



# **USE INSTRUCTIONS**

## **4050 SKYLOC™ SELF-RETRACTING LANYARD**

Complies with ANSI Z359.1-1998, OSHA 1926, and other applicable regulations and requirements.

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## Inspection Log for Skyloc™ Self-Retracting Lifelines

Company: \_\_\_\_\_ Location: \_\_\_\_\_ Date: \_\_\_\_\_  
 Job Site: \_\_\_\_\_ Skyloc™ Part Number: \_\_\_\_\_ Serial Number: \_\_\_\_\_

Describe non-conforming conditions in the boxes below:

Inspection Criteria	Missing parts	Corrosion	Deformed Parts	Cracked Parts/ Broken Wires	Excessive Loading
Skyloc™ ID Tag and Warning Label?					
S/N ID Tag present?					
Housing?					
Housing Fasteners?					
Snaphook?					
Rubber ball?					
Wire rope?					
Wire rope ferrules/ fittings?					
Extraction/Retraction?					
Lock-up?					
Handle?					

Has a Rescue Plan been prepared? \_\_\_\_\_

Is Rescue Equipment on hand? \_\_\_\_\_

Have workers been trained in the Rescue Procedures and been given a copy of the Rescue Plan? \_\_\_\_\_

## User Instructions Skyloc™ Self-Retracting Lanyard

*This manual is intended to meet the Manufacturer's Instructions as required by ANSI Z359.1 and ANSI A10.32-2004, and should be used as part of an employee Training program as required by OSHA.*

**WARNING:** *This product is one part of a personal fall arrest, restraint, work positioning, personnel riding, climbing, or rescue system. Without the other necessary components in such sub-systems the Self-Retracting Lanyard itself serves no useful purpose. The user must follow the manufacturer's instructions for each component of the system. These instructions must be provided to the user before using this product and retained for ready reference by the user. The user must read, understand (or have explained), and heed all instructions, labels, markings and warnings supplied with this product and with those products intended for use in association with it before using this equipment. The Manufacturer's instructions must be followed for proper use and maintenance of this equipment. National standards and state, provincial and federal laws require the user to be trained before using this product. This manual can be used as part of such user safety training program that is appropriate for the user's occupation.*

**IMPORTANT:** *Alterations or misuse of this product or failure to follow instructions may result in serious injury or death. If you have questions on the use, care, or suitability of this equipment for your application, contact RELIANCE Industries, LLC for information.*

### DESCRIPTION

The Skyloc™ Self-Retracting Lifeline (SRL) is designed to be a component in a personal fall arrest systems (PFAS). It may be used in most situations where a combination of worker mobility and fall protection is required (i.e. inspection work, general construction, maintenance work, oil production, confined space work, etc.). The Skyloc™ SRL is designed for use by a single person weighing 310-lb. (body weight plus tools). Protected by a rugged steel housing, the Skyloc™ Self-Retracting Lifeline features a cam-action pawl system ensuring positive

lock-up even in the most demanding environments. The standard cable length of 50-ft. allows the Skyloc™ to be mounted high overhead in areas where there are no other convenient anchor points for personal fall arrest means. The Pelican™ Swivel Snaphook's unique hook body design prevents the accidental "false engagement" to the harness dorsal d-ring, while providing an easy to see load-indicator showing whether the Skyloc™ has been exposed to a fall arrest load and needs to be serviced.

