



SUPER ANCHOR SAFETY®

SAS Synthetic Lifelines Instruction/Specification Manual 05-2024

ENGLISH
VERSION

!WARNING TO USER!

You are required to read and use the Instruction/ Specification manual supplied at the time this device was shipped. Improper use and installation can result in serious injury or death. Follow inspection requirements before each use.

Specifications of Use

Personal Fall Arrest System (PFAS) including tools and equipment for one person use only.
Specified for fall arrest, fall restraint and work positioning.

Max. free fall: 6ft. **Max. user wt.:** 310lb

Working Temperatures: -30°F[37°C] to 130°F[54°C]

Compliance

OSHA 1926.502, ANSI Z359.1-07/15-14

Connector Compliance

ANSI-Z359.12-2009 CSA-Z259.12-11

Snaphook class 1 connector 3,600lb gate strength

SAS = Super Anchor Safety ⓧ Inspection Points

Rope Grab = Fall arrester, integral adjuster, Super/Value Grab.

*OSHA definition: "Qualified or Competent Person"

Hazard Warnings! DO NOT come in contact with:

- Sharp or abrasive edges or cutting tools
- Electrical sources and power lines
- Open flame, high heat or hot asphalt
- Adhesives, gasoline, diesel, kerosene, solvents, acids, caulking, paint or stains
- Cleaning agents or any chemicals that are damaging to polyester or to zinc plated steel

Compatible Rope Grabs

Fig.5

No.4015 SuperGrab™**

7/16" Nylon/polyester.
Dual direction locking.
Captive do not remove.
Tensile strength 7,400lb.
Max. deceleration 12".



Fig.6

No.4015-V ValueGrab™**

7/16" Nylon/polyester.
Dual direction locking.
Captive do not remove.
Tensile strength 7,400lb.
Max. deceleration 12".



Fig.7

No.4015-M Integral Adjuster

Zinc plated steel.
Fits 5/8"d. synthetic rope.
Single direction locking.
Captive do not remove.
Breaking strength 3,600lb.
Max. deceleration 24".



Fig.8

No.4015-Z/C Fall Arrester

Z=Zinc plated steel. C=sst.
Fits 5/8"d. synthetic rope.
Single direction locking.
Removeable.
Breaking strength 3,600lb.
Max. deceleration 39".



Lifeline Model Types

Fig.1

Value™ 3 Strand

No.4020

5/8" Polyester
Tensile Strength:
Min. 9,900lb
Max. Elongation:
10% @1,800lb

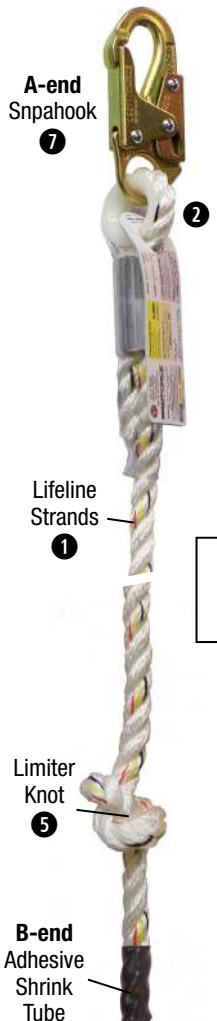


Fig.2

Deluxe™ 12 Strand

No.4033

5/8" Polyolefin
Tensile Strength:
Min. 11,600lb
Max. Elongation:
4% @1,800lb

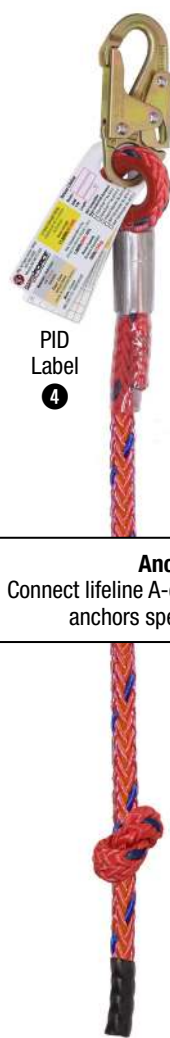


Fig.3

Maxima™ 3 Strand

No.4083

5/8" Co-polymer
Tensile Strength:
Min. 10,582lb
Max. Elongation:
10% @1,800lb



Fig.4

Double-Braid

No.4027

5/8" Nylon/Polyester
Tensile Strength:
Min. 11,260lb
Max. Elongation:
10% @1,800lb



