WARRANTY

Express Warranty – MSA warrants that the product furnished is free from mechanical defects or faulty workmanship for a period of one (1) year from first use or eighteen (18) months from date of shipment, whichever occurs first, provided it is maintained and used in accordance with MSA's instructions and/or recommendations. Replacement parts and repairs are warranted for ninety (90) days from the date of repair of the product or sale of the replacement part, whichever occurs first. MSA shall be released from all obligations under this warranty in the event repairs or modifications are made by persons other than its own authorized service personnel or if the warranty claim results from misuse of the product. No agent, employee or representative of MSA may bind MSA to any affirmation, representation or modification of the warranty concerning the goods sold under this contract. MSA makes no warranty concerning components or accessories not manufactured by MSA, but will pass on to the Purchaser all warranties of manufacturers of such components. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AND IS STRICTLY LIMITED TO THE TERMS HEREOF. MSA SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Exclusive Remedy - It is expressly agreed that the Purchaser's sole and exclusive remedy for breach of the above warranty, for any tortious conduct of MSA, or for any other cause of action, shall be the repair and/or replacement, at MSA's option, of any equipment or parts thereof, that after examination by MSA are proven to be defective. Replacement equipment and/or parts will be provided at no cost to the Purchaser, F.O.B. Purchaser's named place of destination. Failure of MSA to successfully repair any nonconforming product shall not cause the remedy established hereby to fail of its essential purpose.

Exclusion of Consequential Damages - Purchaser specifically understands and agrees that under no circumstances will MSA be liable to Purchaser for economic, special, incidental, or consequential damages or losses of any kind whatsoever, including but not limited to, loss of anticipated profits and any other loss caused by reason of the non-operation of the goods. This exclusion is applicable to claims for breach of warranty, tortious conduct or any other cause of action against MSA.

For additional information, please contact the Customer Service Department at 1-800-MSA-2222 (1-800-672-2222).

MSA Sure-Climb™ Ladder Cable System P/N SFPLS350000

Application, Operation, Maintenance & Inspection Instructions Manual

Please read this manual. This information is vital to your safety.

⚠WARNING

THESE INSTRUCTIONS MUST BE PROVIDED TO THE USER. MANAGEMENT AND USER MUST READ AND UNDERSTAND THESE INSTRUCTIONS; FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.

Application

The Sure-Climb™ Ladder Safety System is designed to provide fall protection climbing or descending a variety of ladders or vertical structures up to 300' (91.4m) in height.* Applications include telecommunication towers, light poles, water towers, hydro electric towers, stacks or any other climbable structure that requires permanently placed climbing protection. When installed as a complete unit, this system complies to all applicable regulations and standards.

Function

Energy absorbing steel galvanized mounting brackets are secured at the top and bottom of the structure. Brackets are designed for ladder rungs but can be easily adapted to most structures. A 5/16 in. steel cable is suspended on the brackets, tensioned and contained approximately every 30 ft. (9 m) by cable guides which are designed to minimize cable vibration and wear.

A stainless steel cable slider (fall arrester) with internal spring-loaded cam can be attached or removed from the cable at any point. It is secured with a compatible carabiner, supplied with the slider, to the frontal attachment point on any approved ladder climbing harness. Once the carabiner is installed, the slider cannot be unintentionally removed from the cable.

The user is free to climb and descend with full use of the hands. In the event of a fall, the slider will quickly cam on the cable and arrest the fall. Free fall distance is minimized by a close coupled attachment. The top mounting brackets will deform during the fall, further reducing impact force on the worker and the structure. An uninjured worker can quickly recover and climb down the structure to safety with complete protection.

* Consult MSA for information on longer systems.

