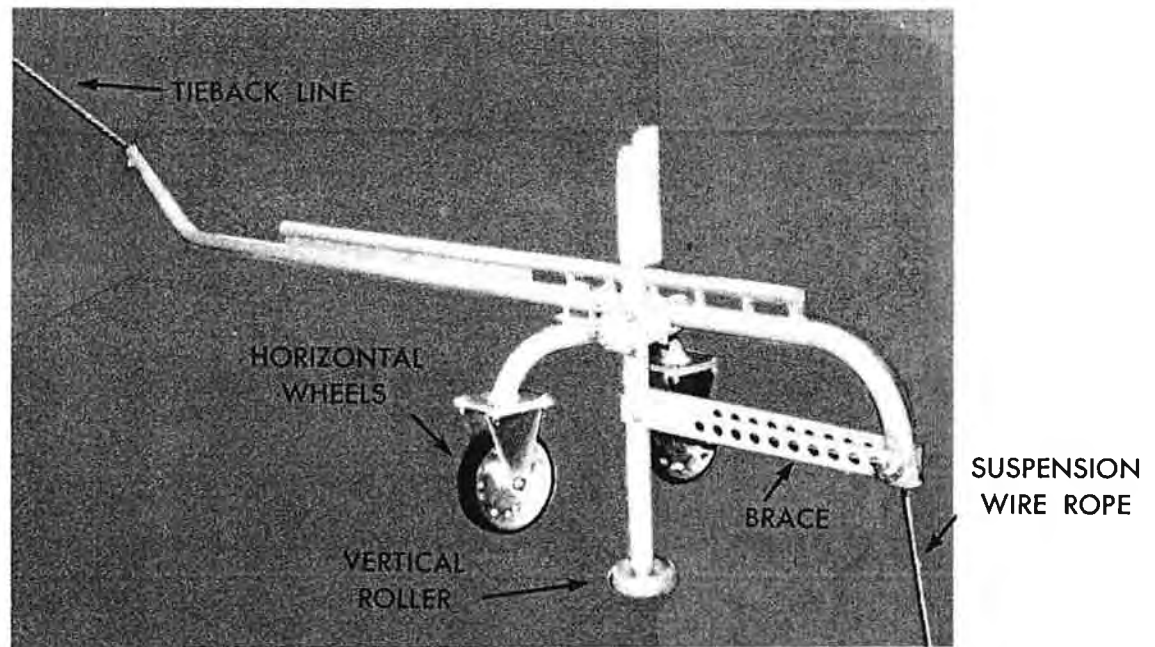


Figure 50

**Assembly Instruction (Fig. 50)**

1. Assemble the horizontal wheel assembly to the tank top bar with the U-bolts. The wheels should be at least six to eight inches in from the edge of the tank when the end of the tank top bar is placed far enough from the vertical wall of the tank to prevent pull-in of the staging guide.
2. The vertical roller bar is clamped to the tank top bar so it will roll on the vertical wall of the tank. The long roller on the vertical roller bar is used when the tank roof plate extends out beyond the tank wall. The long roller will roll on the edge of the roof plate.
3. The suspension line is threaded through the tank top bar and fastened to the rigging point or eye-bolt in the center of the tank.
4. The tank top roller is put in place with the vertical roller against the tank wall and the horizontal rollers on the tank roof. The staging is then suspended from the rigging. Move the roller assembly back and forth several feet to make sure the wheels track around the curve of the roof edge.
5. As the roller is moved around the tank it may be necessary to check the attachment at the center of the tank to see if it is pivoting properly. Also, the vent pipe or eye is not always in the center of the tank. In this case it may be necessary to adjust the roller assembly as it is moved around the tank.