Anchorage Connectors
Connect lifeline A-end only to OSHA or ANSI compliant anchors specified for fall protection use.

Limiter Knot

- 1) Use to gauge free fall length by adjusting position on the lifeline. See Length of Fall (LOF) pg 4.
- 2) Prevents rope grab from unintentional lifeline disengagement.

Warning! The limiter knot is required for use with SAS lifelines.

Fall Arrester/Integral Adjuster Compliance:

ANSI Z359.1-07/OSHA 1926.502

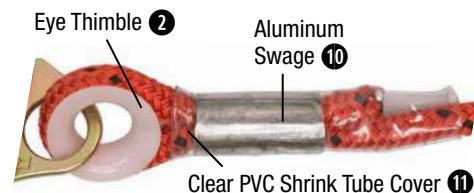
SuperGrab/ValueGrab Compliance:

**Dept. of Labor compliance letter.

Fig.9

Aluminum Swage A-end Termination

Aluminum sleeve min. strength 5,000lb



Storage/Maintenance/Modification

- Store in dry area only away from vermin
- Do not store wet in confined space
- Clean with compressed air or brush
- Do not alter original length or attach components mfg. by others

Fall Arrester (FA) Installation/Removal

- 1) **Fig.10a:** Open the gate lock clip **a** and position gate key **b** into key slot **c**. The gate lock **e** nut won't unthread unless **a**, **b** and **c** are performed first.
- 2) Unthread the gate lock nut **e**.
- 3) **Fig.10b:** Place lifeline into rope cavity. Direction arrow must point to lifeline A-end attached to anchor point.

Closing the Gate:

- 4) **Fig.10a:** Position gate key **b** into key slot **c**.
- 5) **Fig.10c:** Close gate lock clip **a** and securely tighten lock nut **e**. Perform **11a**, **11b** function tests before using.

Warning! Failure to attach the FA in the correct direction will disable the locking function.

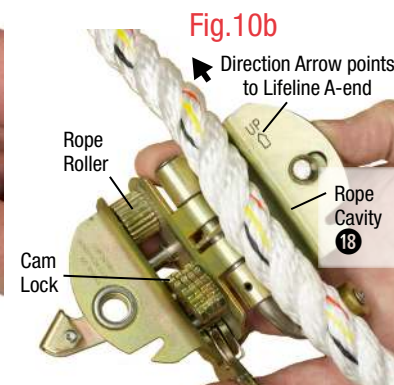
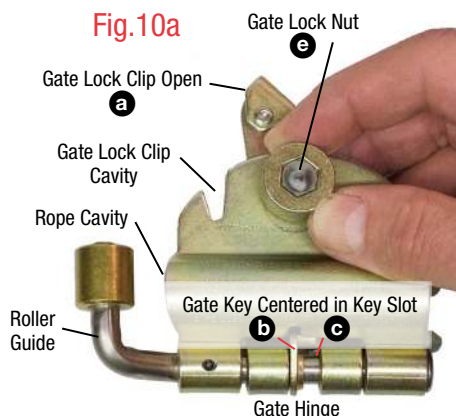


Fig.10c

Gate Lock Clip Closed Position **a**

Fig.10d

Connector Ring Spring Intact

Lock Tests: Perform Prior to Each Use

☒ = Test Fails remove from service. ☑ = Test passes.

Over time a lifeline will grow in diameter due to the accumulation of debris and failure of the mobility test **11b**. Clean lifeline with water or compressed air. Failed mobility test ☒.

