

## Wire Rope Guide



### Preparation, Inspection, Rigging and Handling

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## Steel Wire Rope Requirements

### RECOMMENDED WIRE ROPE

Sky Climber has found the 5/16", (8.0 mm) wire rope to be the most effective for trouble-free operation. Please use only that rope which is recommended by the manufacturer.

5/16" (8.0 mm) 5 x 26 WS, PFC, XIP (or XXIP), RRL, preformed wire rope with a break strength of at least 10,500 lbs.

#### Definitions:

WS: Warrington Seal

PFC: Polypropylene Fiber Core

RRL: Regular Right Lay Steel

XIP: Extra Improved Plow

XXIP: Extra, Extra Improved Plow

### COMPLIANCE

Use only the specified wire rope with the correct diameter and specification in a Sky Climber Hoist. If further information is needed, please contact Sky Climber at 740-203-3900 or 800-255-4629. All wire rope used must conform to Federal Specifications RR-W-410P Type 1, General Purpose, Class 2. This rope is resistant to abrasion and crushing with medium fatigue resistance. The supplier should provide a Certification of Breaking Strength proving a minimum strength. The wire rope MUST have a breaking strength at least six (6) times the rated load of the hoist (6:1 Design Safety Factor).

Similar construction to be used for a 2,000 lb. rated hoist but breaking strength must exceed 12,000 lbs.

## Preparation and Initial Inspection

### TIPPING AND BRAISING

Braze a wire rope tip by applying braze to approximately 1/2 inch of tip (do not exceed 3/4 inch) and let it flow to all of the individual wires. Let the rope AIR COOL. Then grind the tip to a taper. Tip should resemble a pencil with the lead broken off.

- Always use 5/16 inch wire rope of the proper length and construction.
- 5/16" (8.0 mm) 5 x 26 WS, PFC, XIP (or XXIP), RRL, preformed wire rope
- Braze both ends a maximum of 1/2 inch in length.
- Air cool, then grind the tip to a tapered point.



### HOW TO CHECK FOR PROPER WRAPPING

Cut 50 to 100 feet from your new spool of specified wire rope. Braze both ends and run it through a hoist 10 times (no load needed). Check if the strands are separating above or below the hoist. If they DO appear to be opening, then the strands are improperly wrapped and will result in hoist jamming. Return the spool to your supplier.

### QUALITY

Wire rope must be of good quality and free of damage or defects. The wire rope must be inspected at the start of each shift by a competent person.

## Rigging and Handling

### RIGGING

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

- Use only 5/16 inch J-type wire rope clamps (fist grips) with a minimum of three clamps spaced from 2-4 inches apart.
- Do **NOT** use U-type clamps which can crush wires and reduce wire rope strength.
- Torque J-clamps to 30ft.-lb. at first loading. Check for tightness at the start of each work shift.

#### Clamps do loosen with use!

- After all J-clamps are placed, test for 100% proof load. Retighten clamps to specifications.
- Use a 5/16 inch thimble and a 5/8 inch shackle. (3/8" thimble may be used if desired)
- Use insulated thimbles when welding from work cage.
- Wire rope must support 6:1 safety factor (vs. hoist rating).
- A properly made 5/16 inch wire rope will have, depending on type of construction, a breaking strength ranging from 6,700 to 12,500lbs. (Sky Climber recommends the use of wire rope with strength greater than 10,500 pounds).
- Allow an extra 10 feet of wire rope to reeve hoist.
- **CAUTION:** If the wire rope length is less than required to LAND the suspended scaffold on a safe surface, after reeving the hoist, loop the bitter end of the wire rope and secure with a J-clamp. Failure to do so may result in personal injury or death. Remove J-clamp before de-reeving hoist.

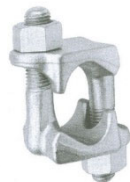
### FOUR WIRE SYSTEMS

Four Wire Systems can be used when it is necessary to protect workers where platforms, canopies or other obstructions are above them (vertical lifelines cannot be used). Contact your Sky Climber representative when Four Wire Systems are needed.

**NOTICE:** Always use proper hardware



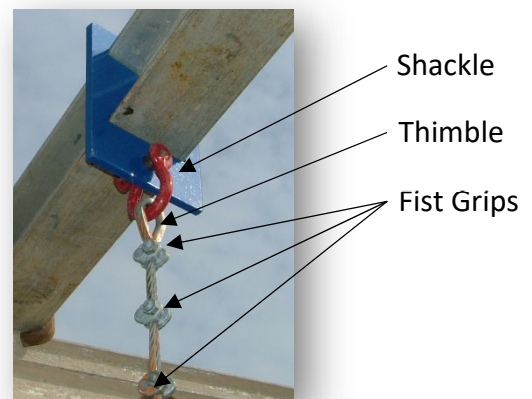
Shackle



Fist Grips  
(or J-clamps)



Thimble



Wire rope is an expendable item. It begins to wear when it is put into use. Do not use kinked, bird-caged, excessively worn or damaged wire rope. Such use may result in serious injury or death to yourself or others.

## **HANDLING AND STORAGE**

- Always wear gloves to protect your hands when working with wire rope.
- Protect rope from physical abuse, inclement weather, and corrosive materials.
- Do not drop wire rope from any height.
- Uncoil wire rope carefully to avoid kinking or inducing a twist.
- Do not uncoil by tossing coil over the edge of a structure.
- Avoid dragging wire rope in dirt or around objects that could scrape, crush, bend, or damage it.

## **Wire Rope Inspections**

### **FIELD INSPECTIONS**

Inspection **must** be performed by a competent person.

### **INSPECTION FREQUENCY**

Inspect **ALL** wire ropes at the start of each work shift and after any occurrence that could affect a wire rope's integrity. The entire length of the wire rope and all terminations should be inspected.

### **WIRE ROPE REPLACEMENT**

Wire rope is critical to safe and trouble-free operation. Replacement wire rope shall be to Sky Climber's specifications. Use of wire rope obtained from sources other than those specified by Sky Climber could result in serious personal injury or death, property damage, and/or equipment breakdown.

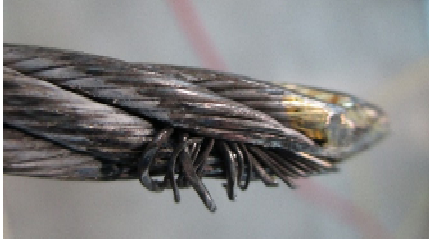
Wire ropes **MUST** be replaced if **ANY** of the following conditions exist.

- Any physical damage which impairs the function and/or strength of the wire rope.
- Kinks that might impair the tracking and/or wrapping of the wire rope around the drum or sheave of the hoist.
- Six randomly distributed wires broken in one rope lay, or three broken wires in one strand in one rope lay.
  - Although OSHA regulations allow some broken wires, Sky Climber recommends that wire rope be replaced if a single broken strand is found.
- Loss of more than one-third of the original diameter of the outside wires due to abrasion, corrosion, scrubbing, flattening, or peening.
  - In lieu of this criteria, wire rope should be replaced when overall diameter has been reduced by 5%.
- Heat damage caused by a torch, or any damage caused by contact with electrical wires.
- Damage caused by improper grounding when welding from a suspended platform.
- Evidence that the secondary brake has been activated during an over speed condition and has engaged the suspension rope.

**DEFECTS**

Examples of wire rope defects that require the wire rope to be replaced:

**Broken or damaged tips**



**Broken strands**



**Crushing**



**Kinking**



**"Milking"**



**Heat, Chemical or Electrical damage**



**Heat, Chemical or Electrical damage**



**Bird caging**