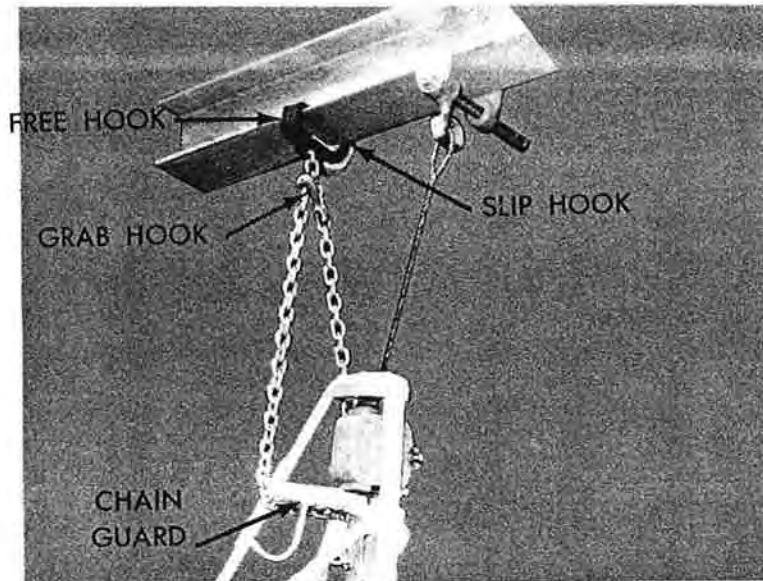


Figure 51

**Transfer Chain SA-1002 (Fig. 51)**

The transfer chain has a maximum rated working load of 1,000 pounds and is intended to support the weight of any model Spider Staging that is equipped with a chain guard on the fairlead. Its purpose is for changing the suspension wire rope rigging location when it is inconvenient or otherwise impossible to bring the staging down to the ground level.

**Assembly Instructions:**

1. The grab hook end of the chain is passed through both legs of the tripod at the chain guard location. Be sure the chain goes through both loops on the chain guard. The loops are supports for the chain when not in use. **DO NOT HANG FROM LOOPS.**
2. The grab hook is hooked onto any one link of the chain below the slip hook so as to form a loop around the two legs of the tripod. The length of the chain loop is determined by the rigging application.
3. The fixed eye hook (slip hook) is placed over one edge of the beam flange and the free hook is placed over the other edge.
4. The staging is lowered until its weight is on the chain and the suspension wire rope has enough slack to enable the rigging equipment to be moved. Be sure to hold the wire rope to prevent it from going slack on the drum. Use the tension holding device if necessary.
5. The only time it is necessary to remove the suspension wire rope rigging from the beam is to get around an obstruction.

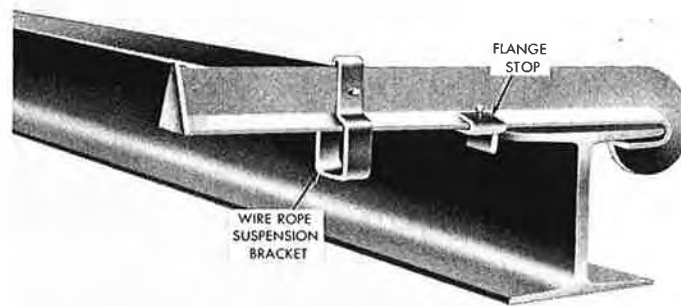


Figure 52

***Truss Outrigger (Top Cord and Bottom Cord) SA-1009 and SA-1009B (Fig. 52)***

This device has a maximum rated working load of 1,000 pounds and is intended for rigging on large horizontal I beam trusses. Especially useful when it is desired to hold the suspension wire rope a short distance away from the truss. The truss should be of adequate strength to sustain the applied load and to resist the torsional load that will be imposed upon it.

***Assembly Instructions:***

1. Loosen the flange clamp and slide it away from the hook end far enough to allow the outrigger to rest on the top flange of the truss beam.
2. Push the hook onto the flange of the beam and slide the flange clamp up to the opposite flange edge. Tighten the set screws on the clamp securely. The outrigger should be able to be lifted from the beam and replaced without further adjustment.
3. Adjust the wire rope suspension bracket to the desired portion and set the set screw securely.
4. The suspension line can be coupled to the bracket with a  $\frac{5}{8}$ " shackle.
5. The bottom cord outrigger assembles to the beam essentially the same except on the bottom flange.

