

PALMER SAFETY

VERTICAL LIFELINE

INSTRUCTION MANUAL

THE INSTRUCTIONS APPLIES TO THE FOLLOWING MODELS:
V503202, V1003202, V1503202, V503201, V1003201, V1503201



Vertical Lifeline Assembly INSTRUCTION MANUAL

These instructions apply to the following model(s):

V503202 50ft lifeline with two snap hooks.

V1003202 100ft lifeline with two snap hooks.

V1503202 150ft lifeline with two snap hooks.

V503201 50ft lifeline with one snap hook.

V1003201 100ft lifeline with one snap hook.

V1503201 150ft lifeline with one snap hook.



UNDER PENALTY OF LAW

This manual must be read and understood in its entirety, and used as part of a fall protection training program, as required by OSHA or any state/local regulatory agencies. User must read and fully understand the limitations and proper use of the equipment. All users must be properly trained by their employer prior to use, per OSHA 29 CFR 1910.66, 29 CFR 1926.503, and applicable local standards.

When used in accordance with instruction specifications, this product meets or exceeds all applicable OSHA 1926 and ANSI A-10.32-2012 standards for fall protection. Applicable standards and regulations depend on the application, along with some state-specific regulations. Consult regulatory agencies for more information on personal fall arrest systems and associated components.

NOTE: This *User Instruction Manual* is not to be removed except by the equipment user. Current *User Instruction Manuals* must always be available to the user. Read and understand these instructions before using equipment. *Do not discard these instructions.*



WARNING

Misuse or failure to follow warnings, instructions, and limitations on the use of this equipment may result in serious personal injury or death. For further instructions about proper use, refer to a supervisor or contact SPIDERGARD at 1-800-242-1358.

MATERIALS AND CONSTRUCTION

Vertical Lifeline Assembly Materials

- V503202 50ft lifeline with two snap hooks.
- V1003202 100ft lifeline with two snap hooks.
- V1503202 150ft lifeline with two snap hooks.
- V503201 50ft lifeline with one snap hook.
- V1003201 100ft lifeline with one snap hook.
- V1503201 150ft lifeline with one snap hook.

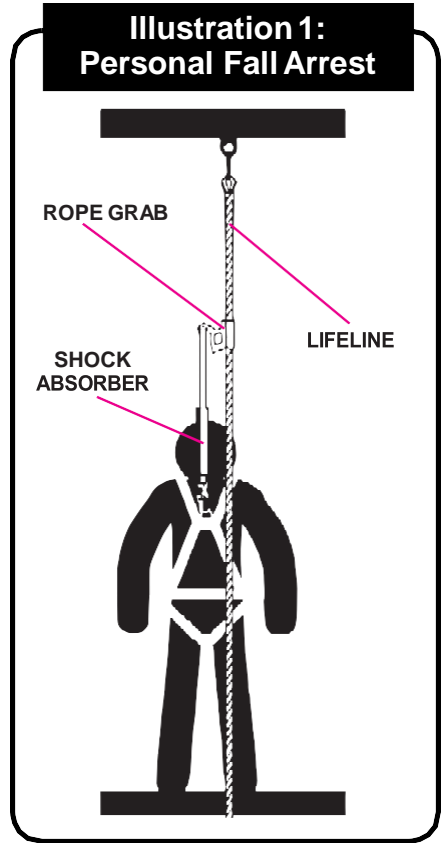
PURPOSE

PALMER SAFETY Vertical Lifeline Assembly is intended for use as part of a Personal Fall Arrest System (PFAS) or Fall Restraint System. Rope grabs move easily up and down vertical lifelines yet lock instantly in the event of a free fall. See Illustration 1.

Personal Fall Arrest System (PFAS):

The Vertical Lifeline Assembly can be used as part of a Personal Fall Arrest System, which includes a full body harness, lanyard, rope grab, and lifeline. Maximum permissible free fall is six feet.

Fall Arrest & Fall Restraint: The Vertical Lifeline Assembly can be used as part of a Personal Fall Restraint System to prevent workers from reaching fall hazards. These systems typically include a full body harness, lanyard, rope grab, and lifeline. No vertical free fall is permitted.



