



# Fall Protection Plan

2015

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## REVISION HISTORY LOG

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## **1.0     INTRODUCTION:**

The following fall protection requirements compiled from Cal-OSHA regulations, and ANSI standards can minimize or prevent injuries, fatalities and lost work days. Cal-OSHA recognizes that falls are generally complex events, involving a variety of factors. Falls are among the most common reasons for workplace injuries and fatalities in the State of California. Consequently, this fall protection program involves human and equipment related issues in protecting the City of San Carlos employees from exposure to fall hazards. The following key elements must be addressed in order to protect the City of San Carlos affected employees from fall hazards and include but are not limited to:

- The proper training on when and where fall protection is required.
- The proper selection, training, use and maintenance of fall protection equipment and fall protection systems.
- The proper construction and installation of fall protection safety systems.
- The proper supervision of employees.
- The proper implementation of work procedures.

Achieving 100% fall protection begins by planning the specific work methods through a collaborative effort between managers and affected workers. This should include an analysis for the work task, including travel to and from the work site, and the proper selection of equipment, supplemented by initial and ongoing training, knowledgeable supervision and regular maintenance. In other words, 100% fall protection can be achieved through a complete systematic approach to each potential exposure before work begins.

It is essential to develop the habit of designing a fall protection plan based on a complete job hazard analysis before beginning each job. Installing a fall protection system that fits the requirements of one situation may not be appropriate in another, even though the situations are apparently similar. Each work method and elevated work task should be examined thoroughly. Outside of specific personal fall arrest equipment and its anchorage, planning what to do after a fall occurs is often overlooked or left up to a “rescue” operation. Much can be done to eliminate or reduce injuries a worker may sustain in a fall, as well as employing systems that allow the worker to recover from a fall independently.

## **2.0     PURPOSE:**

This plan establishes and describes the procedures to be used by the City of San Carlos affected employees to provide fall protection where a fall hazard cannot be eliminated, set criteria and practices for a fall protection system and establish minimum training requirements.

### **3.0 SCOPE AND APPLICATION:**

A. The California Occupational Safety & Health Administration (OSHA) Code of Regulations (CCR) Title 8, General Industry Safety Orders, Construction Safety Orders identify the minimum standards for safe work practices and regulatory requirements for affected employees using fall protection systems. The following are areas or activities identified by the City of San Carlos where affected employees may encounter a fall hazard and therefore be required to implement a fall protection system to minimize the risk of a serious injury or fatality. These include but are not limited to working from or on :

- Elevated ramps & other walkways
- Excavations and, trench sites.
- Holes, drop offs
- Leading edge
- Unprotected sides and edges
- Roof top and near skylights
- Wall openings
- Other walking & working surfaces
- Bridges & pump stations
- Portable and fixed ladders
- Heavy equipment i.e. Vac truck
- Aerial devices i.e. Scissor lifts
- Near confined spaces

General activities conducted by the City of San Carlos employees may involve general building inspections, maintenance and/or repair of HVAC/Chiller units, roof gutters, lighting fixtures, traffic control signs, confined space entry to lower levels, solar heating plumbing systems, park public bathroom roofs, roof waterproofing, heavy equipment i.e. Vac truck maintenance, and working near the service vehicle pit.

B. In addition to the Injury Illness Prevention Program (IIPP), this Fall Protection Plan includes:

- A training program designed to instruct employees in general safe work practices, fall protection equipment safe use, and specific instruction with regard to fall hazards during general activities.
- Scheduled equipment and worksite periodic inspections/audits to identify and correct unsafe conditions and work practices.

#### **4.0     GENERAL REQUIREMENTS:**

All fall hazards shall be assessed, evaluated and controlled by permanent engineering controls when feasible. If engineering controls are not feasible, then all employees responsible for performing work requiring the use of fall protection systems shall be trained on recognizing such hazards and in the use of approved fall protection systems as specified by the regulatory requirements.

#### **4.1     THE PRACTICES, PROCEDURES AND EQUIPMENT:**

Include but are not limited to:

- Hazard Assessments
- Fall Hazard Elimination
- Fall Protection Systems
  - Passive Systems
    - Fall Prevention – Guardrails, safety nets, floor covers, catch platforms, etc.
  - Active Systems
    - Personal Fall Protection – Personal Fall Arrest System, Personal Fall Restraint System, Positioning Devices
- Other Fall Protection Methods
  - Administrative Controls
    - Warning Line Systems
    - Safety Monitoring Systems
    - Controlled Access Zones
- Training

#### **5.0     REFERENCES:**

Reference Appendix A for a list of the Cal-OSHA Orders, and ANSI Standards:

#### **6.0     RESPONSIBILITIES**

##### **6.1     SAFETY COORDINATOR OR DESIGNEE:**

- Be responsible for administering the fall protection plan guidelines for the City of San Carlos.

- Ensure coordination and compliance with these programs provisions when conducting work that requires climbing fixed ladders or using fall protection systems in any/all of the City of San Carlos operations or facilities.
- Provide training to ensure that the purpose, function, and proper use of fall protection equipment and policies are understood by employees and that the knowledge and skill required for the safe application and usage is acquired by the employees.
- Evaluate this Fall Protection Plan for accuracy and compliance as required by the City of San Carlos Injury and Illness Prevention Program policy for periodic review or when necessary.
- Ensure all documented program revisions are communicated to all applicable personnel and employee training will be updated accordingly.
- Ensure recordkeeping system is created and maintained with in the City of San Carlos designated department indicating which employees have received fall protection training.
- Identify activities on elevated work areas (i.e. roofs, leading edge elevated site work, platforms, catwalks, fix ladders, scaffolding, tree work, holiday lights hanging, etc.) that require climbing fix/portable ladders and using fall all protection systems.
- Provide and assign fall protective equipment to employees who are required to wear the equipment while working on elevated work areas.
- Make provisions to provide training to personnel who work on elevated work areas, to acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned as defined in CCR Title 8 (div. 1, subchapter 4, article 24).
- Coordinate with contractors who may work on elevated work areas.
- Review contractor's checklist and program safety submittals for compliance in accordance with regulatory requirements prior to start of work projects.