### **Specifications**

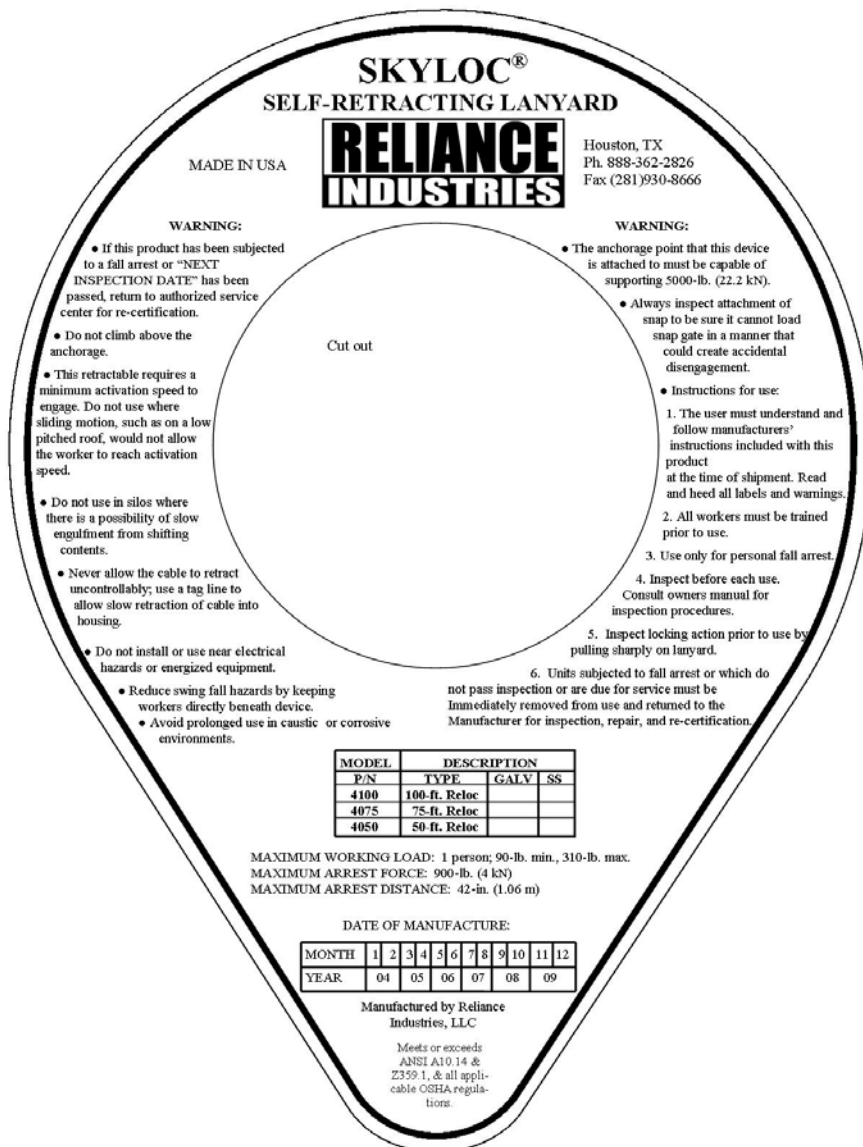
Materials: Housing: steel, Zn plated  
Wire rope: 3/16-in. 19x7, galvanized (4050-1),  
stainless steel (4050-2)  
Pelican™ Swivel Snaphook, steel, Zn plated

Weight: 28-lb.  
Housing size: 15-in. L x 9-in. W x 4-in. H  
Unit Length (housing handle to snaphook): 30-in.

Capacity: 1 worker, 310-lb. total weight  
Maximum Arrest Force (MAF): 900-lb.  
Maximum Arrest Distance: 42-in.

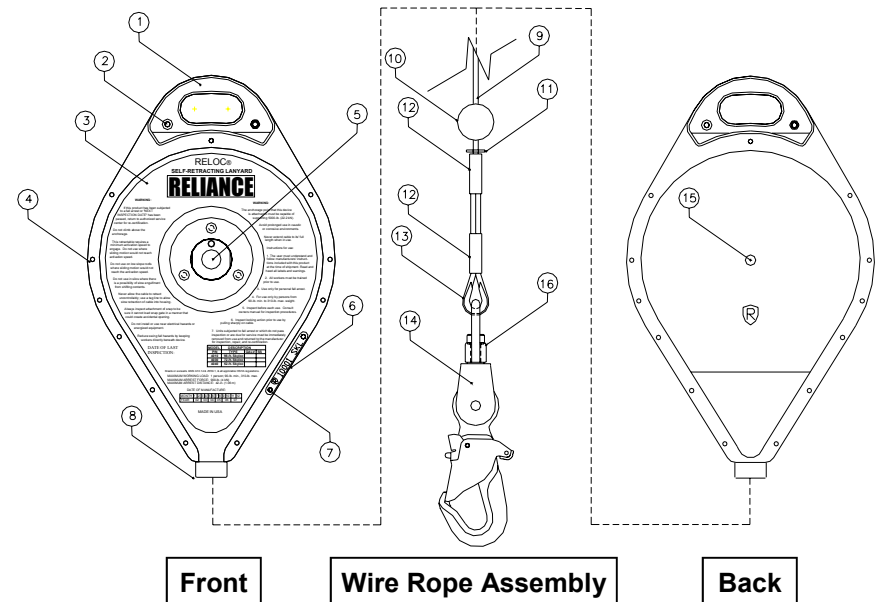
**If you have any questions regarding the correct installation or use of this product DO NOT USE. Call Reliance Industries, LLC Engineering at Ph. (303) 424-8650 or Fax (303) 424-8670.**