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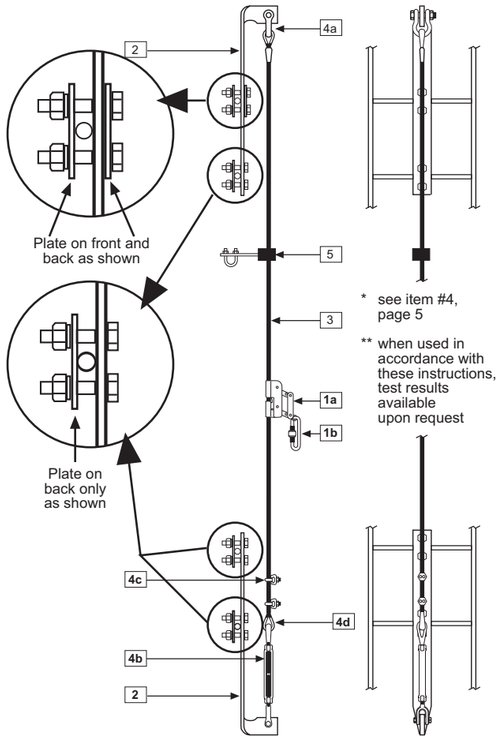
For More Information: Call (1-800-MSA-2222) or Visit Our Website at (www.MSAnet.com)

MSA Be Sure. Choose MSA. MINE SAFETY APPLIANCES COMPANY PITTSBURGH, PENNSYLVANIA, U.S.A. 15230

TWP 502 (L) Rev.1 © MSA 2005 Prnt. Spec. 10000005389 (R) Mat. SLCS001 Dol. SLCS001

Specifications

ONE PERSON SYSTEM* safe working load 310 lbs (140 kg)
** maximum arresting force 1200 lb (5.4kN)
** maximum slippage of slider 1 1/2 in. (4cm)
Compliance standard ANSI Z359.1-1992 CSA Z259.2-1979



* see item #4, page 5

** when used in accordance with these instructions, test results available upon request

1. **SFPLS350020 SLIDER (FALL ARRESTER) and carabiner (SOLD SEPARATELY)**
   - 1a. • stainless steel slider fits 5/16" (8mm) cable only
     • total coupling length 4" (10cm)
     • dimensions, 3" (76mm) x 5 1/8" (130mm) x 3/4" (19mm)
     • low maintenance, minimal moving parts
   - 1b. • steel oval auto-locking carabiner
     • min. breaking strength 5000 lbs (22.2kN)
     • individually proof loaded to 3600 lbs (16kN)
     • total weight of assembly 1.4 lbs (640g)
2. **SFPLS350001 CABLE ANCHOR BRACKET (2)**
   - energy absorbing galvanized steel with mounting hardware
   - 30" (76cm) x 2" (5cm)
   - max rung diameter with standard hardware 1-1/4" (3.2cm)
   - rung / structural member spacing
   - 11-1/2" (30cm) to 13" (33cm) OR 14-1/4" (36cm) to 15-1/2" (39cm) (see design statements)
   - total weight with mounting hardware 11 lbs (5kg) each
   - (2) 1/2" x 3" Grade 5 fully threaded machine bolts for top mount on top bracket
   - (6) 1/2" x 2-1/2" Grade 5 bolts for bottom mount of top bracket and both mounts of bottom bracket
3. **SFPLS351000 CABLE**
   - 7x19, 5/16" (8mm) galvanized steel cable
   - top end, Flemish eye splice and thimble
   - individual proof load certificate available at additional cost at time of order
   - bottom end brazed
   - minimum breaking strength 9800 lbs (4450kg)
   - weight 17.3 lbs / 100 ft (25.7kg / 100m)
4. **CABLE HARDWARE (all components steel galvanized)**
   - 4a. SRI19472 ANCHOR SHACKLE
     •1/2" (12mm) bolt type with safety pin
   - 4b. SRID31939 TURNBUCKLE
     • 1/2" (12mm) x 6" (15.2cm) jaw and eye
     • length 11-3/4" (30cm) to 17-3/4" (45cm)
   - 4c. SRI10079 U-BOLT WIRE ROPE CLIP (2)
     • 5/16" (8mm)
   - 4d. STH10-37657 THIMBLE
     • 5/16" (8mm) heavy duty pear total hardware weight 3 lbs (1385g)
5. **SFPLS350002 CABLE GUIDE [required every 30' (9m)]**
   - die cast rubber (Vibrathane®) galvanized steel with mounting hardware
   - excellent low temperature flexibility
   - dimensions 6" (15.2cm) x 2-3/4" (7cm)
   - maximum rung/structural member diameter 1-1/4" (3.8cm)
   - weight 3/4 lb (340g) each