## **6.2 SUPERVISORS/MANAGERS:**

- Ensure the overall implementation of this plan is accomplished within their departments.
- Ensure all employees are aware of the requirements and provisions of this plan.
- Shall identify employees to receive appropriate fall protection, training and equipment to perform their assigned duties.
- Shall not assign or direct an untrained and/or unauthorized employee to perform activities which require climbing fix ladders or using fall protection equipment.
- Ensure all employees with fall hazard exposure are provided with appropriate fall protection equipment.
- Ensure that employees are aware of the requirement that fall protective equipment will be properly inspected, used, and maintained as required by the equipment manufacturer.

- Ensure that emergency rescue and medical service capabilities are assessed for each site where elevated work may be performed.
- Create a Rescue Plan for each elevated work project in a job specific Fall Protection Plan.
- Ensure a positive means of emergency communication is available between personnel on site and the emergency rescue and medical services provider
- Ensure a designated “competent person” (other than the user) tracks and inspects all personal fall protection equipment and safety systems every 6 months and documents the inspections. Other equipment may require more frequent inspection depending on the manufacturer guidelines.

### **6.3 EMPLOYEES:**

- Wear the assigned fall protective equipment whenever required while working on an elevated work area, scissor lift, and aerial device or when required in other operations.
- Properly inspect, use, and maintain fall protective equipment.
- Notify supervisor/manager whenever fall protective equipment becomes defective and must be repaired and/or replaced and immediately remove from service any or all equipment that has been involved in a fall incident or accident.
- Never attempt any activity on an elevated work area, which may be considered a fall hazard without wearing fall protective equipment.
- Never work on elevated areas for which you have not received the proper training.
- Ensure safety harnesses properly fit.
- Ensure that rescue services are available prior to working on elevated areas.
- Ensure positive means of communication is available between personnel and emergency and medical services personnel prior to working on elevated areas.

### **7.0 TERMS AND DEFINITIONS**

For fall protection system key terms and definitions reference Appendix B of this plan.

### **8.0 FALL HAZARDS**

Each department is responsible to inspect and assess for potential fall hazards and have each potential fall hazard evaluated either by the employer designated Qualified or by a Competent Person.

## 9.0 WALKING AND WORKING SURFACES

### 9.1 HAZARD RECOGNITION

- Protecting the City of San Carlos employees from fall and climbing hazards begins with the identification of all potential fall hazards at each facility associated with each particular operation.
- Anytime the City of San Carlos employees are at a height of 4 feet or greater on unprotected sides of elevated work locations that are not buildings or building structures (8 CCR 3210(b) and/or 7 ½ feet or greater, a fall hazard exists off of perimeters, edges, sides, slopes, etc. of structures (8 CCR 1670(a)).
- The City of San Carlos employees shall be protected from fall hazards by providing guardrails or other appropriate fall barriers, or by providing employees with the appropriate personal protective equipment (PPE), and the necessary training to safely conduct work operations.
- This plan applies to all employees who do or may work at heights of the 4 feet and/or 7.5 feet or more requirements identified above.
- Fall protection must be utilized, within the requirements of this plan, regardless of the duration or nature of the work.
- Fixed installed guardrails meeting applicable standards shall be the primary element in fall protection. Guardrails shall be maintained in proper condition.
- Engineering controls shall be implemented where feasible to reduce employee hazards to falls.
- When conducting a hazard assessment(s), personnel shall select equipment and employ measures that present the greatest protection in preventing a potential fall. This hazard assessment shall also consider the effects of a fall and select equipment that will best protect the employee in the event of an actual fall.
- The City of San Carlos employees are directed to access elevated working locations using an approved and secured proper height/capacity pre-use inspected ladder in accordance with manufacturers instruction/specifications as identified on a legible label located on the ladder rail, OR using an scissor lift when feasible.
- The City of San Carlos employees may use an aerial (elevating lift) lift, bucket truck, etc. to access work at elevated work areas rather than installing approved anchor and use personal fall protection equipment when working from the elevated leading edge.
- The City of San Carlos employees are required to use personal fall protection equipment when working from aerial lift devices including scissor lifts.
- Other types of potential fall hazards that are not commonly thought of, which could also require protection, include but are not limited to the following:
  - Open sided floors, ramps, walkways, etc., that are adjacent to or above dangerous operations, must be guarded, regardless of height.

- Wall openings from where there is a drop of more than 4 feet require guardrails.
- Open windows from which there is a drop of more than 4 feet and the bottom of the window is less than 3 feet above the floor or platform.
- Hatchways and chute floor openings.
- Any opening more than 4 feet in elevation where a significant portion of the body is leaning over or through to perform work.
- Skylights that are at the same level with the roof surface or that may otherwise serve as a walking/working surface.
- Scaffold over 7.5 feet in height.
- Aerial lifts or bucket trucks.
- Confined space entry to lower levels such as man holes and wet wells.
- The following should be used to protect from overhead falling hazards:
  - Placement of toe boards and the use of hard hats.
  - Equipment shall not be stored within 4 feet of an unprotected edge.
  - Canopy structures may be required in high traffic areas.
  - The area to which objects could fall needs to be barricaded, and individuals must be equipped with hard hats.

## 9.2 ENGINEERING CONTROLS

The City of San Carlos designated competent person will determine if engineering controls can eliminate or lessen the hazard of the work area or job site. Engineering controls will be provided, where possible, to minimize fall hazards.

Engineering controls of fall hazards consist of the following:

1. **Guardrails and Toe Boards** - These requirements apply to temporary controls on job sites, as well as, permanent fixtures in general work areas. The work site Supervisor, competent in fall protection systems and requirements, may set requirements that may be more stringent for permanent guardrails.
  - The standard railing consists of a top rail, mid rail, and posts no more than 8 feet apart, and 42-45 inches above the walking working surface with midrail installed at a height midway between the top-rail to the walking working surface.
  - Standard toe boards must be a minimum of 3 inches high, no more than 1/4" clearance to the floor. If a mesh material is used, the opening must be less than 1".
  - The anchoring of posts and framing of members for railings of all types must be of such construction that the completed structure is capable of withstanding a load of 200 pounds applied in any direction at any point on the top rail;
  - Guardrail systems have a surface that prevents injuries such as punctures and lacerations and prevents snagging of clothing.
  - When guardrail systems are in hoisting areas, a chain gate or removable guardrail section shall be in place, when not being used.



