

# BUCKINGHAM MFG.

## Vertical Lifeline Rope Instructions / Warnings

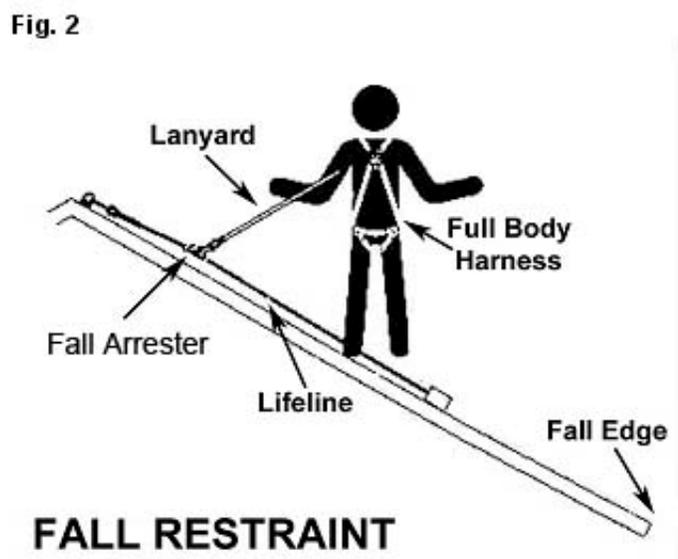
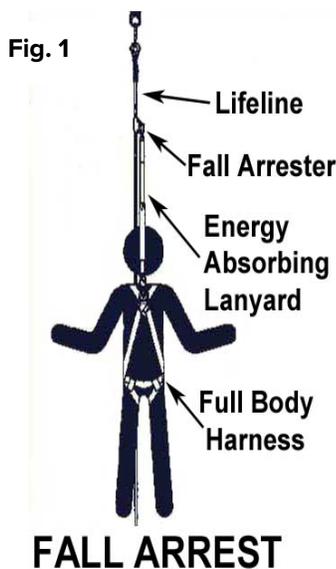
Warning: Do not use this product if you cannot understand and follow the instructions and warnings that come with it and complete all necessary functions.

Vertical lifeline systems are designed to provide fall protection while moving vertically. This product (the rope) of a Vertical Lifeline System is only one component of a complete fall arrest or restraint system which must include additional compatible, personal protective equipment. Vertical Lifeline Systems generally include compatible personal protective equipment such as: Lifeline (rope), fall arrester, energy absorbing lanyard (BuckStop, BuckArrest), full body harness (fall arrest harness). Only compatible components can be used to make up these systems and the user must follow the manufacturer's instructions for each component. This product is not designed for and must not be used for anything other than a vertical lifeline rope.

Common uses for vertical lifelines include the attachment of a fall arrester to provide the user with a means to move along the lifeline. Two common practices for using the lifeline are shown below.

**Fall Arrest:** The lifeline is used as part of a complete fall arrest system normally comprised of a lifeline, fall arrester, energy absorbing lanyard and full body harness (Fig. 1). Maximum allowable free fall is six feet.

**Fall Restraint:** The lifeline is used as part of a fall restraint system normally comprised of a lifeline, fall arrester, lanyard and full body harness. System is designed to prevent the user from reaching a fall hazard such as the fall edge of a roof. (Fig. 2). No vertical free fall is permitted.



### ATTACHMENT / RIGGING

Buckingham lifelines are manufactured in various styles and configurations including varying diameters, lengths, material, terminated ends and with both permanently attached and removable hardware. Choose the appropriate lifeline for your application.

Use only fall arresters that are compatible based on lifeline diameter, material and type.

Only use connecting hardware (snap hooks, carabiners, D-rings, etc.) that is compatible in size, shape and strength with anchorage and other system components. Non-compatible connectors may unintentionally disengage. Self locking snap hooks and carabiners capable of supporting at least 5000 lbf. are required by ANSI Z359.12 and applicable sections of OSHA 1926.502 (d) & 1910.66 App. C.

#### **Fall Arrest:**

Attach the connecting end snap hook / carabiner of the lifeline to a rigid fall arrest anchor point capable of supporting a minimum of 5,000 lbf. (22.2 kN) load per attached worker and being independent of worker support as noted by OSHA 1926.502 (d)(15). Only one person is permitted to attach to each individual rope of the vertical lifeline system at any one time (i.e. multiple connections to a single lifeline are not permitted).

Rig the Lifeline so the location of the anchorage connector is at or above the level of the worker's dorsal d-ring. This is usually 5-ft. or higher above the walking/working surface. Anchor point placement must be as close to directly overhead as possible to reduce the possibility of swing falls. Work as close as possible to directly under the anchor. An example of a swing fall hazard is shown in figure 3.