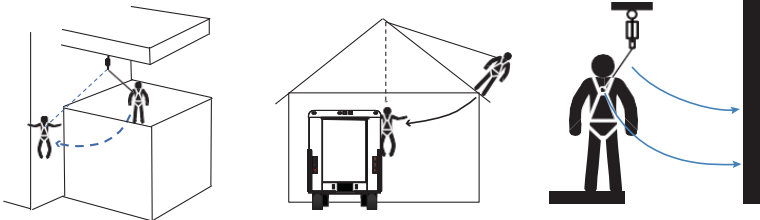
INSTRUCTIONS FOR USE

WARNING

Do not alter or intentionally misuse this equipment.

- Personal fall arrest system (PFAS) **MUST** limit the maximum arrest forces to 1800 lbs. (8 kN) or less.
- Employees shall be trained in accordance with the requirements of OSHA 29 CFR 1910.66 in the safe use of the system and its components before using a Personal Fall Arrest System.
- Inspect all personal fall arrest system equipment for wear, damage, and other deterioration prior to each use. Remove defective components from service immediately.
- Thoroughly evaluate and plan all elements of fall protection system(s) before using this equipment. Make sure that your Personal Fall Arrest System is appropriate for your needs and facility. Calculate fall clearance and swing fall clearance. The amount of clearance required is dependent on the type of connecting subsystem (rope grab, lanyard), the anchorage location, and the amount of stretch in the lifeline. When calculating distance, be sure to consider:
 - Deceleration Distance
 - Movement of harness attachment element (D-Ring)
 - Free Fall Distance
 - Height of the Worker (how tall is the worker?)
 - Elevation of Anchorage Connector
 - Connecting Subsystems Length
 - Rope Stretch
- **Swing Falls** occur when the anchorage point is not directly above the point of a fall. The force of striking an object in a swing may cause serious injury or death. Minimize potential for swing falls by working as close to the anchorage point as possible. Swing falls significantly increase the amount of clearance required.

Illustration 2: Examples of Swing Fall Hazards



LIMITATIONS FOR USE



WARNING

Do not use this equipment if you are unable to tolerate the impact of a fall arrest. Age and fitness can seriously affect your ability to withstand a fall. Consult with a physician if in doubt. Minors, pregnant women, and anyone with a history of back and/or neck problems must not use this equipment.



WARNING

Use caution when employing this equipment around machines, electrical hazards, chemical hazards and sharp edges or abrasive surfaces, as contact may cause equipment failure, personal injury, or death.

- Use only with compatible components of subsystems. Substitutions made with non-approved components may jeopardize compatibility equipment and affect system safety and reliability.
- This equipment is designed for a single user. Combined weight of user, including clothing, tools, etc. must not exceed weight capacity.
- This equipment is designed to be used in temperatures ranging from -40°F to +130°F (-40°C - +54°C).
- Use only with structures capable of supporting static loads required for fall arrest or restraint system as follows:
- **Fall Arrest:** Anchorages used for PFAS must be capable of sustaining static loads in the directions permitted by the personal fall arrest system of at least: 3,600 lbs. with certification of a qualified person; or 5,000 lbs. without certification. When more than one personal fall arrest system is attached to an anchorage, the strengths stated above must be met independently at and for each anchorage location.
- **Fall Restraint:** The restraint system must be attached to an anchorage capable of sustaining static loads in the directions permitted by the restraint system of at least 3,000 lbs. When more than a restraint system is attached to an anchorage, the strengths stated above must be met independently at and for each anchorage location.
- Do not expose this equipment to chemicals or harsh solutions that may have a harmful effect.
- User must not use or install equipment before receiving proper training from a Competent Person, as defined by OSHA 29 CFR 1926.32(f).
- Do not alter or modify this product in any way. Only PALMER SAFETY shall make repairs or alterations to the equipment.

CONNECTOR COMPATIBILITY LIMITATIONS

PALMER SAFETY equipment must be coupled only to compatible connectors that are suitable to your application. Ensure all connections are compatible in size, shape and strength. Ensure all connectors are fully closed and locked. OSHA 29 CFR 1926.502 prohibits the use of snap hooks to engage to objects unless the following requirements are met:

- Snap hook must be an ANSI-style locking model.
- Snap hook must be explicitly designed for such a connection, meaning that the manufacturer of the snap hook specifically it to connect to the equipment in question.

