

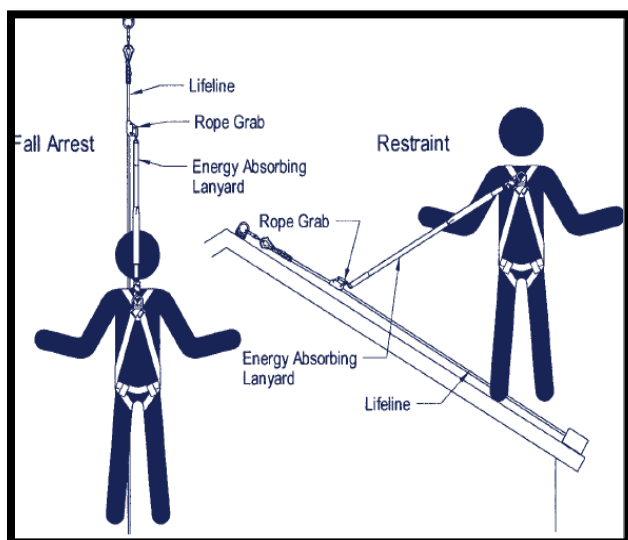
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| Title of Training | Vertical Life Line System | |
| Equipment Info. | MAKE/TYPE/SIZE/MODEL | |
| Material Needed | MANUFACTURER/EQUIPMENT | |
| | MANUAL | |

VERTICLE LIFE LINE SYSTEMS

PURPOSE: Vertical lifelines and vertical lifeline subsystems are intended to be used as part of a personal fall arrest or restraint system. These lifelines and lifeline subsystems (with the exception of 3/8-inch wire rope) are not designed for use in horizontal lifeline systems. Applications include: Inspection work, construction, demolition, maintenance, oil production, confined space rescue, window washing

FALL ARREST: The lifeline or lifeline subsystem is used as part of a complete fall arrest system, which typically includes a lifeline, rope grab, lanyard, and full body harness. Maximum permissible free fall is six feet.

B. RESTRAINT: The lifeline or lifeline subsystem is used as part of a restraint system.



Restraint systems typically include a full body harness and a lanyard to prevent the user from reaching a fall hazard (leading edge roof work). No vertical free fall permitted.

1.2 LIMITATIONS: Consider the following application limitations before using this equipment:

A. CAPACITY: This equipment is designed for use by persons with a combined weight (person, clothing, tools, etc.) of no more than 310 lbs. No more than one person may be connected to a single lifeline.

B. FREE FALL: Personal fall arrest

systems used with these lifelines must be rigged to limit the free fall to six feet (according to ANSI Z359.1). Restraint systems must be rigged such that there is no possible vertical free fall.

C. FALL CLEARANCE: Ensure that adequate clearance exists in your fall path to prevent striking an object. 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.

D. ENVIRONMENTAL HAZARDS: Use of this equipment in areas where environmental hazards exist may require additional precautions to reduce the possibility of injury to the user or damage to the equipment. Hazards may include, but are not limited to; high heat, caustic chemicals, corrosive environments, high voltage power lines, explosive or toxic gases, moving machinery, or sharp edges.

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E. COMPONENT COMPATIBILITY: The lifelines must be used with rope grabs only.

F. TRAINING: This equipment is intended to be used by persons trained in its correct application and use.

1.3 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.

COMPATIBILITY OF CONNECTORS: Connectors are considered to be compatible with connecting elements when they have been designed to work together in such a way that their sizes and shapes do not cause their gate mechanisms to inadvertently open regardless of how they become oriented.

Connectors (hooks, carabineers', and D-rings) must be capable of supporting at least 5,000 lbs. (22kN). Connectors must be compatible with the anchorage or other system components. Do not use equipment that is not compatible. Non-compatible connectors may unintentionally disengage. Connectors must be compatible in size, shape, and strength. Self locking snap hooks and carabineer's are required by ANSI Z359.1 and OSHA.

MAKING CONNECTIONS: Only use self-locking snap hooks and carabineers' with this equipment. Only use connectors that are suitable to each application. Ensure all connections are compatible in size, shape and strength. Do not use equipment that is not compatible. Ensure all connectors are fully closed and locked connectors (snap hooks and carabineer's) are designed to be used only as specified in each product's user's instructions.

ANCHORAGE

STRENGTH: The anchorage strength required is dependent upon the application:

A. FALL ARREST: Anchorages used for personal fall arrest systems 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. See ANSI Z359.1 for certification definition. When more If the connecting element that a snap hook (shown) or carabineers attaches to is undersized or irregular in shape, a situation could occur where the connecting element applies a force to the gate of the snap hook or carabiner. This force may cause the gate (of either a self-locking or a non-locking snap hook) to open, allowing the snap hook or carabiner to disengage from the connecting point.

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1. Force is applied to the snap hook.
2. The gate presses against the connecting ring.
3. The gate opens allowing the snap hook to slip off.