Fig.11a Cam Lock Test 16

Hold the A-end of the lifeline. Pull the connector ring in the opposite direction as shown.

FA does not move on lifeline. ☑

FA moves on lifeline. ☒

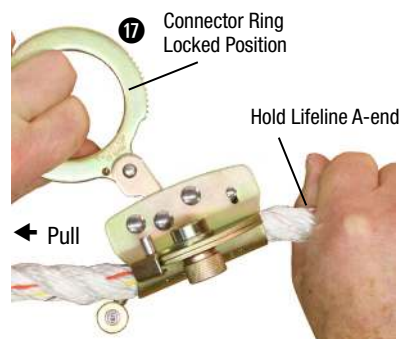


Fig.11b Mobility Test 16

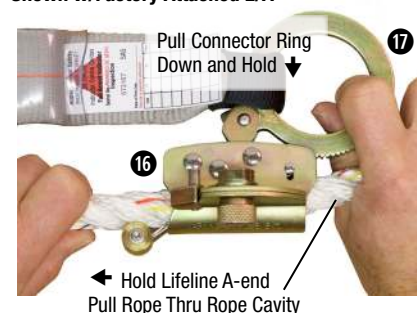
Hold connector ring in open position holding the lifeline A-end as shown.

FA moves freely on the lifeline. ☑

FA does not move easily.

Check cam lock and rope cavity for debris and retest. If test fails: ☒

Shown w/Factory Attached E/A



Connector Ring Spring Test

Fig.10d ring spring must be intact and function properly.

Test by holding the connector ring in the open position **Fig.11b**.

The ring should spring back to the locked position **Fig.11a** ☑

Spring is missing or fails the spring test, remove from service ☒

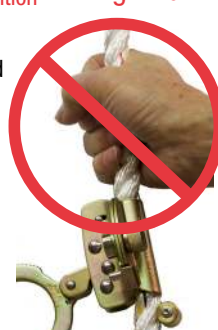
Warning! Applies to all Rope Grabs.

In the event of a fall, DO NOT grab the Lifeline A-end above the rope grabs position Or the rope grab itself. Figs. 12a,12b.

Fig.12a

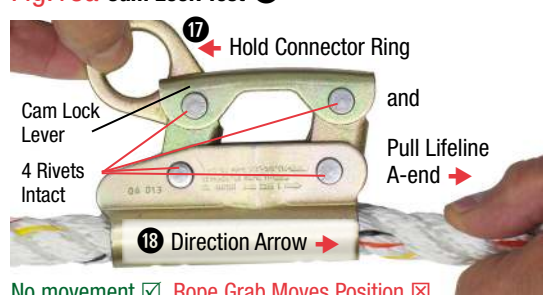


Fig.12b



Integral Adjuster Inspection/Lock Tests

Fig.13a Cam Lock Test 16



No movement ☑. Rope Grab Moves Position ☒.

Rope Grab Fall Indicators

The SuperGrab hand hold breaks when subjected to a free fall.

Damage is evident ☒.

The ValueGrab eye thimble will deform when subjected to a free fall.

See Fig.18 ☒.

Fig.13b Spring/Mobility Test 16



Spring Test

Depress Cam Lock Lever and Release.