Fig. 3

Rig the lifeline to ensure free fall is limited to a maximum of 6 feet and there is sufficient clearance in the fall path below to prevent striking an object or lower level in the event of a fall. The clearance required is determined by combining several factors such as:

- Free fall distance
- Fall arrest connecting sub system components (fall arrester and carabiner, fall arrester and lanyard, fall arrester and energy absorbing lanyard)
- Lifeline stretch based on rope type and the distance between user's point of attachment and the anchor point.
- Energy absorbing lanyard deployment distance.
- Fall arrester movement on the lifeline.
- Harness effect (D-ring slide / harness stretch)

Notes: In general, the maximum free fall distance is twice the length of the fall arrest connecting sub system. Refer to product labeling for energy absorbing lanyard maximum deployment distances.

If you are in doubt when determining required fall clearance, always consult your Supervisor, Safety Director or contact Buckingham Mfg. at (607) 773-2400 or 1-800-937-2825.

Additionally, a minimum of 12 feet (3.7 m) of lifeline should be allowed below the securing point of a fall arrester, and the end must be terminated to prevent the device from sliding off the lifeline. One termination is the use of a figure 8 stopper knot as shown in Fig. 4. Alternatively, the lifeline must extend to the ground or the next working level below to prevent the worker from inadvertently moving past the end of the lifeline and having the fall arrester become disengaged from the lifeline.

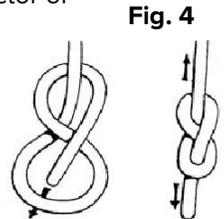


Fig. 4

Secure the free end of the lifeline to ensure a light tension and absence of slack. An example is to attach a rope weight to the end of the lifeline.

For fall restraint applications, locate anchorages and rig the lifeline using a lanyard short enough to prevent the person's center of gravity from reaching the fall hazard so that vertical free fall is not possible (Fig. 2).

## WARNINGS

- This equipment is intended for use by properly trained professionals only.
- Please consult with your physician prior to using this product. Do not use this product under the influence of drugs or alcohol.
- This product is designed to be used by a person with a weight up to 350 lbs. when fully equipped.
- No more than one person may be connected to a single lifeline at any one time.
- Fall protection equipment (i.e. fall arrest, work positioning belts, retrieval, suspension etc.) should not be resold or provided to others for re-use after use by original user as assurance cannot be granted that a used product meets criteria of applicable standards and is safe for use to a subsequent user.
- Manufacturer's instructions shall be provided to the user of this product. If an additional copy is needed, contact supplier or Buckingham Mfg. Co.
- Completely read, understand, and follow all instructions, warnings, and guidelines pertaining to this and all associated equipment before use. Failure to do so could result in your serious injury or death.
- Employer - instruct employees as to proper use, cautions and warnings before use of this equipment.
- Be certain this equipment is suitable for the intended use and work environment. It should only be used as personal protection equipment (PPE). If suitability for intended use is in doubt, contact supplier, consult a safety engineer, or Buckingham Mfg. Co. before using.
- Ensure Vertical Lifeline Rope is properly attached to anchor point.
- Perform an operational test before each use to determine: 1. That rope is properly installed to the fall arrester and properly functioning. 2. All hardware is properly connected to anchor point and full body harness.
- Ensure lifeline free end is properly terminated or length is sufficient to extend to the ground or the next working level below to prevent the user from inadvertently moving past the end of the lifeline.