Use of a non-locking snap hook can result in rollout (a process by which a snap hook or carabiner unintentionally disengages from another connector or the object to which it is coupled (ANSI Z359.0-2007). PALMER SAFETY connectors (snap hooks and carabiners) are designed to be used only as specified in each product's user's instructions.

Avoid the following types of connections:

- Two or more snap hooks or carabiners attached to one D-Ring.
- A snap hook connected to its integral lanyard.
- A snap hook connected to a horizontal lifeline.
- Connection in a manner that results in a load on the gate. NOTE: *Large throat opening snap hooks should not be connected to standard size D-Rings or similar objects, as such use will result in a load on the gate if the hook or D-Ring twists or rotates. Large throat snap hooks are designed for use on structural elements such as rebar or cross members that are not shaped in such a way that they may capture the gate of the hook.*
- False engagement connections, where protruding features of the snap hook or carabiner may catch on the anchor and seem fully engaged to the anchor point. Always confirm engagement.
- Connection to snap hooks or carabiners.
- Direct connection to webbing lanyard, webbing loop, rope lanyard or tie-back (unless the manufacturer's instructions for both the lanyard and connector specifically allow such a connection).
- A snap hook connected to a D-Ring, rebar, or other connection point with improper dimensions or configurations that could cause the snap hook keeper to become depressed by the turning motion of the snap hook, or such that the snap hook or carabiner will not fully close and lock, or that roll-out could occur.

Illustration 3 depicts examples of inappropriate connections:

Illustration 3: Inappropriate Connections



CONNECTING COMPONENT LIMITATIONS

Rope Grab:

- For use by one person only, with maximum weight of 310 lbs. (including clothing, tools, etc.).
- Do not use if any part of the device appears to be damaged.
- Do not attempt to service the device or alter it in any way.
- Attach the device to appropriate vertical lifelines only.
- Use of this product is not suitable when the user is positioned on an unstable surface, fine grain material, or particulate solids such as sand or coal.
- Connect rope grabs to the back D-ring of a full-body harness using approved lanyard.



WARNING

Rope grab is a personal protective device and should be used for fall protection only. Other uses may result in serious injury or death.

Vertical Lifelines:

- Minimum tensile strength of 5,000 lbs. (22.2kN).
- Vertical Lifelines must be kept clean.
- Never allow the lifeline to become slack or to pass under or entwine around arms, legs, neck, or any other obstacle.
- Do not use if any part of the device appears to be damaged.
- Do not remove product labeling.
- Do not tie knots in the lifeline.
- Lifelines cannot be attached to the working surface. Lifelines must be anchored above the user to prevent a swing fall.

System:

- A Competent Person must ensure the compatibility of all connections and that of the system.
- Do not use the system if the device does not lock onto the lifeline or if any other component in the system does not operate properly.
- Allow sufficient safe clearance in the event of a freefall.
- Stretch with synthetic rope = Length of VLL from Anchorage Connector to Rope Grab position on VLL multiplied by 10%.
- Shock absorbers require consideration of an additional 48" maximum elongation.
- System must be rigged to limit the total free fall distance to 6 ft. or less.
- Do not use if any part of the system appears to be damaged.
- Do not remove system labeling.
- Do not use a body belt for fall arrest applications.

PERFORMANCE

Each PALMER SAFETY Vertical Lifeline Assembly has a minimum tensile breaking strength of 5,000 lbs. (22.2 kN) when statically tested in accordance with the requirements of the ANSI Z359.1-2007 standard.

