Super Anchor Safety

SAS Lifeline Instruction Manual 2014.1
X-Line® Pneumatic Lifeline w/rope grabs
US Pat No.7,814,938

Material Specification:

- **Device:** 12 strand lifeline. Fig.1
- **Cord Diameter:** 1/2” (12mm)
- **Finished Material:** 5/8” (16mm)
- **Material Type:** Polyester
- **Min. Tensile:** 10,600lb (48kN)
- **% Elongation:** 4% @ 9kN
- **Compliance:** ANSI Z359.1-07
- **CSA Z259.2.5

Specifications of Use:

- One person PFAS system w/tools.
- Min. Tensile: 10,600lb (48kN)
- Max wt.: 310lb (140kg) w/E-4 absorber
- Max. PSI: 250lb.
- *Requires use of energy absorber.

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<td>4077C</td>
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Pneumatic Air Line Component is engineered for use w/air driven nail guns. Care must be taken to avoid punctures in the portion inside the X-Line.

**Specifications:** USA mfg. reinforced Polyester tubing, 1/4” (6.5mm) d. w/brass reusable MP fittings and bend restrictors. Max. PSI: 250lb.

**Maintenance:** To prevent rust, mildew and deterioration, always store lifelines and rope grabs by hanging in a dry area. Never store wet in a confined space. Clean lifelines with an air hose or low pressure water and mild detergent. Keep away from salt water.

**WARNING!** Synthetic fibers are damaged by mildew, extreme temperatures and extended exposure to UV. SERVICE LIFE is based on frequency of use, environmental conditions, and normal wear and tear. A plan for removing equipment from service should be determined by a competent person or safety consultant.

- **Adhesive PVC termination**
- **Tubing Length** w/brass MP fitting 4ft (1.2m)

**Attachments:**

- **Stopper/Termination Knot** is required to prevent accidental disengagement. CSA Z259.2.5(7.3)(e) states “the bottom end shall have a counterweight to provide stiffness”. Not required by SAS.
- **Pneumatic Air Line Component**
- **5/8” (16mm) diam. rope.**
- **Min. Tensile:** 7,400lb (34kN)
- **Avg. Tensile:** 3,600lb (16kN)
- **Max. Deceleration:** 3600lb (16kN)
- **Attach to A” end**
- **Use For:** 5/8” (16mm) diam. rope.
- **Compliance:** OSHA 1926:502
- **ANSI Z359.1-07**

**Rope Grab:**

- **Super-Grap 4015 or 4015V**
- **Func:** Captive bi-directional lock, adjustable diameter. Fig.2
- **Max. Deceleration:** 12” (300mm)
- **Fabric:** 7/16” (11mm) Nylon/Poly
- **Avg. Tensile:** 7,400lb (34kN)
- **Strength Rating:** 5,000lb (23kN)
- **Use For:** 5/8” (16mm) diam. rope.
- **Compliance:** OSHA 1926:502

**Pneumatic Air Line Component**

- **ADP**
- **Rope Grab**
- **Stopper/Termination Knot**
- **E-4 absorber**
- **E-6 absorber**
- **12” (300mm)**
- **Hor./Max. Vertical**
- **Max. PSI:** 250lb.
- **Min. Tensile:** 10,600lb (48kN)
- **Avg. Tensile:** 7,400lb (34kN)
- **Max. Deceleration:** 3,600lb (16kN)
- **Use For:** 4015Snaphook or carabiner.

**Specifications of Use:**

- One person PFAS system w/tools.
- Min. Tensile: 10,600lb (48kN)
- Max wt.: 310lb (140kg) w/E-4 absorber
- *Requires use of energy absorber.

**Attaching Lifeline To Anchorage**

Connect Snap-Hook “A” end of lifeline ONLY to an anchorage device that complies with OSHA 1926 or ANSI Z359.1-07 section 7.2.3 capable of supporting 2x the maximum arrest force of an engineered system or 5,000lb (23kN).

**Reverse Attachment:** Lifeline “A” end may be connected directly to a full body harness dorsal or side D-ring using Value Grab 4015V as specified in SAS-Reverse Rigging instructions.

**Connector Compatibility**

4015/4015V/4015C require class 1 connectors. Use snaphooks or carabiners that are compatible with attachments and are ANSI or CSA certified for fall protection use. Do not link more than 1 attachment to a connector.

**Rigging: ADP/Rope Grab**

A compatible we lanyard or energy absorber with a max. length of 30” (750mm) is required to attach the device to the dorsal D-ring of the harness.