r  
d  
f  
e  
  
e  
  
e  
r  
N  
  
e

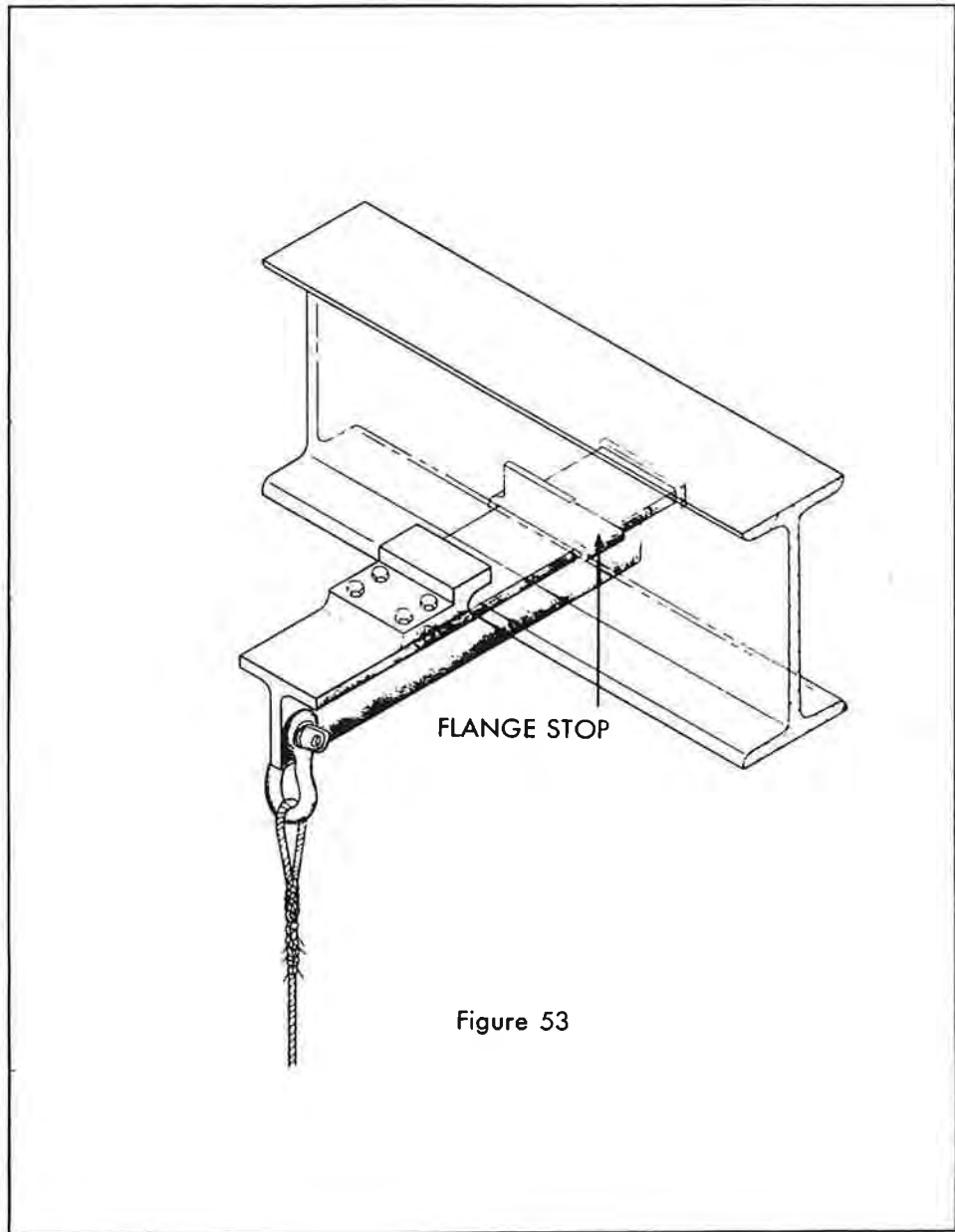


Figure 53

## Service Branches

BRANCH	ADDRESS	PHONE
Seattle	13536 Beacon Coal Mine Rd. South Seattle, Wa. 98178	(206) 255-8267
Atlanta	P.O. Box 43471 4507 F2 Mills Place S.W. Atlanta, Ga. 30336	(404) 691-6622
Boston	185 R Felton Street Waltham, Mass. 02154	(617) 899-8205
Chicago	1550 North Mannheim Road Stone Park, Ill. 60125	(312) 378-2151
Cleveland	66 Lincoln Ave., Bldg 1 Berea, OH 44017	(216) 234-5940
Detroit	11841 Brookfield Ave. Livonia, MI 48150	(313) 522-8235
Houston	3440 Yale Street Houston, Texas 77018	(713) 869-5764
Los Angeles	P.O. Box 1100 9922 Atlantic Avenue South Gate, Ca. 90280	(213) 564-3333
New York	10-02 34th Avenue Long Island City, N.Y. 11106	(212) 274-1313
W. Consho	220 Ford Street West Conshocken, Pa. 19428	(215) 828-4485
San Francisco	421 Littlefield Avenue South San Francisco, Ca. 94080	(415) 871-5866
St. Louis	3051 Bartold Avenue St. Louis, Mo. 63143	(314) 644-3080