- Only Buckingham Mfg. Co. or those people authorized in writing by Buckingham Mfg. Co. may make repairs to this equipment.
- Product must not be altered in any way.
- In the event of a fall, the employee must have a rescue plan and a means to implement it.
- Use PPE only for the specific purpose for which it is designed and intended. This lifeline is for personal use only, NOT for hoisting or towing.
- This rope is NOT designed for, nor to be used as, a component of a horizontal lifeline system.
- OSHA requires that impact force in a fall NOT exceed an 1800 lb. limit with a harness. Keep connecting device slack to a minimum to stay under these limits.
- Harnesses equipped with a front mounted attachment element for fall arrest shall be used only as part of a personal fall arrest system that limits the maximum free fall distance to two feet (0.6m) and limits the maximum arrest force to 900 lbf. (4.0 kN).
- Equipment subjected to impact loading must be immediately removed from service, destroyed and discarded.
- Fall arrest anchor points must support a minimum of 5,000 lbf. (22.2 kN) per attached worker and be independent of worker support.
- Fall restraint anchor points as a minimum must be capable of sustaining static loads in the direction allowed by the restraint system.
- No fall protection system can guarantee that you will not sustain injuries should a fall occur. Therefore, connecting devices should be kept as short as possible to minimize free fall distance. OSHA requires that maximum length of energy absorbing lanyards provide for a fall of no greater than six (6) feet (1.8 m), allow no contact with any lower level and unit elongation not exceed 3.5 feet.
- The fall arrest attachment point on the user should be in the middle of the back near shoulder blade level.
- When using a fall arrester as an attachment point to a lifeline, always keep it above the rear fall arrest attachment of the harness. If climbing above the fall arrester, position it to a point higher up the lifeline prior to ascending.
- Use this lifeline only in combination with compatible equipment (i.e. fall arresters, energy absorbing lanyards etc.). See the instructions supplied with fall arresters for compatibility, proper method of connection and use of the device prior to use.
- Avoid rubbing of unit components against abrasive surfaces and sharp edges.
- Always work directly under fall arrest anchor point to avoid swing fall injuries (pendulum effect).
- Never wrap a lifeline around a beam or other sharp structural member or abrasive surface, as the material could be cut or damaged. The lifeline should always be installed with the snap hook / carabiner attached directly to an approved overhead anchorage. It is not permissible to tie the rope to an overhead structure or wrap the rope around a structure and use the snap hook / carabiner to tie-back to the rope.
- Never knot the working section of a lifeline. Knots can reduce the ropes strength up to 50%. A knot may be an acceptable means of securing the free end of the lifeline at ground level.
- Avoid working where your lifeline may cross or tangle that of another worker or object. Do not allow the lifeline to pass under your arms or between your feet.
- As outlined by OSHA 1910.66 App. C 8, due to tie off considerations significant reduction in the strength of the lifeline may occur (in some cases, as much as a 70 percent reduction). The sliding hitch knot (prusik) should not be used for lifeline connections except in emergency situations where no other available system is practical. The "one-and-one" sliding hitch knot should never be used because it is unreliable in stopping a fall. The "two-and-two," or "three-and-three" knot (preferable), may be used in emergency situations; however, care should be taken to limit free fall distance to a minimum because of reduced lifeline/lanyard strength.
- Always visually check that the snap hook / carabiner freely engages the anchor point attachment and the keeper / gate is completely closed. Never rely on the feel or sound of a snap hook / carabiner engaging.
- Be certain the snap hook / carabiner is positioned so that its keeper / gate is never load bearing.
- Ensure loads applied to snap hooks / carabiners are directed in the proper orientation. Proper and improper loading techniques are shown below in Fig. 5.

Proper Loading Techniques

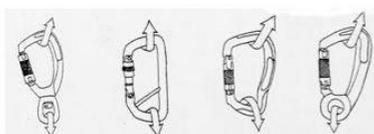
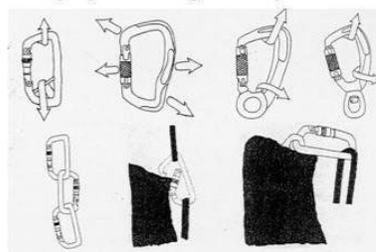


Fig. 5

Improper Loading Techniques



- Never disable the locking mechanism on the snap hook / carabiner, punch holes in or alter a connecting device or any part of this system in any way.
- Avoid contact of this equipment with high temperature surfaces, welding, or other heat sources, electrical hazards or moving machinery. Do not let any part of this system come into contact with any chemicals, corrosive materials, acids or basic solvents.
- Never work without independent fall-arrest protection if there is danger of a fall.
- Product covered under these instructions / warnings should not be resold / redistributed or re-used after use by original user.

## CLEANING, STORAGE & MAINTENANCE

Proper cleaning storage and maintenance of your equipment will prolong its useful life and contribute toward its performance. Cleaning, storage and maintenance of equipment shall be conducted by the user's organization in accordance with the manufacturer's instructions. A dirty product should be washed with water and mild soap (a dish washing soap that removes grease such as Dawn) and rinsed in clean water, then allowed to dry thoroughly without using excessive heat.

Equipment must be stored and transported in a manner that protects it from exposure and conditions that could result in damage. Store and transport in a clean and dry environment out of direct sunlight and away from extreme climate conditions and so that the equipment does not come into contact with, but not limited to, corrosive elements, solvents, oil, chemical agents or their vapors, fumes, moisture, or other degrading elements. Ropes should be stored on racks or hooks to provide ventilation and should never be stored on concrete or dirt surfaces.