Springs back quickly ☑

Does not spring back ☒

Mobility Test

Depress Cam Lock Lever Down

Lifeline moves easily ☑

Does not move easily ☒

Super/Value Grab Inspection/Lock Tests

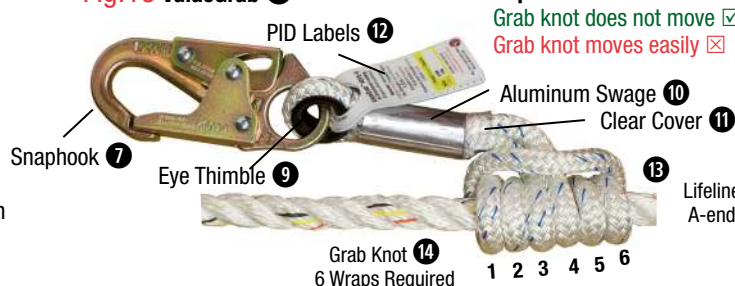
Fig.14 SuperGrab

Lock Test 15

Hold Lifeline A-end. Pull Rope Grab in Both Directions →



Fig.15 ValueGrab 15



SuprGrab/ValueGrab Lock Test

Grab knot does not move ☑

Grab knot moves easily ☒

Daily and Annual Inspections

Perform lifeline inspection, rope grab and snaphook function tests prior to each use and by a qualified or "competent" person at least once a year. A record of inspections and removal of lifelines from service should be maintained for each lifeline. The following inspection points are common conditions that occur as a result of abuse, poor maintenance or long service life and should be used as an inspection guideline. Employers and safety personnel are responsible for drafting their own fall protection equipment inspection and maintenance program which may include the information contained in this manual.

Snaphook Class 1 Connector ⑦

Fig.16a
Gate Locked



Fig.16b
Un-lock gate

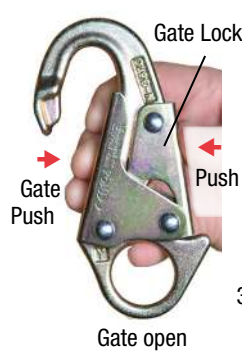


Fig.16c
Gate Closed/Locked



Lifeline Inspection

Fig.17a

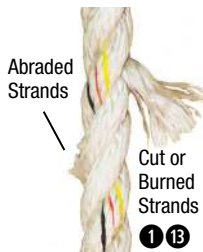


Fig.17b



Fig.18
Eye Thimble



Lifeline Knots

Fig.19a



Fig.19b

Incompatible Connections

Warning! DO NOT make incompatible connectors as shown in Figs. 20. They may result in failure of the lifeline to sustain a free fall.

Fig.20a



Fig.20b DO NOT Connect Snaphooks Together



Fig.20c

DO NOT Tie Lifelines Together



Fig.20d

DO NOT Tie a Lifeline to a Anchorage Point Attach Lifeline A-end w/class 1 connector only.



Table 1. Snaphook Function Tests

Fig.	Test Type	Function	Pass ☒	Fail ☒
16a	Gate-lock	Push against gate only	Won't open	Opens
16b	Gate-open	Push gate-lock and gate	Opens	Won't open
16c	Gate-close	Release gate and gate-lock at same time	Snaps shut	Won't close and lock

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

☒ = Remove From Service. ☒ = Make Changes as Noted.

Primary Inspection Points

- Lifeline subjected to a free fall or unspecified use. ☒
- Fails inspection/function tests. ☒
- Has not been inspected annually. ☒
- Perform annual inspection and return to service. ☒
- Expired service life see Table 2. ☒

Lifeline

- Strands are cut, hocked or have heat damage. ☒ Figs.17a,17b.
- Eye thimble is deformed or missing. ☒ Fig.18.
- Swage cracked or loose. ☒ Figs. 9,18.
- PID/Inspection label missing. ☒ Figs. 1,2,3,4.
- Limiter knot missing. Tie limiter knot below rope grab position. ☒ Fig. 19a.
- Knots tied above rope grab. Remove knot. ☒ Fig. 19b.

Snaphook Table 1

- Fails function test or inspection. Missing rivets. ☒ Figs. 16a,b,c.

Super Grab

- Hand grab is cracked. Missing screws. ☒ Figs. 5,14.

Value Grab

- Eye thimble is deformed or missing. ☒ Figs. 15,18.
- Swage cracked or loose. ☒ Figs. 9,15.
- Swage clear cover missing. ☒ Figs. 9,18. OK to use.

SuperGrab/ValueGrab

- PID/inspection labels missing. ☒ Figs. 14,15.
- Rope grab stands cut or hocked. ☒ Figs. 17a,b.
- Less than 6 rope wraps. ☒ Figs.14,15. Add additional wraps as needed. ☒
- Fails locking test. ☒ Figs. 14,15.