Model/ Part #	Description (Materials & Size)	Length	Width	Standard
V503201	3 Strand Polyester Rope with One Snap Hook.	50' Rope;	5/8" Diameter	ANSI Z359.1- 2007
V1003201	3 Strand Polyester Rope with One Snap Hook.	100' Rope;	5/8" Diameter	ANSI Z359.1- 2007
V1503201	3 Strand Polyester Rope with One Snap Hook.	150' Rope;	5/8" Diameter	ANSI Z359.1- 2007
V503202	3 Strand Polyester Rope with Two Snap Hooks.	50' Rope;	5/8" Diameter	ANSI Z359.1- 2007
V1003202	3 Strand Polyester Rope with Two Snap Hooks.	100' Rope;	5/8" Diameter	ANSI Z359.1- 2007
V1503202	3 Strand Polyester Rope with Two Snap Hooks.	150' Rope;	5/8" Diameter	ANSI Z359.1- 2007

Approximate elongation for new lifelines in dry conditions are: 5 feet of lifeline elongation.

Applicable Standards:

Refer to national standards, including ANSI Z359.1, and local, state and federal (OSHA 1910.66, appendix C, 1926.500) requirements for more information on personal fall arrest systems and associated components.

Before Each Use:

- Inspect the rope grab for any damage or soiling (dirt, oil, paint, etc.).
- Ensure the lifeline is the proper type and size. (5/8" dia. synthetic rope with minimum tensile strength of 5,000 lbs.) for your application.
- Tie-off the bottom end of the lifeline vertically below the anchorage point to eliminate excess slack.
- The Rope Grab has been designed and tested to perform properly on PALMER SAFETY 5/8" polyester ropes.
- Allow for lifeline elongation when determining clearance needed in case of a fall. If using Nylon ropes, significant elongation can happen under load.

Installation:

Do not use/install equipment without proper training by a "competent person" as defined by OSHA 29 CFR1926.32(f).



WARNING

Rope grab is a personal protective device and should be used for fall protection only. Other uses may result in serious injury or death.

With the arrow pointing upward on the rope grab device, lift upward on the spring-loaded cam handle that connects the gripping cams. Slide the rope grab to the desired position on the lifeline and release the cam handle. The spring-loaded gripping cams will keep the rope grab in position.

NEVER attach the device on the lifeline with the arrow pointing downward; it will not lock onto the lifeline should a fall occur (see Illustration 4).

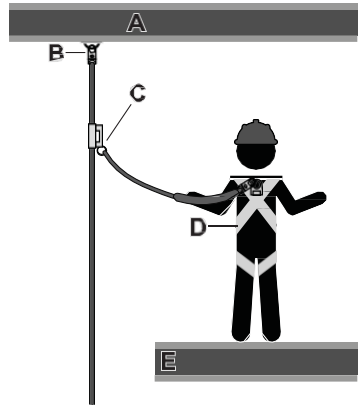
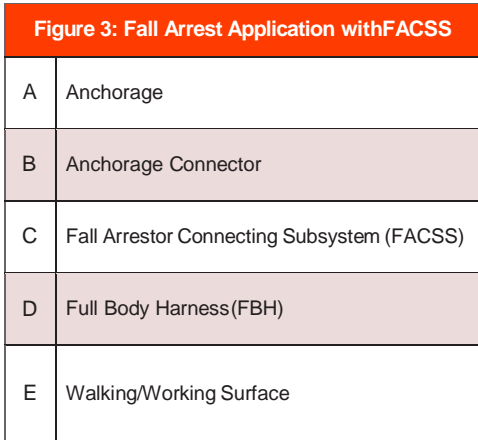
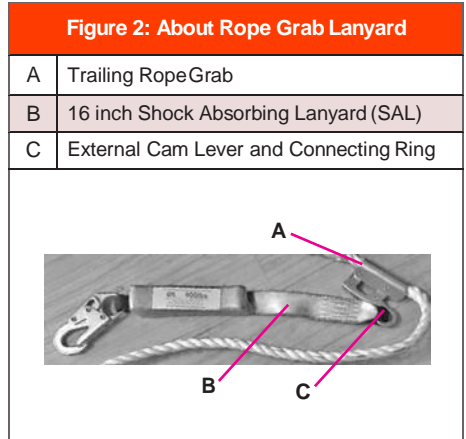
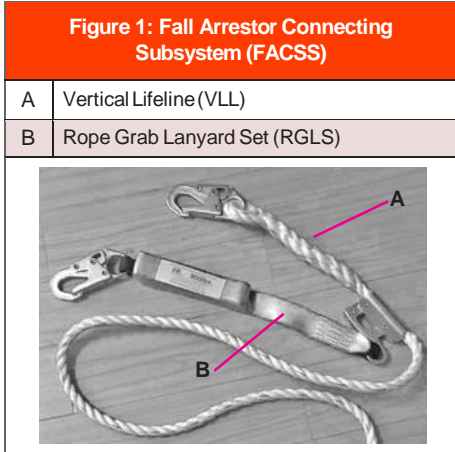
Connect device to full-body harness. Rope grabs should only be connected to the back D-ring on the full-body harness.