Installation

⚠ **WARNING:** FAILURE TO READ, UNDERSTAND AND FOLLOW THESE GUIDELINES MAY CAUSE DEATH OR SERIOUS INJURY. **NOTE:** INSPECT SYSTEM FOR COMPLETENESS BEFORE BEGINNING. REFER TO INSPECTION CHECKLIST

1. Fit harness according to harness fitting instructions included with harness at time of purchase.

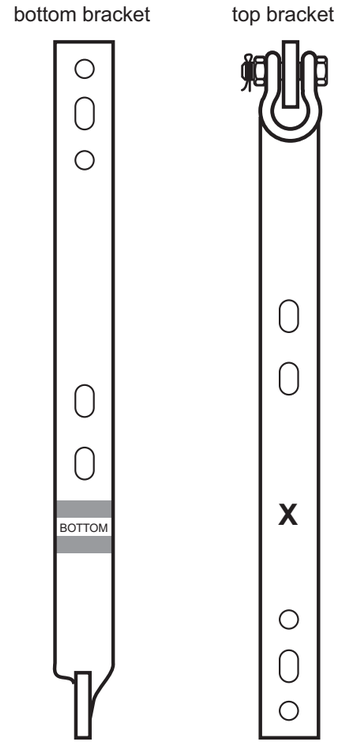
Top Bracket, Cable and Cable Guides

2. Lay cable on ground by rolling coil like a wheel.
3. Tie handline to cable (shackle) and top bracket.
4. Climb structure with the following items:
   - handline
   - cable guides and hardware
   - cable slider / carabiner
   - harness and tool pouch
   - positioning lanyard
   - 3/4 in. socket
   - 9/16 in. socket
   - ratchet
   - adjustable wrench
   - pliers
   - (first climb fall protection)
5. Use fall protection as outlined in company policy (a first climb system is recommended).
6. Belt off at top bracket location, haul cable and bracket.
7. Tie off shackle and cable.
8. Install top bracket centered over line of ascent (max torque, 75 ft-lbs; do not bend backing plate).
9. Install cable on bracket with shackle, ensure safety pin is installed.
10. Attach slider assembly to cable and harness just below bracket according to installation procedure.
11. Unbelt and descend to first cable guide location (20-30', 7-9 m, depending on height of structure).
12. Belt off and install first cable guide (max torque, 30 ft-lbs; do not bend backing plate).
13. Install guide with U-bolt centered over line of ascent (cable wlll be slightly offset).
14. Place cable in guides before descending to next bracket location (30 ft / 9 m).
15. Alternate orientation of cable guides at each location (ie. cable slot on left then right).
16. Last guide is installed half way between second last and turnbuckle.

IMPORTANT NOTICE

Additional instructions for the MSA Sure-Climb Ladder Cable System. This information is vital for the safety of the System.

This system consists of two brackets, a top bracket and a specially marked bottom bracket. It is critical to the performance of the system that the top bracket is mounted at the top of the system. The bottom bracket is easy to identify, it is stamped with the word "BOTTOM" and is marked with blue strips. The bottom bracket is also shipped with the turnbuckle attached. The system must be installed with the top bracket in the proper orientation. Included is a line drawing showing how to identify the top and bottom bracket.



The top bracket must be positioned at the top of the system! This is important for the function of the device. Failure to follow these instructions could cause injury or death! The top bracket is marked with an "X" as illustrated.