## Marking and Labels of the Skyloc™ Self-Retracting Lifeline



## Identifying Components of the Skylock™ Self-Retracting Lifeline

The components of the Skyloc™ Self-Retracting Lifeline are (see Figure 1 below):



**Figure 1—Skyloc™ Components**

1. Handle
2. Handle screw and nut (2 places)
3. Label
4. Housing screws and nuts (12 places)
5. Torque nut cover
6. Serial number label
7. Label rivet
8. Nozzle
9. 3/16-in. wire rope
10. Rubber ball
11. Washer
12. Ferrules (2 places)
13. Thimble eye
14. Pelican™ Swivel Snaphook
15. Rear Cover Acorn Nut
16. Load Indicating Swivel

### **Anchorage Points**

Anchorage and attachment components must be able to withstand a sustained force of 5000 lbs. Anchorages selected for personal fall arrest systems (PFAS) shall have a strength capable of sustaining static loads, applied in the directions permitted by the PFAS, of at least:

a) 3,600-lb. when certification exists, or b) 5,000-lb. in the absence of certification. When more than one PFAS is attached to an anchorage, the anchorage strengths set forth in a) and b) above shall be multiplied by the number of personal fall arrest systems attached to the anchorage.

Anchorage connectors must be selected carefully. Eyebolts should not be used if they will be loaded at an angle to their axis, unless the loads fall within design parameters for such use. Weld-on lugs should not be less than 1/2-in. in width and should not be made of steel with less than 50,000-PSI yield strength. The proper stress areas and weld areas must be calculated to assure proper safety. If in question, consult Reliance Industries Engineering for proper design requirements.

### **Consideration of Workplace Geometry**

A careful examination must be made of the workplace by a Competent Person before the selection or installation of Skyloc™ anchorage points. Consideration must be given both to the movement of materials (Will cranes be used to “fly” equipment or parts in?) and workers around the workplace to ensure that potentially hazardous situations are avoided.

Areas where overhead cranes or gantries are used must be examined to verify that neither the moving loads or lifting wires can interfere or snag the extended wire rope of a Skyloc™ SRL causing a worker to be dislodged.

Overhead lighting and electrical cables must also be identified to insure that installation of the SRL is sufficiently far enough away so that the cable can never contact the wire creating an electrocution hazard.

Consideration of obstacles present in the work area must include ALL

Any Skyloc™ Self Retracting Lifeline that has the load indicator of the swivel snap showing (deployed) has seen a fall-arrest load and must be returned to Reliance Industries for evaluation, repair, and recertification. Units must not be reset in the field or allowed to be used until recertification has taken place.

Users should be familiar with pertinent regulations governing the use of this personal fall arrest system and its components. Only trained and competent personnel should install and supervise the use of this system.

Use only Reliance Industries supplied or qualified compatible components.

ble for verifying or validating the suitability and compatibility of this product for use in his application or system.

Whenever questions regarding proper use or compatibility arise, please contact Reliance Engineering at (303) 424-8650.

### **Warnings and Limitations**

Proper care should always be taken to visually scan the work area prior to use. Remove any obstruction, debris, and other materials from, and beneath the work area that could cause injuries or interfere with the operation of this system. Be cautious of swing fall hazards if working anywhere but directly below the anchorage point of the SRL. Be aware of the movements of others using SRLs or shock-absorbing lanyards in close proximity, knowing that if the lines become crossed or tangled and a fall occurs, the sudden motion could pull others off balance and make rescue more difficult.