2. **Skylights** – Any employee approaching within 6 feet of any skylight shall be protected from falling through the skylight or skylight opening by any one of the following:
  - The skylights that may be used as a walking or working surface must be protected by a standard railing, standard skylight screen, grill work with 4” x 4” openings or slat work with 2” openings; and
  - Standard skylight screens must be capable of withstanding a minimum load of 200 pounds applied perpendicular to any point on the screen and will not deflect under ordinary loads and impacts and break glass.
3. **Covers** - shall be designed by a qualified person and be capable of safely supporting:
  - Covers for holes, including grates, shall be capable of supporting, without failure, 400 pounds or twice the weight of employees, equipment, and materials, that may be imposed on any one square foot area of the cover at any one time.
  - Covers located on roadways and vehicular aisles shall be capable of supporting, without failure, at least twice the maximum axle load of the largest vehicle expected to cross over it.
  - All covers shall be secured in place to prevent accidental removal or displacement by the wind, equipment, or employees.
  - Covers shall bear a pressure sensitized, painted, or stenciled sign with legible letters not less than one inch high, stating “Opening—Do Not Remove.”
  - Covers shall not project more than one inch above the floor level and all edges shall be chamfered to an angle with the horizontal of not over 30 degrees. All hinges, handles bolts, or other parts shall set flush with the floor or cover surface.

### 9.3 HOUSEKEEPING

Slips and trips are caused by lack of good housekeeping, inadequate maintenance of walking and working areas and inattention by employees. Employees should keep their area clean and orderly. If they are not equipped to eliminate a hazard, they should contact the appropriate maintenance personnel to correct the problem. These hazards may include wet floors, torn floor coverings and stair tread, and missing or broken handrails or guardrails.

General safety requirements include but are not limited to the following:

All areas of the workplace shall be kept clean and as dry as possible. These guidelines apply to work areas, passageways, storerooms, and service rooms:

- All spills cleaned promptly. Floors in work areas kept free of scraps, chips, oil spills, and other debris or liquids.
- Boxes, chairs, buckets, desks or any other device not specifically intended for use in extending reach shall not be used.

- Areas, which are constantly wet, should have non-slip surfaces or mats where workers may walk or work. Where wet processes are used, good drainage is required and should be maintained.
- Every floor, working place, and passageway shall be maintained free from protruding nails, splinters, holes, and loose boards.
- Where mechanical handling equipment such as lift trucks are utilized, sufficient safe clearance shall be provided for foot and vehicular traffic.
- No obstructions that could create a hazard are permitted in aisles. All permanent aisles must be easily recognizable.
- As a general condition, a standard guardrail and/or toe board are required where; (i) people walk near or beneath the open sides of a platform or similar structures 30” above the floor. (ii) ground or working areas; (iii) where items could fall from a structure; (iv) or where items could fall from a structure into machinery below.
- No obstructions or equipment across passageways shall be allowed.

#### **9.4 ELEVATED LOCATIONS (PLATFORM, AISLE, WALKWAY)**

- Walking and working surfaces should be at least 18 inches wide, stable and reasonably free of tripping hazards
- Floors and walking surfaces shall be kept free of debris and clutter.
- Floors and walking surfaces shall be kept free of protruding nails, splinters, holes, or loose boards.
- No obstructions or equipment across passageways shall be allowed.
- Every effort shall be made to ensure all temporary platforms/walkways are secured and equipped with solid decks free of openings and standard guardrail systems and temporary work platforms or walkways must be provided with at safe means of access/egress, which allows personnel to remain tied off at all times.
- Retractable lifelines or other approved fall protection equipment and procedures shall be used to achieve fall protection while ascending or descending access ladders to temporary platforms or walkways.
- All personnel engaged in **unguarded** work at elevations at or above 4 feet and/or 7.5 feet shall be provided with and shall wear fall protection suitable for the task at hand.
- Personnel working from temporary platforms or traveling on temporary catwalks shall have their safety lanyard secured at all times to a lifeline or structure capable of supporting 5000 pounds.
- Personnel working at elevations greater than 4 feet and/or 7.5 feet above the surface below shall maintain positive engagement with fall protection equipment. This includes, but is not limited to, transitions between ladders or other devices and fall protection

systems. This positive engagement can be maintained by connecting to the fall arrest system prior to disconnecting from the ladder or other device.

- All floor openings including skylights shall be identified and guarded or protected to prevent personnel from falling into/through such openings.

## **9.5 EXCAVATION**

- Where employees or equipment are required or permitted to cross over excavations over 6-feet in depth and wider than 30 inches, secured walkways or bridges with standard guardrails, toe boards and non-skid surface shall be provided.
- Adequate barrier physical protection shall be provided at all remotely located excavations. All wells, pits, shafts, etc., shall be barricaded or covered. Upon completion of exploration and other similar operations, temporary wells, pits, shafts, etc., shall be backfilled.

## **9.6 HOIST AREA**

- During hoisting operations that are conducted four (4) feet or higher above solid surface, employees shall be protected from falling by guardrails (chain gates, hinged gate, or 1/2 door designed/installed in accordance with regulatory specification requirements) or personal fall restraint/arrest systems.
- If an employee must lean through the access opening or out over the edge of the opening to receive or guide equipment or materials, they shall be provided with personal fall restraint/position/arrest equipment (approved anchor, full body harness, lanyard, and tie-off equipment, etc).
- Openings associated with hoist platforms shall be kept closed when not in use.

## **9.7 LADDERS (PORTABLE, EXTENSION, FIXED LADDER WAYS, ETC.)**

- Portable A-frame ladders shall be of proper height/capacity and set up on firm level surfaces.
- Workers using A-frame ladders shall not stand on the top or second to the top rung of the ladder for any reason.
- Portable extension ladders must be of the proper height/capacity and shall be positioned using the four to one rule. (For every four feet in the height of the structure, the foot of the ladder must be located one foot away from the leading edge where the ladder contacts the roof or surface. Note: it is very important that the roof overhang is taken into account when positioning the ladder.).
- The ladder must be positioned using the roof upper surface contact point in determining the proper location of the ladder. Failure to do so would result in an improper ladder

angle and could result in a fall and ladder must extend a least 3 feet above leading edge to facilitate transition of and onto the ladder.