Tie Offs: The strength of a Personal Fall Arrest System is based on its being attached to an anchoring system which does not reduce the strength of the system. Strength may be reduced by tie-offs using knots, tying around sharp edges, etc. Tie-offs using a knot in a rope lanyard or lifeline (at any location) reduce the lifeline or lanyard strength by 50% or more. Avoid tie-off around an "H" or "I" beam; these tie-offs

**Illustration 4:
Installing Rope Grab**



can reduce the lifeline or lanyard by approximately 70% due to the cutting action of the beam edges.



Using the Vertical Lifeline Assembly:

IMPORTANT: DO NOT grab the Positioning Device in the event of a fall, accidentally depressing the cam lock can open up the unit and cause it to slide on the rope.

- Inspect all equipment before each use.
- Attach only to approved anchorages suited for the applications that meet OSHA and any other applicable standards.
- The system is rated for 5,000 lbs. Shock absorber pack incorporated in the system limits arrest forces on the body to under 900 lbs. when properly used.
- The maximum weight capacity (including clothing, tools, etc.) for this lifeline is 310 lbs.
- The rope grab remains locked until the lever is depressed to allow the unit to

slide along the lifeline rope. Releasing the lever locks the rope grab in place on the lifeline.

- Attach shock absorber portion built into the leg of the rope grab to an ANSI-approved body harness.
- DO NOT tie knots in rope lifelines. Knots in rope significantly reduce the rope's strength properties. Limiter knots are permitted at the end of the system to stop rope grab from travelling past end of lifeline.
- Do not allow slack in the system; slack can allow a free fall of greater than 6 ft. Rope Grab fall arrester components must be adjusted during use to limit free fall (slack) potential.
- Do not work above the Rope Grab unless free fall is limited to 6 ft. or less.
- Do not remove components from lifeline assemblies.
- Only one person is allowed per vertical lifeline system.

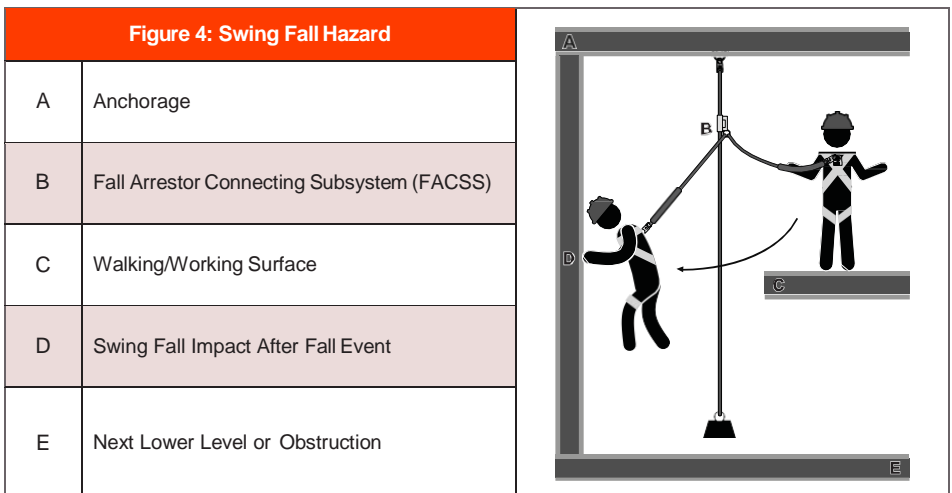
Anchorage Strength:

In accordance with ANSI Z359.1, any anchorage selected for **Personal Fall Arrest Systems must meet all** anchorage strength requirements. Anchorages used for PFAS must be capable of sustaining static loads in the direction permitted by the PFAS of at least 3,600 pounds. with certification of a qualified person or 5,000 pounds without certification.