Do not release the wire rope when extended and allow it to retract back into the unit uncontrollably. Releasing the cable and allowing it to reel itself in uncontrollably could cause damage to the Skyloc™. The wire rope should be allowed to retract slowly into the unit under its' own power. If the unit is too far overhead to permit this, then a tagline should be attached to the snaphook to help control the line retraction.

In the course of use, do not allow the wire rope to wrap around arms or legs, or become entangled in clothing or other items. In the event of a fall, they could cause injury, or prevent the Skyloc™ from functioning properly.

Do not tie knots in the wire rope of the unit. Tying knots in wire rope reduces the overall strength of the wire rope. Only connect to the Skyloc™ by using the Pelican™ swivel snap to connect to the dorsal (back) d-ring of a full-body harness.

Do not cross lines with another worker. Should the lines become entangled, a fall by one worker could dislodge others. Plan and place SRLs to prevent workers from crossing safety lines.

locations that COULD be reached if the entire length of wire rope were extracted from the SRL. Obstacles that pose no threat when a worker is on a platform, for example, may be exposed to a dangerous situation should he climb downwards or moves laterally towards another work-surface.

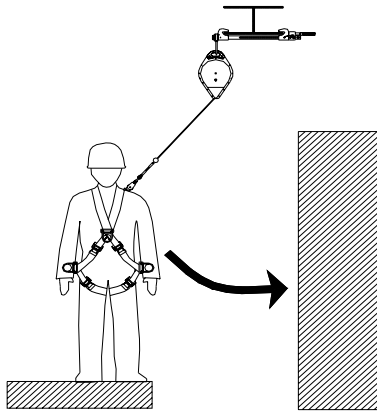
The wire rope used in SRLs should be protected from damage when passing over sharp edges or near objects where the cable could become lodged or pinched through the use of edge protectors that are not abrasive to the lifeline. When significant changes in angle are encountered, directional sheaves should be used or the SRL anchorage point should be relocated to a location that prevents contact with the sharp edge.

Avoid installations where debris, contaminants, and other objects falling from above could damage the Skyloc™ or its cable.

Extreme caution must also be exercised when considering the use of the Skyloc™ SRL as a means of fall protection in areas where a user is working on a sloped surface such as a pitched roof or tank bottom, or on piles of loose material (such as grain or sand) that may shift or slide. If the user falls or begins to slide on such a surface, the Skyloc™ cable may not be extracted fast enough for the device to lock-up (typically, cable must be extracted around 4.5-ft/sec. for the unit to lock-up,) and arrest the sliding fall. The user might continue to slide over a roof edge, or into some other hazardous zone causing injury or death. The use of a travel restriction system or a work-positioning system may be more appropriate for such locations and should be considered first. Contact Reliance Engineering for help in selecting equipment for these applications.

### **Swing Fall Hazards**

Care must also be taken to recognize the possibility of swing falls that may occur when the Skyloc™ Self-Retracting Lifeline is located above the worker, but not **DIRECTLY** overhead (as shown in Figure 2). If the worker falls in such a situation, there is a possibility of a swing fall that may bring him into contact with objects below or to the side of him, possibly causing serious injury or death. These objects must be removed



**Figure 2—Swing Fall Considerations**

or the SRL and/or anchorage point be repositioned directly over the worker to help reduce the risk of a swing fall. A Competent Person or Qualified Engineer should always be consulted if there exists a possibility of a swing fall occurring.

The worker must be trained to understand that the width of his allowable work area can never exceed the anchorage height of the retractable over his walking/working surface. For example, if a worker in a building with 10-ft. floors walks 20-ft. away from his anchorage he could fall and strike the floor below before his fall would extract any cable from the retractable.

If an object is in his swing path (or that of the cable) a hazardous situation exists. Two factors become evident in this situation.

First, due to the swing fall, horizontal speed of the worker may be high enough to cause injury if an obstacle in the swing fall path is struck by either the user or the cable. The hazard increases as the initial (before fall) length of extended cable is increased and as the initial angle which the cable makes with the vertical is increased. In the extreme case where a user has extended 90 feet of cable at an angle of 30 degrees with the vertical, the user can theoretically develop a horizontal speed of about 19 mph. By comparison, if the user has extended 50 feet of

Before every use, the worker should extract all of the cable and examine it for defects that would affect its overall strength. These defects would include but are not limited to weld strikes or burns, kinks, bends, “bird-caging”, bends, bulge spots, outer diameter thinning, broken or snagged wire strands, etc. If a wire rope is showing evidence of any of these defects, the unit should be removed from service immediately until the wire rope is replaced and re-certified. The ferrules of the wire rope by the snaphook should also be examined for cracks or deformation.