- Portable extension ladders shall be tied off at the top to prevent the ladder from falling.
- Portable extension ladders shall be secured by an assistant until the ladder can be tied off or properly secured. This includes the last trip down after untying a ladder at the top.
- Workers transitioning to a roof or other elevated structure shall secure themselves to the fall restraint/arrest system when available prior to tying off or transitioning off the ladder.
- If a designated and approve anchor for tying off is not available, then transition from the ladder perpendicular to the roof edge and stand at a minimum 6 feet away from the roof edge.
- For steep roof such as 7:12 pitch roofs or higher, install an approved anchor on the roof prior stepping on the roof and tie off before transitioning to the roof.
- When using or accessing any ladders workers must ascend and descend using 3 point contact and ABSOLUTELY never carry equipment and/or tools when either ascending or descending.
- Ladders must be secured to prevent accidental movement.
- Ladders must all be pre-use inspected in accordance with manufacturer specification and instructions as outlined on a legible ladder rail.

#### **9.7.1 General Policy – Selection, Pre-use and Use:**

Always:

- Follow the ladder safety rules and instructions printed on the ladder label (must be legible).
- Inspect ladders before using them.
- Ensure you have the required ladder(s) with you.
- Use only City of San Carlos owned and supplied ladders - never borrow from a contractor.
- Do not loan City of San Carlos ladders to contractors.
- If a ladder does not pass the pre-use inspection or is damaged during work it must be immediately “red tagged” and removed from service and either destroyed or repaired by a manufacturer approved repair vendor or service.

#### **9.7.2 Choosing a Ladder:**

Select the right ladder for the task. A ladder’s type is determined by how much weight it can safely support and the proper height for the project elevated work location.

- |           |                                    |                     |
|-----------|------------------------------------|---------------------|
| • Type 1A | Extra Heavy Duty Industrial Ladder | 300 pounds capacity |
| • Type 1  | Heavy Duty Industrial Ladder       | 250 pounds capacity |

- |          |                               |                     |
|----------|-------------------------------|---------------------|
| • Type 2 | Medium Duty Commercial Ladder | 225 pounds capacity |
| • Type 3 | Light Duty Household Ladder   | 200 pounds capacity |

Extension ladders vary in length. Choose one that is about three feet taller than the job, plus allowing for the one foot out for every four-foot rise rule. Don't use a ladder that is so tall that the extra height presents a hazard. Extension ladders should have the proper overlap depending on their maximum length:

- Three foot overlap for a 32 foot ladder
- Four foot overlap for a 32 to 36 foot ladder
- Five foot overlap for a 36 to 48 foot ladder
- Six foot overlap for a 48 foot ladder

### 9.7.3 **Pre-Use Check (What to Look For?):**

Ladders must be periodically inspected by a competent person for visible defects, before use and after any incident that could affect the ladder's safe use.

- The minimum clear distance between side rails for portable ladders is 11½ inches
- Rungs/steps of both portable and fixed ladders must not be vertically spaced less than 10 inches apart, or more than 14 inches apart.
- Rungs/steps must be parallel, level and uniformly spaced when the ladder is in position for use.
- Rungs/steps of portable ladders must be corrugated, knurled, dimpled, coated with skid-resistant paint, or otherwise treated to minimize slipping.
- Rungs/steps must be intact and free from grease, oil or other slipping hazards
- Side rails and rungs/steps must be free of splinters or sharp edges, which could lead to puncture or laceration wounds, or snag clothing.
- Metal ladders must not be dented or bent.
- Fiberglass ladders must not be cracked or torn.
- Ladders showing evidence of exposure to fire or corrosive chemicals should not be used.
- All ladder feet should be in place.
- All support braces and associated bolts/rivets must be in place and secure.
- On extension ladders, make sure the rope is not torn or frayed.
- On stepladders, make sure the hinge spreader is working properly.
- Wood ladder components must not be coated with any opaque covering (paint, plastic, etc.) except for required identification or warning labels, which may be placed on only one face of a side rail.
- All labels must be legible or it must be removed from service.

### 9.7.4 **Using a Ladder:**

- If you have any fear of heights – STOP – don't climb a ladder – let somebody else do it.
- Read and follow all manufacturer's labels and warning stickers on the ladder.

- Stepladders should only be used fully opened, with the spreaders locked.
- Never step on the spreader of a stepladder.
- Never climb on the rear section of a stepladder unless it is designed for use on both sides.
- Never stand or sit on the top rung or the top of a stepladder.
- Carefully raise an extension ladder before extending it. If in doubt, get a co-worker to help. Secure the foot of the ladder before extending it.
- The base of a ladder should be away from the building/wall  $\frac{1}{4}$  of the distance from the ground to the ladder's support or contact point on the building/wall.
- Use both hands when climbing. Hoist tools up in a bucket, or wear a tool belt.
- Don't stretch so far sideways to reach something that your belly button is past the side rail of the ladder. Climb down and move the ladder.
- Always face toward the ladder when climbing up or down.
- Be very careful when using a ladder in wet conditions – you may not have as much stability as when it's dry.
- Make sure all the ladder feet are secure on a stable, level, and firm surface – unless secured to prevent accidental movement.
- For more than a one-time use, make sure the base and the top of the ladder are tied off or otherwise secured.

Note: If ladder cannot be secured it will require a spotter to remain on the bottom rung for all ascending and descending of personnel.