Fall Arrester/Integral Adjuster

- Fails inspection/lock tests. ☒ Figs. 10a,b,c. 11a,b. 13a,b.
- Connector ring bent or deformed. ☒ Figs. 11a, 13a.
- Arrow not pointing to lifeline A-end. ☒ Figs. 10b, 13a. Remove and orient in correct position. ☒

Zinc Plating Corrosion

Minor surface corrosion does not require to remove from service. Salt air accelerates corrosion and can be reduced by rinsing with fresh water after use. Remove from service if deep pitting or extreme rust is present.

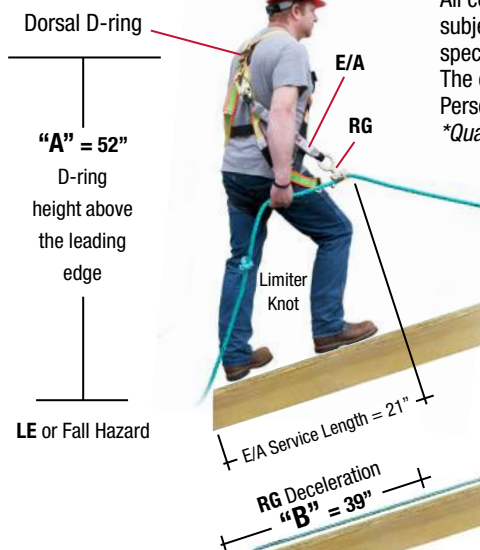
Lifeline/Rope Grab Service Life

Deterioration of synthetic rope is difficult to determine by visual inspection. Service life is based on UV exposure and frequency of use.

Table 2. SAS Recommended Service Life

Use	UV Exposure/Service Life Years			
Low	Low	3-5 yrs	High	2-3 yrs
Moderate		2-4 yrs		1-3 yrs
Daily		1-3 yrs		1-2 yrs

Fig.21

**Length of Fall (LOF) 6ft Free Fall Example**

All components of a fall protection system are subject to stretch, elongation and deceleration when subjected to a free fall. To prevent striking a lower level, the ground below, or exceeding **PPE** performance specifications, the **LOF** plus ground or obstacle clearance must be calculated as accurately as possible. The examples shown in this manual apply to equipment mfg. by **SAS** and are intended as an example only. Personnel* responsible for project safety are required to draft their own Length of Fall Plan **LOFP**.

Qualified or competent person or a safety consultant as defined by OSHA.

LOF Example

Standing at the **LE** with no slack or angle in the Lifeline, the **RG** should be placed on the lifeline no closer than its service length of 21" from the **LE** to reduce free fall to a minimum. **E/A** in tension see Fig.21.

To prevent free falls greater than 6ft, the **E/A** should not be allowed to hang vertically when positioned at the **LE** Fig.24.

Note: The example plan specifies a 39" **RG** deceleration and **E/A** deployment of 48".

Key Code:

E/A = Energy Absorber

RG = Rope Grab

LE = Leading edge

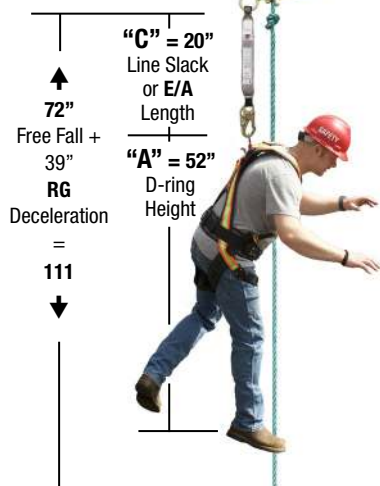
LOF = Length of fall

Calculating Free Fall Lengths

Two factors are required to limit free falls to 6ft:

- 1) D-ring height above the leading edge, fall hazard or work surface Fig.21.
- 2) The amount of slack/angle in the lifeline and the service length of the **E/A** that is allowed to hang vertically Fig.24.