Lubricate moving hardware parts at least weekly or as often as required to maintain smooth operation (no binding) with light weight lubricant such as WD-40®. To aid in protecting the hardware from rusting / corrosion, it is recommended that the hardware be treated with WD-40 Multi-Use Product or Hilco Lube lubricant cleaner at regular intervals. If used in a corrosive environment you should always rinse, thoroughly dry and relubricate your equipment after each use.

## INSPECTION

- Prior to and after each use, carefully inspect each component of this lifeline and all associated equipment. Apart from visual examination of product before and after each use, it should be inspected at least twice a year by a competent person capable of determining the suitability for use. The inspection should include, but not be limited to the following:

### Lifeline

- Inspect the entire length of rope to ensure there are no cuts, kinks, abrasions, burns, broken fibers, chemical or physical exposures, excessive wear, mildew, discoloration, swelling, or herniated rope (core popping through cover)
- Inspect spliced or stitched eyes to ensure there is no excessive wear, abrasions, cut, broken, missing or unraveling thread or broken fibers, and that shrink tube and thimbles are properly in place.

### Hardware

- Ensure locking device and or keeper / gate operate freely and smoothly.
- Inspect to ensure there are no cracks, distortion, corrosion, or nicks.

If any evidence of wear or deterioration as outlined above is observed, immediately cease use, destroy the product, and replace it with new equipment. Should any unusual conditions not outlined above be observed, or you have reasonable doubt about a particular condition, remove the equipment from service and notify your Supervisor, Safety Director, or contact Buckingham Mfg. Co. for clarification.

## **STATEMENT of OBSOLESCENCE:**

Precise “useful life expectancy” or “shelf life” for this product is not specified, as the degree of use, conditions of use, and the degree of care and storage determines useful life. All users maintain responsibility to select proper equipment for the job, be properly trained in its use, and ensure all personnel support equipment passes inspection before each use. Upon evidence of defects, damage or deterioration, all equipment shall be removed from service immediately and tagged or marked as unusable or destroyed. Additionally, all equipment shall be inspected on a regular basis not to exceed one year by a Competent Person, as defined by OSHA/ANSI, to verify that the equipment is safe for use. In the event of any question or concern regarding the condition of such equipment, users shall remove the equipment from service for further inspection. All users must comply with OSHA/ANSI/ASTM standards prior to and in using such equipment. For more information regarding safe and appropriate use of equipment, please contact Buckingham Manufacturing at 1-800-937-2825.

## **INTERNATIONAL USERS:**

Notwithstanding the above, please know that certain international jurisdictions require manufacturers of equipment to provide customers with a maximum useful lifespan (sometimes referred to as a “Statement of Obsolescence”). To the extent required, Buckingham personal protective equipment manufactured from synthetic fiber materials including but not limited to items such as webbing and/or rope are subject to a maximum useful lifespan of ten (10) years from the date of manufacture. As stated above proper usage, storage, maintenance, and care impacts the useful lifespan of equipment. Extreme circumstances may require that product must be retired after only one use. This statement is made in conformance and compliance with BS EN 365:2004. International users must ensure that product inspections are completed by Competent Persons as defined by international standards including but not limited to British Standard (“BS”). If equipment fails any inspections, it must be immediately withdrawn from service and destroyed. For more information regarding safe and appropriate use of equipment, please contact Buckingham Manufacturing at 1-800-937-2825.

## **OUR GUARANTEE:**

We guarantee the equipment we manufacture to be free from defects in material and workmanship. We will repair any equipment deemed to be defective which is returned to us by the original purchaser. However, this guarantee is void if any product is changed or altered in any way, or if the product is used in a manner other than for which it is intended. This express guarantee supersedes all other expressed or implied guarantees, obligations or liabilities. There are no implied warranties of merchantability or fitness for a particular purpose and as such, all implied warranties are specifically disclaimed.

## **LIMITATION ON LIABILITY:**

In no event will Buckingham or buyer be liable to the other for lost revenues, lost profits or any other indirect, consequential, special or punitive losses or damages, however caused, whether in action for breach of contract, strict liability, tort, or otherwise, even if advised of the possibility of such losses or damages. In no event will Buckingham’s liability exceed the total amount paid by the buyer to Buckingham for the product or equipment giving rise to such claim(s).

Please see other terms and conditions relating to this product at <https://buckinghammfg.com/terms-conditions/>

## **REGISTRATION:**

Before use of the product, ensure to register and confirm the product at [www.buckinghammfg.com/register](http://www.buckinghammfg.com/register).

**BUCKINGHAM MFG.**  
**BINGHAMTON, NY**  
**[www.buckinghammfg.com](http://www.buckinghammfg.com)**  
**1-800-937-2825**

Information contained in these written instructions supersedes all other information (written, audio, video etc.) produced by Buckingham Mfg. prior to the revision date of this document.