**Specifications of Use:**

- Custom lengths not available.
- Min. Tensile: 10,600lb (48kN)
- Max wt.: 310lb (140kg) w/E-4 absorber or 340lb (154kg) w/E-6 absorber.

**Attaching Lifeline To Anchorage**

- Connect Snap-Hook “A” end of lifeline ONLY to an anchorage device that complies with OSHA 1926 or ANSI Z359.1-07 section 7.2.3 capable of supporting 2x the maximum arrest force of an engineered system or 5,000lb (23kN).

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**HAZARD WARNING!** Failure to avoid hazards and use lifeline as specified in this manual may lead to serious injury or death!

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  - **an anchorage device that complies with OSHA 1926 or ANSI Z359.1-07 section 7.2.3 capable of supporting 2x the maximum arrest force of**
  - **an engineered system or 5,000lb (23kN).**

**Reverse Attachment:** Lifeline “A” end may be connected directly to a full body harness dorsal or side D-ring using Value Grab 4015V as specified in SAS-Reverse Rigging instructions.

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**Connector Compatibility**

4015/4015V/4015C require class 1 connectors. Use snaphooks or carabiners that are compatible with attachments and are ANSI or CSA certified for fall protection use. Do not link more than 1 connector together or make more than 1 attachment to a connector.

**Rigging: ADP/Rope Grab**

A compatible we lanyard or energy absorber with a max. length of 30” (750mm) is required to attach the device to the dorsal D-ring of the harness.

**Specifications of Use:**

- Custom lengths not available.
- Min. Tensile: 10,600lb (48kN)
- Max wt.: 310lb (140kg) w/E-4 absorber or 340lb (154kg) w/E-6 absorber.
Inspect Before Each Use!

Prior to each use, inspect and perform function tests for all components. Annual inspections should be done at least once a year by a competent person and recorded on the matrix label. See Fig. 11. A record of inspections, repair, and removal of equipment from service should be maintained for each component. The following inspection points are a guideline of common conditions that occur as a result of abuse, poor maintenance or long service life.

**Remove equipment from service if any of the following conditions are present:**

1) Subjected to a free fall or other force.
2) Obvious damage to any component.
3) Warning labels missing or not legible.
4) Has not been inspected annually.
5) Fails to pass inspection/function tests.

The following conditions require removal from service or repair at SAS factory or by a competent person.

**ACTION REQUIRED:**

1) Remove.
2) Repair.
3) Inspect points

### Lifeline and Super-Grab 4015: Figs.5-6.1-7

1. Strands are cut or hocked.
2. Thimble missing, broken, deformed.
3. Splice cover or termination end shrink tube is missing.
4. PVC cover is missing.
5. PVC cover is cracked.

### Rope Grab 4015C: Fig. 8.

- Arrow position is upside down.
- Remove and install correctly.
- Body or Locking Cam bent, twisted or missing rivets.
- Won’t hold static position on lifeline.

### Webbing Components: Fig. 9.

- Loop wear pads are missing or worn through to primary webbing.
- Stitching/webbing are cut or damaged.
- Webbing overlaps are separating.

### Snaphook-Carabiner: Page 3.

- Obvious damage/missing rivets.
- Gate is bent or won’t close.

**ADVISORY**! Equipment removed from service should be disposed of in a way that prevents further use.

### Energy Absorber: Figs. 10-11-12.

- PVC cover is missing or damaged.
- Fall indicator warning “Remove From Service” is visible or missing.
- Fails webbing inspection.

### Absorber serviceable condition.

- PVC Cover and label in place.
- PVC Cover Missing

**Fall Indicator**

**WARNING!** Absorber deployed. **DO NOT USE!**

**Webbing Components:**

- Inspect connector attachment points for webbing deterioration
- Wear pad outside

**WARNING!** 4015C is a single direction locking device that must be installed with the arrow indicator pointing up-slope to the lifeline anchorage point “A” end or it will not lock in the event of a free fall.
Connectors: Gates are designed to remain closed during use and are fitted with gate locks to prevent accidental disengagement.

Function Tests
Test rope grabs and connectors before each use. Remove equipment from service if any function tests fails.

Rigging Super-Grab To Energy Absorber
Verify that energy absorber to Super-Grab connector meets the following requirements:

- **Carabiner:** All auto-lock, thread-lock, steel or aluminum carabiners rated for fall protection.
- **Snaphooks:** Must meet ANSI Z359.12-09 or CSA Z259.12-11 3600lb (16kN) gate strength.
- **Compatibility:** Carabiner or Snaphook must easily attach to Super-Grab and rotate freely.