After the wire rope has been allowed to retract into the unit, the snaphook should be pulled sharply to verify proper lockup of the unit. If unit fails to lockup when pulled quickly, or if the cable fails to retract properly after lockup, the unit must be removed from service until repaired.

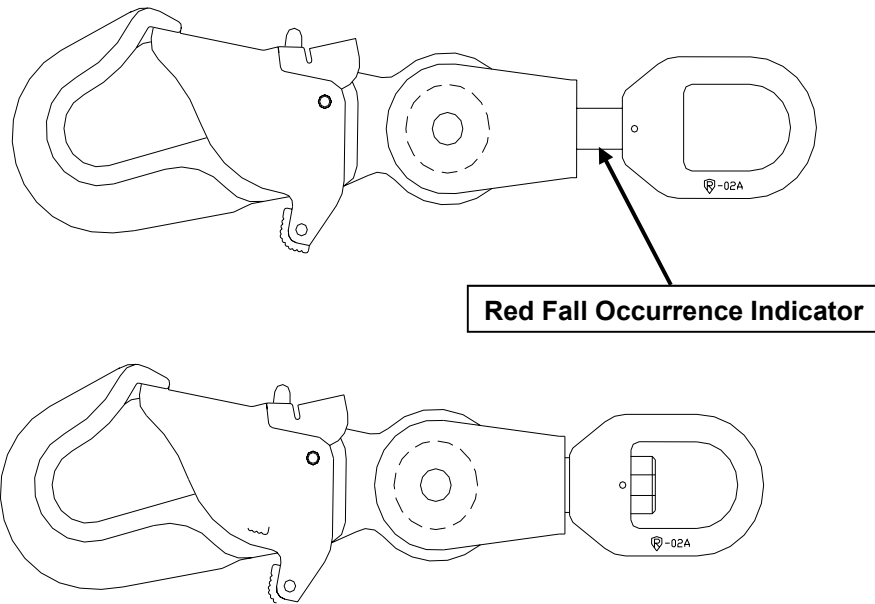
## **Servicing**

A Qualified Person trained in the inspection and servicing of system components must carry out servicing of this system. The company's safety officer should maintain a record log of all servicing and inspection dates. The system and all components must be withdrawn from service if subjected to fall arrest forces. Those components may be returned to service only after being certified by a Qualified Person. Only original Reliance Industries equipment and replacement parts are approved for use in this system. Contact Reliance Industries Engineering with questions and when in need of assistance.

## **Guarding Against Application Failure**

To avoid property damage, injury or death, the User must take reasonable steps to prevent “Application Failure”. An application failure may be any unacceptable use, misuse, or application error on the part of the User or System Designer. Because each end user might use this product in a manner different from Reliance Industries testing platform, and because the User might use this product in combination with other manufacturer's products in a manner not evaluated, contemplated, or tested by Reliance, the User or System Designer is ultimately responsi-





**Figure 3—Pelican™ Swivel Snaphook with Load Indicator Deployed (Top), and Intact (Bottom)**

### Inspection

Prior to each use, the worker must inspect the Skyloc™ Self-Retracting Lifeline for any physical damage, wear, corrosion, or malfunctioning parts. Verify that the load indicator in the Pelican™ Swivel Snaphook is not visible (see Figure 3) by looking to see if the red slide bearing under the swivel eye is exposed. Once the load indicator has been deployed, the SRL must be returned a Reliance Industries approved repair facility for evaluation and recertification.

The worker should also verify that conditions around the SRL location have not changed that may affect its' ability to arrest a fall, such as obstacles or equipment directly below the anchorage point which might create a swing fall.

cable at an angle of 15 degrees with the vertical, the user may develop a horizontal speed of about 7 mph. This situation is clearly more tolerable but it may still be dangerous if hazards such as rigid or sharp objects, electrical conductors, or powered equipment are in the swing fall path.