- Wear proper footwear.
- Carry an extension ladder horizontally, not vertically. Get help. Watch your step.
- Never use a ladder for uses it's not intended for, such as in place of scaffolding.
- Never allow more than one person at a time on a ladder.
- Ladders placed in areas such as doorways, passageways, driveways, etc., must be secured, or barricades must be placed to keep pedestrians, traffic, doors, etc. away from the ladder.
- The area around the top and bottom of a ladder must be maintained as a controlled access zone to prevent overhead falling hazards to person below.
- Ladders must not be moved, shifted or extended while in use.
- Ladders must have non-conductive side rails if used where workers could come into contact with energized electrical equipment or conductors.
- Immediately red-tag defective ladders: "Do Not Use" or Out of Service" and make sure they are not used

### **9.7.5 Maintenance of Ladders**

- Damaged ladders must be withdrawn from service and either repaired or destroyed.
- When a defect or unsafe condition found, personnel should tag or mark the ladder, so that, not used until the corrective action taken.
- Defective or unsafe conditions shall be reported to the Supervisor.
- Field repairs and the fabrication of improvised ladders is prohibited.
- Never try to straighten a bent or bowed ladder. Remove it from service immediately.

- Do not paint wooden ladders with solid color paints. This may mask cracks in the wood and make them hard to see. Clear wood preservative may be used to protect bare wood.
- If exposed to grease, oils or other slippery substances, the ladder shall be cleaned of the substance with appropriate products as specified by the manufacturer.
- If the slippery substance not completely removed, the ladder shall be removed from service.

#### 9.7.6 Storage of Ladders

Ladders should be stored where they can easily be inspected and reached without causing injury. Secured all ladders in storage.

### 9.8 **FIXED LADDERS AND STAIRS**

#### 9.8.1 Fixed Ladders

- Fixed ladders shall be designed to withstand a single concentrated load of at least 200 pounds.
- Rungs of metal ladders must have a minimal diameter of three quarters inch.
- Rungs must be at least 16 inches wide and be spaced 12 inches apart.
- Fixed ladders, when their location so demands, must be painted or treated with a preservative to resist deterioration.
- The preferred pitch for a safe descent is 75 to 90 degrees. Ladders with 90-degree pitch must have two and one-half feet (2 ½) of clearance on the climbing side. There must be a three-foot clearance on ladders with a 75-degree pitch.
- There must be at least a seven-inch (7") clearance behind the ladder to provide adequate toe space.
- There must be a clearance width of fifteen inches (15") on each side of the centerline of the ladder, unless the ladder is equipped with a cage or well.
- Side rails must extend at least 42 inches above the landing.
- Fixed ladders greater than 20 feet in height shall be equipped with either a ladder safety climbing system or safety cage. Cages shall start at an elevation of 6 feet and shall continue to a point of 42" above the top of the upper surface.
- Every ladder way floor opening or platform with access provided by ladder way, including ship stairs (ship ladders), shall be protected by guardrails with toe boards meeting the requirements of General Industry Safety Orders, Section 3209, on all exposed sides except at entrance to the opening. **The opening through the railing shall have either a swinging gate or equivalent protection**, or the passageway to the opening shall be so offset that a person cannot walk directly into the opening. **8 CCR 3212 (2)(A)**

#### 9.8.2 Fixed Industrial Stairs

The following applies to all stairs around equipment, machinery, tanks, etc. They do not apply to stairs used for fire exits:

- Riser height and tread width of fixed industrial stairs should be uniform throughout any flight of stairs.
- All treads must be reasonably slip resistant.
- The minimum permissible width of a stairway is 22 inches.
- The angle to the horizontal made by the stairs must be between 30 and 50 degrees.
- All stairs adequately lighted.
- If the tread is less than 9 inches wide, the risers should be open.

## 9.9 SCAFFOLDING

Scaffolds shall be provided for all work that cannot be done safely by employees standing on permanent or solid construction at least 20 inches wide, except where such work can be safely done from the proper height/capacity ladder.

All scaffolds shall be erected in accordance with CCR, Title 8, Section 1637, Scaffold Design and Construction specifications.

Use of Scaffolds:

- Selection - The proper scaffold selected for the task by the Competent Person based upon the type of work conducted and the working load supported.
  - Light duty scaffolds intended for workers and tools only. The design load required to support a working load of 25 pounds per square foot.
  - Medium duty scaffolds intended for workers, tools, and construction materials. The design load required to support a working load of 50 pounds per square foot.
  - Heavy duty scaffolds are intended for workers, tools, stored materials, and construction materials. The design load of the scaffold should be that it would support a working load of 75 pounds per square foot.
  - All scaffolds must be capable of supporting at least four times the design load.
- General Requirements
  - Fall protection (guard rails or personal fall protection system) is required for all scaffold use, 7.5 feet above a lower level.
  - All scaffold work conducted in excess of 7.5 feet in height, shall have 4-inch toe boards.
  - No movement of scaffold is allowed, while workers are working on scaffolding.
  - Follow all manufacturer's guidelines and special warnings if commercially produced.



- The maximum work level height shall not exceed 4 times the least base dimension of the scaffold. EXAMPLE: A four-foot base by six-foot length scaffold cannot exceed sixteen feet in height at the work platform level.
- The minimum working platform width is two feet.
- The supporting structure for the scaffold require rigidly braced, using adequate cross bracing or diagonal bracing with rigid platforms at each work level.
- Working platforms should have a non-slip surface.
- Scaffolds used only on an even surface.
- The platform surface kept clear of extraneous tools and materials.
- The work level platform shall be wood, aluminum, plywood planking, steel or expanded metal for the full width of the scaffold, except for necessary protected openings.
- Work platforms secured in position.
- All work platform planking in compliance with Cal-OSHA requirements. Wood shall be compliance grade lumber. Planks shall be overlapped a minimum of 12 inches and extended over supports 6-12 inches.
- Follow all manufacturer guidelines in the assembly of the scaffold. Do not use or assemble the scaffold if unsure of the correct assembly procedure.
- Controlled access zone is required around the base and hard hats are required within an area beneath elevated work where objects could fall from a height and strike a worker.
- Mobile scaffolds only moved if surface of travel is within 3 degrees of level and free of pits, holes, and obstructions, and the employee on the scaffold has advanced knowledge of the movement.
- Inspection of Scaffolds

Prior to the use of any scaffold, an inspection in accordance with manufacturer instruction and specification must be conducted by a designated competent person, and then daily during usage of the scaffold.