**Super-Grab 4015:** DO NOT REMOVE FROM LIFELINE!
A Prussic type device locks in two directions (bi-directional) by applying force to the connector end. Move position by pushing or pulling the wraps up or down on lifeline.

**Fall Arrester 4015C**
Locking cam is activated by force applied to the connector ring. Remove by opening gate. **Mobility:** move position by pulling or pushing device up or down on the lifeline or hold cam-lock open.

**Auto-Lock Carabiner**
Perform same tests for thread-lock carabiners.

**Super-Grab 4015 rated for use on vertical and horizontal lines. Mobility can be reduced by tightening the wraps.**
Rigging/Length of Fall Plan

The Sample Length of Fall Plan (LOFP) shown here is based on the maximum stretch and deceleration values for each component, a user weight of 310lb (140kg), and a maximum free fall of 6ft (1.8m). To prevent contact with the ground or a lower level, the following factors must be calculated in your own Job Specific Length of Fall Plan:

1) Free fall length: “A”
2) Line slack: “C”
3) D-ring height: “B”
4) Rope grab deceleration: “D”
5) Absorber deployment: “E”
6) Harness stretch: “F”
7) Ground clearance: “G”

LOF = A + C + B + D + E + F + G

Position on the life line is gauged using the rope grab. A limiter knot tied below the rope grab will prevent it from creeping downslope and will allow factor “D” to be eliminated from the LOF.

Calculate Line Slack “C”

Travel along the leading edge is limited to the amount of slack, “C”, in the lifeline. The greater the slack, the wider the range of horizontal movement along the leading edge. Line slack is calculated by subtracting the D-ring height “B” from the free fall length “A”.

Figs. 18a, 18b. (A-B) = C. The sample plan line slack value is 20” (5.5m).

Adjusting Rope Grab Position

Shown at Fig. 18a, the PPE in this sample plan is rigged in tension to reduce excess slack. The vertical distance you will travel in a free fall is “B” Length from the lifeline D-ring connection to the leading edge. “C” The amount of slack in the lifeline.

Option: If the absorber and rope grab hang vertically from the D-ring at Fig. 18a, the length of the two components must be added to the “B” value D-ring height.

Calculate Length of Fall

(A+B+E+F+G)=LOFP

Factors:
1) Desired Free fall length “A” 72” (1.8m)
2) Rope grab deceleration “D” 24” (0.6m)
3) Absorber deployment “E” 42” (1.06m)
4) Harness stretch “F” 12” (0.3m)
5) Total Length of Fall (LOF) 150” (3.8m)
6) Ground clearance “G” 52” (1.3m)
7) Length of Fall Plan (LOFP) 202” (5.1m)

Note: Rope grab deceleration “D” may be eliminated from the LOF by use of a Limiter Knot.

Insufficient Ground Clearance

WARNING! A failure to calculate the LOF and correctly rig PPE can result in striking the ground or a lower level in the event of a fall and may lead to serious injury or death.

LOF + Ground Clearance 16ft-8” 202” (5.1m) = LOFP

WARNING! PROMT RESCUE!

A plan for immediate rescue is necessary to avoid serious injury or death resulting from suspension trauma. SAS recommends that each harness is fitted with a suspension ladder and workers trained in its use. Request S.T.E.P Trauma Strap N°6060.

Calculation of Insufficient Ground Clearance

“G” = Ground clearance D-ring height, 52” (1.3m)

STOP: If ground clearance is less than 52” (1.3m), contact SAS for technical advice or visit our website. Most workers in suspension trauma are entrapped or are disabled PPE devices to be adjusted to fit as an immediate rescue plan.

WARNING!

Super Anchor Safety (SAS) recommends that each harness is fitted with a suspension ladder and workers trained in its use. Request S.T.E.P Trauma Strap N°6060.

Note: Rope grab devices attached to the energy absorber have the label affixed to the absorber.

Lifeline eye thimbles are fitted with a primary label, an inspection matrix label and may have an optional rope grab label. Do not use equipment if the labels are missing or unreadable.

Primary Label

Label CR: w/snaphook CSA Logo.
Label CCR: no CSA Logo.

SAS Part number (SAS)

Year-Month of mfg.
Gate strength
Lifeline Length

Record Inspections

Serial N°