When more than one PFAS is attached to an anchorage, the strengths stated above must be met independently at and for each anchorage location. Avoid potential swing fall hazards and obstructions.

Swing Falls:

Minimize swing fall by working as directly below the anchorage point as possible. Worker movement should remain within 30 degrees maximum deflection of the lifeline from the vertical line directly below the anchorage point. (Figure 4). Do not permit a swing fall if injury could occur.



Free Fall:

Maximum free-fall distance allowed for use in a Personal Fall Arrest System is six feet. Do not work above the anchorage point to avoid increased free-fall distance. Do not use this device at or below foot level. Using it at or below foot-level will increase your free-fall distance beyond the allowable limits set by OSHA and exceed the capabilities of this device to safely arrest a fall.

Fall Arrest Forces:

The Personal Fall Arrest System must limit fall arrest forces to 1800 lbs. maximum (8kN). Deceleration distance should not be allowed to exceed 48".

Fall Clearance:

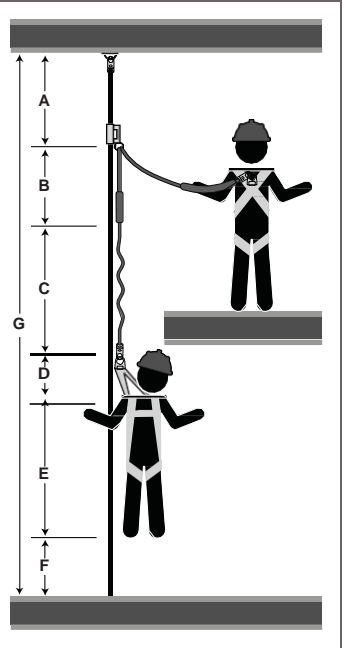
Ensure sufficient clearance exists in your fall path to prevent striking an object during a fall. The clearance required is dependent upon the subsystem and lifeline properties. The elongation specified is for an applied static load of 1,800 lbs. Wet ropes generally have more elongation than dry ropes. Allow for additional elongation in wet or humid conditions. Lifeline elongation must be considered when estimating fall clearance. Approximate elongation for new lifelines in dry conditions are 5 feet of lifeline elongation:

Calculating Total Fall Distances:

Total Fall Clearance below worker is calculated from Anchorage Connect. Free-Fall Distance + Working Level + Energy Absorber + Deceleration Distance + Worker Height + Connector Length + Safety Factor. Ensure the total fall distance is clear of obstructions and equipment. Avoid potential contact with a lower level.

Figure 5: Managing Vertical Lifeline Stretch

A	Stretch	Stretch of Vertical Lifeline: Stretch = length of VLL from Anchorage Connector to Rope Grab position on VLL multiplied by 10%
B	0.3ft.	Length of Shock Absorbing Lanyard: Original working length before a fall event occurs/before activation of energy absorber
C	4 ft.	Elongation/Deceleration Distance: Maximum allowable amount of elongation that will payout from the energy absorber upon activation, during a fall event
D	1 ft.	Harness Stretch & Dorsal D-Ring Shift: Combined amount of harness webbing elongation and dorsal D-Ring upshift during entire fall event
E	5 ft.	Height of Dorsal D-Ring: Average height of the Dorsal D-Ring on a user's full body harness measured from the walking/working surface up
F	1-1/2 ft.	Safety Factor: Added length to account for factors like an improperly adjusted harness, actual worker height, and worker weight
G	Add A-F	Total Minimum Clear Fall Distance Required: Must calculate for Distance A)



Sharp Edges:

Avoid working where your lifeline, lifeline subsystem, or other system components will be in contact with, or abrade against, unprotected sharp edges. Do not loop a lifeline around small diameter structural members.

Rescue:

Users must have a written rescue plan and the means to implement it. This plan must provide prompt employee rescue or assure that employees have the ability to rescue themselves in the event of a fall.

After a Fall is Incurred:

Components which have been subjected to fall arrest forces must be removed from service immediately.