- Carefully examine the scaffold for broken or missing cross bracing, broken supporting structure, working platform, and other damaged parts.
- All walking and working surfaces must be free of grease, oil, paint, or other slippery substances.
- The scaffold should be equipped with positive wheel lock casters secured in place.
- The joint between working platform and supporting structure must be tight, and all hardware and fittings attached firmly.
- Movable parts should operate freely without binding or undue play.
- All wood parts must be free of sharp edges and splinters. Visually inspect the scaffold to be free of shakes, warping, decay or other irregularities.

- Metal parts must be free of sharp edges, burrs, and corrosion. Inspect for dents or bends in supporting structure, cross braces, and walking/working surfaces.
  - Check all working platform components, support structure connections, hardware connections, and rivets.
  - If a scaffold tips over, inspect the scaffold for damage before continuing work.
  - Damaged scaffolds must be withdrawn from service and either repaired by a qualified and approved manufacturer repair service/vendor or destroyed.
  - When a defect or unsafe condition found, personnel shall tag or mark the scaffold not be used until corrective action is taken.
  - Defective or unsafe situations report to the Supervisor.
  - Field repairs and the fabrication of improvised scaffolds prohibited.
- Maintenance of Scaffolds
    - A qualified and approved manufacturer repair service/vendor must do all scaffold repairs.
  - Storage of Scaffolds
    - Scaffolds shall be disassembled prior to storage.
    - Scaffolds should be stored to allow inspection and reached without causing accidents.
    - The storage area should be well ventilated and away from sources of heat and moisture.

#### **10.0 PERSONNEL LIFT (POWERED PLATFORM, SCISSOR LIFTS, FORK LIFTS, ETC.)**

Personnel using powered platforms, personnel lifts, scissor lifts with handrails less than 42” high, basket lifts or other enclosed elevated work platforms shall utilize a full body harness and lanyard, anchored to a designated anchor point on the equipment.

Equipment shall be placed on solid level surfaces so as to eliminate the possibility of overturning and follow manufacture use and specifications for the equipment.

**Note:** If the manufactured fall protection system is not 100% in safe working condition or in place then this will require further fall protection determination and personal fall protection equipment and evaluation by a competent person.

The City of San Carlos requires that all employees using the scissor lift must use the Personal Fall Restraint System and tied off to the equipment designated anchor. Note: Do not use Personal Fall Arrest System.

## **11.0 AERIAL LIFTS**

Personnel riding in or working from these lifts must wear a properly donned and fit full body harness and must secure their safety lanyard to the lift basket designated anchor point (connection point) at all times, in addition the employee must be trained to operate the equipment as well per T8 CCR 3648.

All manufacture instructions and specifications for equipment use must be followed.

Personnel must ensure that they understand and utilize the all clearance calculation when using a fall arrest (shock absorbing) lanyard length rather than a position/restraint or self-retracting (SRL) lanyard which doesn't require use of the fall clearance calculation because these systems are designed to either restrain worker from ever falling (restraint/position lanyard) or SRL which limits all falls to 24 inches or less.

Also note that if a fall arrest system is used that requires a rescue plan/procedure, said plan shall be in place in conjunction with prior notification with local emergency services capable of rescue from a hang fall accident. If position/restraint lanyard, or SRL, is used the rescue plan is not required since in the event of a fall SRL using personnel will be-able to self-rescue.

Aerial Lifts include the following types of vehicle mounted aerial devices used to elevate personnel to job sites above ground.

1. Articulating Boom Platforms designed to reach up and over obstacles.
2. Extensible or Telescoping Boom Platforms may extend over one hundred feet.
3. Vehicle Mounted Bucket Lifts used to repair utility lines.

### **Specific Requirements:**

- Aerial lifts must be secured in the lower traveling position before the truck moves for highway travel.
- Lift controls shall be tested each day prior to use.
- Only personnel authorized and properly trained shall operate an Aerial Lift.
- Employees shall always stand firmly on the floor of the basket and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.
- A full-body harness worn and a lanyard attached to the boom or basket approved anchor when working from an Aerial Lift.
- Tying off to an adjacent pole structure or equipment while working from an Aerial Lift not permitted.
- Boom and basket load limits specified by the manufacturer shall not be exceeded.
- The brakes shall be set and when outriggers are used, shall be positioned on pads or other solid surface.
- Wheel chocks installed when using an Aerial.

- Aerial Lift trucks shall not be moved when the boom is elevated in a working position, except for equipment that specifically designed for this type of operation.
- Articulating and extensible boom platforms shall have both platform and ground controls.
- Before moving an Aerial Lift for travel, inspect the boom to ensure it is properly cradled and outriggers are in the stowed position.

## **12.0 ROOFS**

The hazards associated with work on roofs include falling through openings and falling off edges. The protection of openings can be located in the engineering controls section of this program.

- By implementing the use of the hierarchy of controls employer/employees must first identify and utilize the safest possible procedure for access to, from and during the elevated project work.
- The system of choice for fall protection on roofs is first to access, if at all possible, from the ground up, utilizing an A-frame ladder, extension ladder, scaffold or aerial lift.
- Completing work tasks accordingly by NOT transitioning off onto the roof.

If not feasible next try to utilize:

- Personal Fall Restraint by anchoring off to an approved 3600 pound anchor which will restrain worker from reaching or falling off the leading edge, then:
- Personal Fall Arrest System (PFAS) (5000 pound anchor).
- A Qualified Person must design PFAS or anchor points for roof work.
- Least preferable, if all else is not feasible, is to implement one of the identified Administrative Controls as outlined in this program.
- Guardrails shall be required at locations where there is a routine need for any employee to approach within 6 feet of the edge of the roof.
- When intermittent work is being done, full body harness, approved anchor and lanyard, or an approved fall protection system may be provided in lieu of guardrails.

**NOTE: For the purpose of this requirement, routine need means more than four times a year and intermittent work means work not exceeding four times a year.**

Effective roof work techniques protect workers while providing the mobility and comfort necessary to perform work tasks. Several techniques are available that are described below.

## **12.1 LOW-SLOPE OR FLAT ROOFS**

Each employee/contractor engaged in roofing activities on low-slope roofs, with unprotected sides and edges 20 feet or more above lower levels, shall be protected from falling by providing Guardrail Systems, Safety Net Systems, Personal Fall Arrest Systems or a combination of Warning Line Systems and Guardrail Systems, Warning Line System and Safety Net System, or Warning Line System and Personal Fall Arrest System, or Warning Line System and Safety Monitoring System.