The second factor that comes into effect in a swing fall is that the total vertical fall distance of the user may be much greater than if the user had fallen entirely vertically without a swing fall path. This hazard also increases as the initial (before fall) length of extended cable is increased and as the initial angle which the cable makes with the vertical is increased. For example, if the initial extended cable length is 10 feet, the drop at the bottom of the pendulum swing would be 1.3 feet. This is in addition to the cable extension due to the devices internal shock absorption which may be as much as 3.3 feet. The total vertical fall distance would then be as much as 4.6 feet. If, however, 50 feet of cable is initially extended at a 30 degree angle with the vertical, then a drop at the pendulum bottom of 6.7 feet would result. In this example, adding the 3.3 feet of cable extension due to internal shock absorption of the device, the total vertical fall distance could be as much as 10.0 feet.

### Self-Retracting Lifeline Installation Procedures

**NOTE:** Approved fall protection must be worn during Skyloc™ Self-Retracting Lifeline installation at all times. Do not use the SRL as a method of personal fall protection until the system has been completely installed, inspected, and approved for use by a Qualified Person.

1. Installation of the Skyloc™ Self-Retracting Lifeline begins with the identification of a suitable anchor point. The anchor point must be capable of supporting a 3,600-lb. load where certification of load carrying ability exists, or 5,000-lb. where certification does not exist. **NOTE:** These strengths must be multiplied by the number of men that will be connecting to the anchorage point at any one time.
2. Pass a large carabiner or bow shackle (or other Reliance approved connecting means) through the handle opening at the top of the Skyloc™. This carabiner or bow shackle must be rated with a minimum breaking strength of at least 5,000-lb. and must be used for connecting to only 1 SRL at a time.

3. Secure the bow shackle or carabiner to the anchor point. If using a bow shackle, verify that it is a safety shackle and that the nut of the shackle has been fully captured using a clevis pin or lock ring to prevent accidentally disengagement. When using a carabiner make sure that the gate has fully closed and rotated into a locked position.
4. Once the Skyloc™ has been secured into position, extract a few feet of cable slowly to verify that there is tension on the line and the retraction spring is functioning correctly.
5. Give the cable a quick, sharp tug causing the unit to lock-up proving that the braking mechanism is operating correctly. Slowly allow the cable to be retracted back into the unit under the power of the retraction spring. CAUTION: The cable must always be released slowly and in a controlled manner when rewinding the cable back into the unit; it should never be fully released in an uncontrollable manner. Allowing the cable to retract in an uncontrolled fashion could cause damage to the Skyloc, the workplace, or other users in the area. Always use a tagline attached to the snaphook to help guide the wire rope back into the unit when it is installed to far overhead to reach directly; this will also help in pulling the snaphook down to the user for connection to his harness.

The Skyloc™ Self-Retracting Lifeline is now ready for inspection prior to use.

Removal is the opposite if installation.

Installation methods are not limited to bow shackles or carabiners. Custom brackets are available for permanent or specialized installations. Contact Reliance Engineering to help identify specific installation methods for your situation.

### **Training**

It is the responsibility of the employer to train all workers prior to using this system (per OSHA 1926.503 (a)(1)). The employer shall provide a training program for each employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be

followed in order to minimize these hazards.

The employer shall assure that, as necessary, each employee has been trained by a competent person qualified in the following areas:

- OSHA regulations governing the use of horizontal lifelines.
- Ability to recognize potential fall and workplace hazards.
- Method of inspection of safety equipment.
- Rescue procedures.
- Installation and removal techniques.

### **Planning for Rescue**

Prior to system use, a rescue plan must be prepared, the workers must be trained in its use, and the rescue equipment must be on hand to implement it in case of a fall.

Typical rescue plans include (but are not limited to) the following items:

- List of equipment that must be readily accessible in the event of an emergency and the names of those workers certified to use or operate that equipment.
- Emergency contact phone numbers (ambulance, hospital, fire department...) and a means to contact them (cell phone, emergency radio).
- List of employees on the site, and the specific tasks they will perform to effect the rescue.

The equipment that will be used to aid in the rescue of any worker should be attached to structural anchorages independent of those used for the personal fall arrest system. During installation of anchorages, tie-off and equipment attachment hardpoints should be attached, and also clearly marked in such a manner as to provide a means to rescue a worker in any position along the worksite.