Inspection Checklist

Location _____

Date _____

Inspected By _____

Quantity	Part Number	Description	Good	Damaged, worn, altered	Missing	Remove from service	Comments
1	SFPLS350020	SSC350 SLIDER #					
1		oval auto-locking carabiner					
1		Compliance label*					
1	SFPLS350001	Cable Anchor Bracket, Bottom					
1	SFPLS350001A	Cable Anchor Bracket, Top					
4		backplate					
8		1/2 in. x 2-1/2 in. bolt					
8		lock washer					
system length	SFPLS351000	STEEL CABLE					
1		Flemish eye splice termination					
1	SRI19472	ANCHOR SHACKLE					
1		safety pin					
1	SRID31939	JAW AND EYE TURNBUCKLE					
1		3/8 in. x 1-5/8 in. bolt with nut					
2	SRI10079	U-BOLT WIRE ROPE CLIP					
1	STH1037657	CABLE THIMBLE					
every 30'	SFPLS350002	CABLE GUIDE					

Installation con't

Bottom Bracket

1. Install bottom bracket with pre-installed turnbuckle (top of bracket should be at chest height or lower).
2. Back off turnbuckle to 1/2 length.
3. Thread end of cable around thimble pre-installed on turnbuckle eye.

⚠ WARNING: When threading end of cable, clips must not be applied within 12" (30.5cm) of the brazed end.

NOTE: The cable on all systems actually has 5 feet of additional cable supplied to allow the system to be grounded and to account for measurement errors. So, for example, a 200 ft system is actually 205 ft long.

4. Hand tighten cable and attach first wire rope clip 5 1/4 in. (13.3cm) from thimble.
5. Apply U-bolt over dead end of wire rope: live end rests in saddle.
6. Tighten nuts evenly, alternate from one nut to the other until reaching the recommended torque (30 ft-lbs).
7. Apply the second clip as near to the thimble as possible, tightening as before.
8. Tension cable to approximately 400 lbs with tensioning device (tensioning device not supplied).
9. Paint threads on turnbuckle to detect tampering.

⚠ WARNING: AN UNDER-TENSIONED CABLE WILL VIBRATE EXCESSIVELY RESULTING IN CABLE DAMAGE. OVER-TENSIONING WILL INITIATE BRACKET DEFORMATION AND REDUCE SHOCK ABSORBING ABILITY OF TOP BRACKET.

Cable Slider/Carabiner

1. Remove carabiner from slider; hold slider in one hand with cams in activated position, open carabiner gate and remove from slider carabiner hole **(1)**. To open auto-locking carabiner, twist black sleeve 1/4 turn counterclockwise with thumb and forefinger and hold while depressing gate.

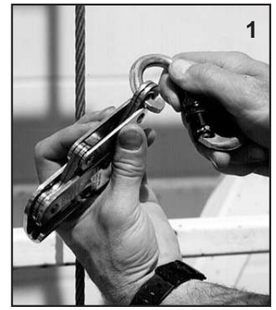
NOTE: This connection is intentionally designed with close tolerances to discourage removal by an untrained person.

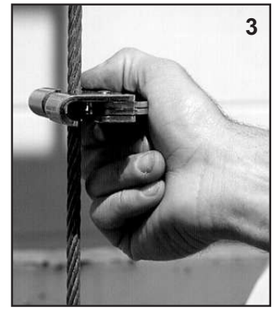
2. Collapse slider as shown in **(2)** to expose cable slot. Check "up arrow" on right side of device to ensure the slider is correctly orientated.
3. Rotate slider 1/4 turn clockwise and insert cable **(3)**.
4. While collapsed, return to upright position **(4)** and release. The slider will grip the cable as shown **(5)** if correctly installed.