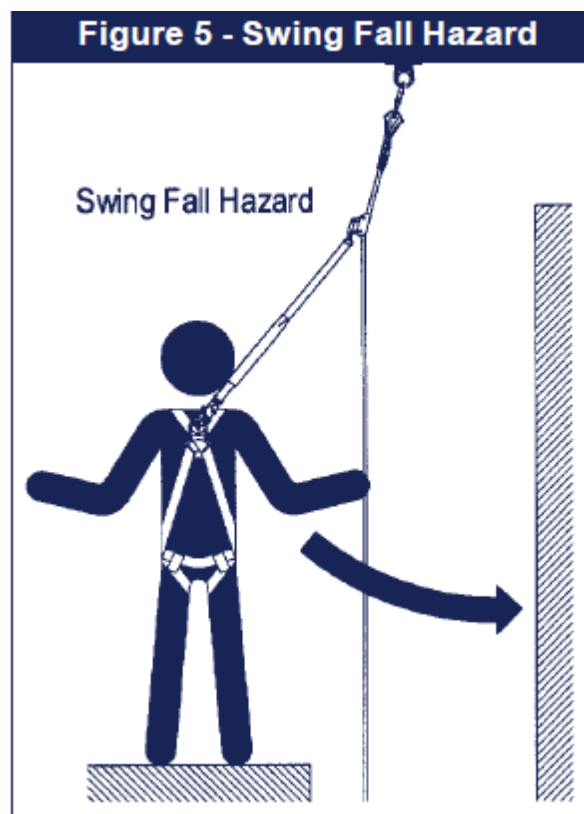
B. RESTRAINT: The restraint system must be attached to an anchorage capable of sustaining static loads in the directions permitted by the restraint system of at least 3,000 lbs. When more than restraint system is attached to an anchorage, the strengths stated above must be met at each anchorage location independently.

OPERATION AND USE

BEFORE EACH USE of this equipment, carefully inspect it according to steps listed AT END OF THIS TRAINING UNDER Inspection,

3.2 PLAN your fall arrest or restraint system before using this equipment. Consider all factors that will affect your safety during use of this equipment. Consider the following points when planning your system:

- A. ANCHORAGE:** Select a rigid anchorage point that is capable of sustaining the loads specified in section 2.3. For fall arrest applications, select anchorage locations that will minimize free fall and swing fall hazards. For restraint applications, locate the anchorages such that no vertical free fall is possible.
- B. FREE FALL:** To avoid increased free fall distance, do not work above the anchorage level. Rig personal fall arrest systems so that the free fall is limited to six feet (ANSI Z359.1). Rig restraint systems such that no vertical free fall is possible.
- C. FALL ARREST FORCES:** The personal fall arrest system must limit fall arrest forces to 1,800 lbs. and deceleration distance must not exceed 42 inches. Do not use a body belt for fall arrest applications.
- D. SWING FALLS:** See Figure 5. Swing falls occur when the anchorage point is not directly above the point where a fall occurs. The force of striking an object in a swing fall may cause serious injury. Minimize swing falls by working as directly below the anchorage point as possible. Do not permit a swing fall if injury could occur.



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E. 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 (rope grab and lanyard, rope grab and carabiner) and lifeline properties. Table 2 shows the approximate elongation for new lifelines in dry conditions. 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.

F. 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. If working with this equipment around sharp edges is unavoidable, provide protection by using a heavy pad over the exposed sharp edge

INSPECTION STEPS:

Step 1. Inspect lifeline hardware (snap hooks, ferrules, thimbles, etc.). These items must not be damaged, broken or distorted. These items must be free of sharp edges, burrs, cracks, worn parts, or corrosion. Hook gates must move freely and lock upon closing.

Step 2. Inspect the lifeline per the following:

SYNTHETIC ROPE: Inspect rope for concentrated wear. Material must be free of frayed strands, broken yarns, cuts, abrasions, burns, and discoloration. The rope must be free of knots, excessive soiling, paint build-up, and rust staining. Rope splices must be tight, with five full tucks, and thimbles must be held firmly by the splice. Check for chemical or heat damage; indicated by brown, discolored, or brittle areas. Check for ultraviolet damage; indicated by discoloration and splinters and slivers along the rope surface. All of the above factors are known to reduce rope strength. Damaged or questionable rope should be replaced.

WIRE ROPE: Inspect entire length of wire rope. Always wear protective gloves when inspecting wire rope. Inspect for broken wires by passing cable through gloved hands, flexing the rope every few inches to expose breaks. Broken wires can be removed by bending the wire back and forth parallel to the rope 8 length. Do not pull broken wires out of the rope. Replace the wire rope if there are six or more randomly distributed broken wires in one lay; or three or more broken wires in one strand in one lay. A “lay” of wire rope is the length of wire rope it takes for a strand (the larger group of wires) to complete one revolution along the rope. Replace the wire rope if there are broken wires within one inch of the swages at either end of the assembly. Wire rope should be free of corrosion.

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Step 3. Inspect labels. All labels must be present and fully legible. See section 8.0.

Step 4. Inspect each system component or subsystem according to manufacturer's instructions.

Step 5. Record the inspection date and results in the inspection log..

If inspection reveals an unsafe or defective condition, remove equipment from service and destroy, or contact Brieser Safety Department for repair.

TRAINING

It is the responsibility of the user to assure they are familiar with these instructions, and are trained in the correct care and use of this equipment. User must also be aware of the operating characteristics, application limits, and the consequences of improper use of this equipment

IMPORTANT NOTICE

This Safety Training Topic (STT) does not necessarily cover all possible hazards associated with this equipment and should be used in conjunction with equipment manual. It is designed as a guide to be used to compliment training in the field at Brieser Construction and as a reminder to users prior to equipment use.

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