## **12.2 STEEP ROOFS (SLOPES GREATER THAN 7:12)**

Each employee/contractor on a steep roof with unprotected sides and edges 7 ½ feet or more above lower levels requires protection from falling by Guardrail Systems with Toe Boards, Safety Net Systems, and Personal Fall Arrest Systems.

## **13.0 OTHER BUT NOT LIMITED TO:**

- Other fall protection measures such as safety nets may be employed as necessary as defined specifically working over or near water and any other locations where the danger of drowning exists. Such systems must meet the provisions of state laws and ANSI standards for fall protection.
- Personnel working in Confined Spaces shall wear full body harnesses and shall utilize fall arrest systems in compliance with confined space entry standards and the City of San Carlos Confined Space written program/procedures.

## **14.0 FALL PROTECTION SYSTEMS**

In accordance with Cal-OSHA Title 8 Article 24 (Sections 1669-1672), the following safe work practices and regulatory requirements are the minimum standards for employee safety.

### **14.1 HIERARCHY OF FALL PROTECTION**

There are five basic methods used to control fall hazards. After identifying the hazard, the hierarchy can be applied to determine the best method of protection. This hierarchy can be applied to every fall hazard in any industry.

1. Hazard Elimination- Eliminate the need to access the hazard. (Contract work out, removal of work at elevated locations, engineering design changes, etc.)
2. Fall Prevention- A physical barrier between a worker and the fall hazard. (Guardrails, Parapets, Covers.)
3. Fall Restraint – Restrains the worker from reaching the edge. (Full body harness, approved anchor point, restraint/position lanyard, vertical lifelines)
4. Fall Arrest- Arrests a fall after it has started. (Full body harness, shock absorbing lanyard, approved anchor point, ladder safety devices, self-retracting lifelines, horizontal/vertical lifeline systems)

5. Administrative Controls – Warns of a fall hazard nearby will not actively stop a fall. (Warning line systems, controlled access zones, safety monitoring systems, fall protection plan)

## 14.2 TRIGGER HEIGHTS AND REGULATORY REQUIREMENTS:

- **Buildings – 8 CCR 3210(a) - 30 inches above the ground surface level** require a guardrail to be provided on all open sides of unenclosed elevated work locations, such as, roof openings, open and glazed sides of landings, balconies or porches, platforms, runways, ramps, or working levels more than 30 inches above the floor, ground.
- **Other Elevated Locations– 8 CCR 3210(b) - 4 feet above the ground surface level** of unprotected sides of elevated work locations that are NOT buildings or building structures shall be provided guardrails.
- **Note:** Where overhead clearance prohibits installation of a 42 inch guardrail a lower rail(s) shall be installed and the railing shall be provided with a toe board where the platform, runway, or ramp is 6 feet or more above places where employees normally work or pass and where the lack of a toe board could create a hazard from falling tools, materials or equipment.
- **Elevated Work Locations – 8 CCR 1670 - 7.5 feet above the ground surface level** of the perimeter of a structure, unprotected sides and edges, leading edges, through shaft ways and openings and sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected under the provisions of the regulatory requirements shall use approved personal fall restraint, positioning or arrest equipment or systems.

This type of fall hazard would require the use of fall protection equipment if not accessed using the appropriate size and type of ladder, extension ladder, scaffolding and/or aerial lift. Employees should be vigilant whenever working at any heights.

## 14.3 GUARDRAIL SYSTEMS

- Railings shall be constructed of wood, as follows, or in an equally substantial manner from other materials, and shall consist of a top rail not less than 42 inches or more than 45 inches in height measured from the upper surface of the top rail to the floor, platform, runway or ramp level and a mid-rail. The mid-rail shall be halfway between the top rail and the floor, platform, runway or ramp.
- A standard toe-board shall be 4 inches (nominal) minimum in vertical height from its top edge to the level of the floor, platform, runway, or ramp. It shall be securely fastened in place and have not more than 1/4-inch clearance above the floor level. It may be made of any substantial material, either solid, or with openings not over one inch in greatest dimension. Toe-boards shall be provided on all open sides and ends of railed scaffolds at

locations where persons are required to work or pass under the scaffold and at all interior floor, roof, and shaft openings.

- Guardrails are required at locations where there is a routine need for any employee to approach within 6 feet of the edge of a roof. When intermittent work is being done an approved fall protection system or safety harness and lanyard may be provided in lieu of guardrail systems. For the purpose of this requirement, “routine need” means more than four times a year and intermittent work means work not exceeding four times a year.

#### **14.4 PERSONAL FALL POSITION/RESTRAINT/ARREST SYSTEMS**

- Effective January 1, 1998- Body Belts shall not be used as part of a fall arrest system.
- All approved personal fall arrest equipment will be inspected by the user prior to each use according to the manufacturer’s instructions/specifications. The inspection shall include examination for wear, damage and other deterioration. If during the inspection, the user discovers defects or damage the user shall immediately remove the equipment from service and destroy.
- All fall arrest systems shall be properly engineered and designed. Equipment used for fall arrest shall meet ANSI standards and shall not be used for tasks other than fall position/restraint/arrest (e.g. lifting supplies or materials). The applications of fall systems shall include the use of predetermined anchor points. Each anchor point shall be capable of supporting a static load of 5000 lbs (3000 lbs. if using a position/restraint as in self-retracting lifeline (SRL)) and shall be independent of any anchorage used to support or suspend other platforms or loads. Anchor points shall be established and designed to limit the swing of an individual in the event of a fall.
- Lanyards shall be attached to anchor points, or other fall system components such as rope grabs, carabineers, anchor straps, etc. so as to limit the total fall distance. Generally this requires the lanyard to be positioned at or above head level. Where this cannot be achieved, lanyards of less than 6' in total length must be used. (the total extended length of break-away straps used as deceleration devices must be considered during the fall arrest system evaluation, design and placement and be not more than 3.5 feet).
- Full body harnesses meeting ANSI standards shall be supplied and used by all personnel working at unguarded elevations greater than 4 feet and/or 7.5 feet above the surface below. The use of body belts is strictly limited to positioning devices, and shall not be used for personnel fall arrest.
- Personnel working at elevations greater than 4 feet and/or 7 1/2 feet above the surface below shall maintain positive engagement with fall protection equipment, if available. This includes, but is not limited to, transitions between ladders or other devices and fall position/restraint/arrest systems. This positive engagement can be maintained by connecting to the fall arrest system on the structure prior to disconnecting from the ladder or other device.