General Use Considerations:

Avoid work where a lifeline may cross or tangle a lifeline of another worker. Do not allow lifeline to pass under worker's arms or between worker's feet.

Making Connections:

- See Illustration 3. When using a hook to connect components to an anchorage, Ensure roll-out cannot occur when using a snap hook to connect components to an anchorage. Use self-locking snap hooks and carabiners to reduce the possibility of roll-out.
- Follow manufacturer's instructions for each component of the system.

Connecting to an Anchorage or Anchorage Connector:

- Lifelines or lifeline subsystems supplied with connecting hooks should be connected to the anchorage properly.
- The connection must support 3,600lbs with certification, 5,000lbs without certification per worker.
- Knots must not be used for load bearing end terminations. See ANSI Z359.1. Some knots reduce lifeline strength fifty percent or more.
- If the user splices end terminations, proper procedures must be followed to ensure compatibility in size, shape, and strength.

Connecting Rope Grab to Lifeline:

- Rope Grab can be positioned at any point along the vertical lifeline such that if a falls occurs, the rope grab immediately locks on the lifeline.
- The integral energy absorbing lanyard ensures that the device limits maximum fall arrest forces. Rope grab must only be used with the integral energy absorbing lanyard.
- User must allow for up to 48" of deceleration distance when calculating necessary fall space.

Connecting to the BodyWear:

- Rope Grabs should only be connected to the back D-Ring on the full- body harness.

TRAINING

Employers are responsible for providing training to any employee who may be exposed to fall hazards in order to enable the employee to recognize and reduce them. Training must be conducted by a competent or qualified person. Trainer and trainees must not be exposed to fall hazards during training courses.

INSPECTION

Note: Keep all instructions available for reference. Record the date of first use:

Record all observations and results of each inspection in your Hog Tracker account or inspection log. If inspection reveals any defect, inadequate maintenance, or unsafe condition, remove Self Retracting Lifeline from service immediately.

Any equipment that has been subjected to the forces of arresting a fall must be removed from service immediately.

Note: Equipment must not be altered in any way, including attempted repair. Only manufacturer, or entities authorized in writing by the manufacturer, may make repairs to this product.

- Equipment must be free of corrosion, chemical attack, alteration, excessive heating or extreme wear.
- All markings must be legible and attached to the equipment.
- Inspect Rope Grab, buckles, D-rings, snap hooks and thimbles for evidence of distortion, sharp edges, burrs, cracks, worn parts or corrosion.
- Make sure buckles work correctly and move freely.
- Snap hook gate spring provides tension to keep the snap hook gate closed in a locked position; snap hook must close flat and exhibit no sideways play. Rivets and grommets must be tightly set in the material with no distortion.
- All webbing must be free of frayed or broken fiber, pulled stitches, tears, abrasions, mold, burns or discoloration.
- Inspect rope by twisting. Inspect webbing by pressing to bend webbing over a 1½ inch diameter object. Rope must be free of cuts, fraying or signs of wear.
- Shock absorbing devices must show no evidence of elongation.

Note: If inspection reveals any defective condition, remove from service immediately.

MAINTENANCE & CLEANING

Wash Rope Grab with a liquid that will dissolve or wash away all contaminants. Allow Rope Grab to dry completely. To clean lifeline rope & webbing, wipe off all surface dirt. Use solution of water and mild detergent to clean away contaminants. Wipe dry with clean cloth. Hang away from heat to dry. Store this equipment in a cool, dry, and clean environment that is out of direct light when not in use to prevent UV degradation

Frequency:

- All equipment must be visually inspected prior to each use according to the manufacturer's instructions included at time of shipment. Inspections must be performed by a Competent Person other than the user (as defined by OSHA) a minimum of twice per year.
- Record the results of each formal inspection in your Hog Tracker account or inspection log.
- NOTE: Per Cal/OSHA PFAS must be inspected by a competent person at least twice a year, in accordance with the manufacturer's recommendations, with inspection dates documented.

Repairs to the Multi-Directional Anchor Plate can only be made by a PALMER SAFETY Fall Protection representative or an entity authorized by PALMER SAFETY.



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