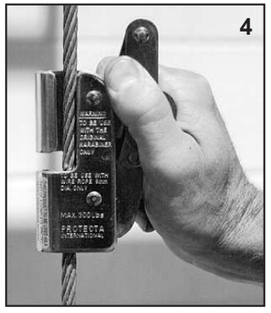
⚠ WARNING: IF SLIDER IS INSTALLED UPSIDE DOWN, IT WILL NOT GRIP THE CABLE WHEN RELEASED AND WILL NOT ARREST A FALL. ALWAYS CHECK ORIENTATION OF UP ARROW BEFORE RELEASING DEVICE.

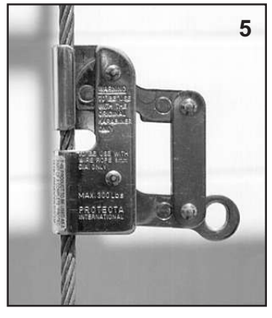
5. While supporting slider on cable, install carabiner **(6)**.
6. Turn carabiner over to allow easier connection to the harness **(7).**
7. Connect carabiner to frontal Dee ring on harness **(8)**

⚠ WARNING: CONNECT HARNESS TO SLIDER ONLY WITH CARABINER SUPPLIED. A LONGER COUPLING WILL DRASTICALLY INCREASE THE FORCE APPLIED TO THE SYSTEM IN THE EVENT OF A FALL.









Operation

1. The structure can be climbed normally. Tall users should refrain from leaning back to avoid excess friction between the cable and slider.
2. Cable can be removed from cable guides hands-free. Pass the bracket with the upper torso leaning to the open side of the guide. The cable will release on it's own. Leave the cable released from the guide until the descent.
3. Pauses in climbing or work performed while connected to the system should be protected by a work positioning system.
4. Do not disengage from the system while exposed to a potential fall before belting off or attaching to another approved fall arrest device.

⚠ WARNING: DO NOT HANG ON THE SLIDER. THE SLIDER IS DESIGNED AS A FALL ARREST DEVICE ONLY.

Inspection

General

1. The MSA Sure-Climb™ System shall be inspected by the user before each use, and additionally by a competent person other than the user at intervals of not more than one year. Inspections must be recorded in the Inspection Checklist.
2. When inspection reveals defects, damage, or inadequate maintenance of any component in the system, the component affected shall be removed from service and undergo adequate corrective maintenance before return to service. Removal from service may imply that defects or damage will result in retiring and replacing some components.
3. Remove from service if:
   - slider label is illegible or absent;
   - there is evidence of defects or damage to hardware elements including cracks, sharp edges, deformation, corrosion, chemical attack, excessive heating, alteration or excessive wear;
   - there is evidence of improper function, improper fit, misuse or alteration of any mechanical component;
   - there are parts missing;
   - the system has been subjected to the forces of arresting a fall.
4. MSA or persons or entities authorized in writing by the manufacturer, shall make repairs to equipment. No unauthorized repairs and/or modifications are allowed.

Procedure

Inspections should focus on tampering that may have occurred at the base of the system as well as damage to the cable from wind or unreported falls.

1. Harness should be inspected in accordance with instructions supplied with the product.
2. Inspect brackets, wire rope clips and turnbuckle assembly at base for loose or missing parts. Ensure that turnbuckle is adjusted to proper tension as indicated by markings on threads. Observe if cable is trapped by cable guides. If cable has been free to vibrate in wind, particularly over long periods, assume that there has been some cable damage.
3. Each worker requiring climbing protection should have a dedicated slider/carabiner and be responsible for inspection of that unit. Check slider and carabiner for smooth, clean action. Sticky gate or cams require lubrication or replacement. Replace entire unit if carabiner gate does not close properly or if slider cam is jammed. See Maintenance and Storage for instructions.
4. Install slider and carabiner. Pull down sharply on slider to ensure camming is effective.
5. During climb, inspect cable and cable guides for damage, missing parts or loose hardware.
6. Check that shackle at top anchor is not loose and ensure safety pin is installed. Inspect top anchor bracket for loose or missing hardware and deformation. If the bracket is bent assume the system has sustained a fall. Descend with care, tag "do not use" and report findings to the supervisor. (see design statements, item 18)

Maintenance and Storage

1. Maintenance and storage of equipment shall be conducted by the user's organization in accordance with MSA instructions. Unique issues, which may arise due to conditions of use, shall be addressed with MSA.
2. Equipment which is in need of or scheduled for maintenance shall be tagged as "do not use" and removed from service.
3. Store in a clean dry area free from excessive heat, steam, sunlight, harmful fumes and corrosive agents.
4. Periodically lubricate carabiner gate and slider with a light oil. Remove excess to avoid contamination.