Fig.22

**Free Fall Event**

Fall arrest occurs in 2 different phases.

The worker steps over the **LE**, Fig.22, and immediately free falls. The free fall length is equal to the D-ring height of 52" + any line slack or **E/A** length that is allowed to hang vertically.

In this example, 20" of line slack + 52" = 72" total free fall before any force is applied to the **RG**.

Phase 1: After free falling 6ft, the **E/A** and lifeline are in tension and the force of the fall is applied to the **RG**. This initiates the **RG's** locking function. As it decelerates a max. length of 39" down the lifeline, the force of the fall causes the **RG** to lock fully onto the lifeline.

This action will initiate **Phase 2**.

Note: A limiter knot positioned below the **RG** on the lifeline at the **LE** can be used to reduce the **RG's** deceleration distance to less than 39", Fig.25.

Leading Edge Swing Fall Hazard

Horizontal travel along the leading edge exposes the worker to a swing fall hazard. The free fall length will not increase provided the **E/A** and lifeline remain in tension. **LOF** will be increased by the angle of the lifeline off-center from the anchor point above.

Fig.24

E/A Service Length

When the **E/A** is allowed to hang vertically at the **LE**, the total service length must be added to the free fall length.

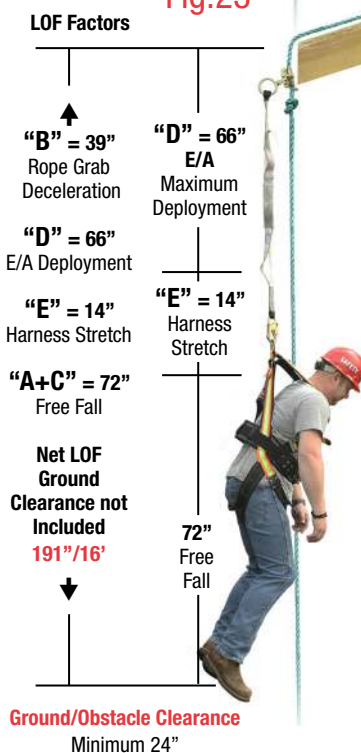
**Example Free Fall Calculation**

D-ring Height = 52"

E/A + RG Service Length = 30"

Total Free Fall Length = 82"

Fig.23

**Fall Arrest**

Phase 2 E/A Deployment: When the **RG** locks onto the lifeline, the **E/A's** tear webbing begins to deploy (tear out), reducing the free fall velocity and avg. arrest force to 1,350lb or less, while limiting the **G** forces to humanly sustainable levels. As the **E/A** gradually deploys, it brings the free fall to a complete stop (fall arrest). The **E/A's** tear webbing has a max. deployment length of 66". Deployment lengths will vary based on the workers weight and the length of the free fall. It is typically less than 66".

Harness Stretch: The force of the free fall combined with the weight of a suspended worker takes up any slack in the harness webbing causing the D-ring's D-Plate to slide upward. Harness stretch is approx. 14", provided the harness has been properly adjusted to fit the worker, and reducing webbing slack to a minimum.

Ground Clearance Warning!

A 2ft safety margin should be added to the net **LOF** to avoid striking a lower level or the ground below. A failure to do so can result in serious injury or death.

Length of Fall Calculation

"A" = D-ring height above LE	52"
"B" = Rope grab deceleration	39"
"C" = E/A length over the LE	20"
"D" = E/A Max. Deployment	66"
"E" = Harness stretch	14"
Net LOF Total	191"/16"
Min. Ground Clearance	24"
Length of Fall Plan (LOFP)	215"/18"

Note:

The **LOF** example shown here specifies No.4015-Z fall arrester deceleration Length of 39". No.4015-M, SuperGrab and ValueGrab deceleration lengths are shorter reducing the **LOF**. Figs. 5,6.

Fig.25



Termination Knot