Design Statements

1. The MSA Sure-Climb™ Ladder Safety System shall comply to and be used with consideration to all government or other applicable regulations and standards.

2. MSA Sure-Climb™ Ladder Safety System components cannot be used for other applications or in conjunction with other fall protection systems. CSA certification does not apply unless equipment is purchased and installed as outlined in these instructions. No additional equipment can be used in the system without written approval of MSA Surety. If the buyer chooses to disregard this warning, the buyer assumes responsibility for the integrity of the entire system.

3. Any component that has sustained the force of arresting a fall shall be removed from service. A qualified person shall inspect and recertify the system prior to returning it to active service.

4. Although several climbers can use the system to access a work area, the system is designed to be used by a single person at any one time.

5. The Sure-Climb™System must be attached to a structure that is capable of supporting 5000 lbs (2270kg).

6. A worker who has been incapacitated by an injury or medical condition and who is suspended by the system, hung up in the structure or belted off, must be rescued immediately. The MSA Sure-Climb™ Ladder Safety System is a fall arrest system only. It is the responsibility of the users employer to devise a rescue method that will effectively evacuate a worker. Rescue equipment and trained personnel must be available during climbing on the structure.

7. All potential users of this equipment and users management must read and understand the instructions; failure to do so could result in serious injury or death.

8. Do not install or store the system near corrosive chemicals, flammable materials, explosives, or other elements that may damage components or injure the operator.

9. Do not allow the wire rope to drag through dirt or debris that could cause damage or poor operation.

10. Use the system only with an approved ladder climbing harness.

11. Correct connection of fall protection system to user should always be visually confirmed by another worker.

12. Standard brackets will fit rung or structural supports to a maximum of 1 1/4 in. (3.2cm) diameter. As the rung diameter decreases, a wider range of rung spacings can be fitted. Contact MSA for more exact measurements and custom hardware if required.

13. Anchor brackets must be installed in line with expected impact force. The rungs or structural members must be perpendicular to the bracket.

14. For effective protection, the angle of the climbing surface must be more than 80 degrees and less than 100 degrees. As the climbing angle deviates from the vertical there is more risk that the cam will not engage during the fall or that the user will fall away from (under) the structure. Contact MSA for recommendedmodifications for non-vertical applications.

15. Cable guides are designed to dampen excessive vibration in the cable. Failure to use cable guides may result in damage to the cable or will cause interference with electronic equipment on towers. Install guides approximately 30 feet apart (see chart below); this distance can be staggered somewhat to prevent harmonic effects on the cable.

16. Flemish eye splice on wire rope cable does not significantly reduce the strength of the cable.

17. Deformation in the top bracket is usually caused by a fall or severe overtensioning of the cable. It will not absorb fall energy according to design specifications and must be replaced.

18. The Sure-Climb™ System is available in heights up to 300 ft. (91.4m). Installations on higher structures is possible with special considerations and approval from MSA.

* ANSI Z359.1-1992 specifies 3600 lbs (16kN) with certification by an engineer.

CABLE GUIDES REQUIRED

Structure might be different than cable length supplied.
Install guides according to installation instructions.

CABLE LENGTH SUPPLIED (ft)	GUIDES	CABLE LENGTH SUPPLIED (ft)	GUIDES
10-30	0	160-180	5
40-60	1	190-210	6
70-90	2	220-240	7
100-120	3	250-270	8
130-150		280-300	