- When work is of short duration and limited exposure such as measuring, roof inspection, etc., and the time involved in rigging and installing safety devices equals or exceeds the performance of the designated tasks of measuring, roof inspection, etc., these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained.
- Personal Fall Protection Protective Equipment shall be used to minimize fall hazards where engineering controls do not eliminate the hazard or in conjunction with engineering controls or where no other alternative means will minimize the fall hazard for work sites and duties to be completed by employees.
- The use of a Personal Fall Arrest System (PFAS) is the required personal protective equipment for fall hazards. A PFAS consists of a full-body harness, lanyard (or retractable lanyard), and anchor point OR a full-body harness, lanyard (or retractable lanyard), lifeline, anchor point, and deceleration/grabbing device.

The five Fall Protection categories:

- Fall Arrest & Personal Fall Arrest Systems (PFAS)
  - Body Harness – Only full-body harnesses are used. No body belts shall be used.
  - Connecting Devices – include shock-absorbing lanyards and lifelines.
  - Lanyards and Lifelines shall have a minimum breaking strength of 5000 pounds;
  - Lanyards shall not exceed six feet in length. Lanyards used on aerial lift devices should not exceed 3 feet in length to reduce slack;
  - Ropes and straps (webbing) used in lanyards, lifelines, and strength components of body harnesses shall be made from synthetic fibers;
  - Connecting assemblies shall have a minimum tensile strength of 5,000 pounds;
  - Personal Fall Arrest Systems shall limit the maximum arresting force to 1800 pounds with a full body harness;
  - The maximum free fall distance is six feet for all systems;
  - The maximum deceleration distance is 3 ½ feet;
  - Personal Fall Arrest Systems shall have sufficient strength to withstand twice the potential impact energy of the falling employee;
  - Lifelines shall be protected against cutting and abrasions;
  - Horizontal Lifelines designed, installed, and used under the supervision of a Qualified Person and as part of a complete Personal Fall Arrest System.
  - On Suspended Scaffolds or similar work platforms with Horizontal Lifelines, which may become Vertical Lifelines, the devices used to connect to a Horizontal Lifeline shall be capable of locking in both directions on the lifeline.



- Required separate attachment for each employee when using Vertical Lifeline systems.
- Anchorage – Anchorage point and anchorage connector.
  - Anchorages used for Personal Fall Arrest Systems shall be independent of any anchorage being used to support or suspend platforms, and be capable of supporting at least 5000 pounds per employee attached, or shall be designed, installed (temporarily or permanently), and used as part of a complete fall arrest system.
  - A Qualified Person shall determine all anchor points, both temporary and permanent.
  - Permanent anchor points shall be properly marked.
  - Guardrail attachment is prohibited for Personal Fall Arrest Systems.

- Positioning

A positioning device is not a substitute for a personal restraint/arrest system and is limited to use as a system rigged to allow an employee supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

Where a positioning device is used, it shall comply with the following:

- Position device systems require a full body harness. Body Belts are not legal.
- Positioning devices fall cannot be more than 2 feet or 24 inches.
- Secure positioning devices to an anchorage point capable of supporting at least twice the potential impact load of an employee's fall or 3600 pounds, whichever is greater.

- Restraint Line

A Restraint Line is a device that attaches between the employee and an anchorage point to prevent the employee from walking or falling off an elevated surface. It does not support an employee at an elevated surface, but rather, the employee from leaving the elevated surface or work position and provided by using a shock-absorbing lanyard or positioning device.

- Suspension

Personal Suspension Systems typically used for window washing and painting, and are designed to lower and support a worker to perform tasks. The components of a Suspension System are:

- Work Line
- Anchorage
- Boatswains Chair

A Boatswain's Chair System is a single-point adjustable suspended scaffold. Since the suspension system components isn't designed to arrest a free fall, a back-up fall arrest system should be used in conjunction with the personal suspension system that would activate only if the worker were to experience a free fall.

- Retrieval

Personal Retrieval Systems are used for confined space entry and on-entry rescue. Refer to the City of San Carlos, Confined Space Program for information on Confined Spaces entry. Personal Retrieval Systems consist of the following:

- Full-Body Harness
- Retractable Lifeline/Rescue Retrieval Winch
- Tripod or Davit Arm Uni-hoist

Any other personal protective equipment (PPE) deemed necessary for the task under the Personal Protective Equipment Standard, is required. This includes, but is not limited to, hard hats, gloves, safety glasses, and safety-toed boots. Hard hats are required within an area beneath elevated work where objects could fall from a height and strike a worker.

## **14.5 ADMINISTRATIVE CONTROLS:**

### **14.5.1 Warning Line Systems**

- Consist of rope, wire or similar material, flagged with highly visible material hanging from the warning lines at approximately 6-foot intervals, and shall be installed 34 to 45 above the roof surface to warn employees that they are approaching the edge of the roof.
- Warning lines shall have a minimum tensile strength of 500 pounds
- The line shall be attached at each stanchion in such a way that pulling on one section of the line between stanchions will not result in slack being taken up in adjacent sections before the stanchion tips over.
- The warning lines and headers shall be placed no closer than 6 feet from the roof edge.
- Application of materials outside the warning lines shall be closely supervised by a qualified person.
- No employee, other than an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

- Each employee working in a Warning Line zone shall be directed to comply promptly with fall hazard warnings from safety monitors

#### **14.5.2 Controlled Access Zones**

- Where personnel are not required to work near a leading edge, a controlled access zone may be employed in lieu of a personnel fall arrest system. This controlled access zone shall be positioned no less than 6 feet from the leading edge, the cable shall be able withstand a force of 200 lbs and shall be positioned at a height of not less than 39 inches and no more than 45 inches the working surface. The cable shall have flags every 6 feet. Personnel beyond the parameter of the controlled access zone, for any reason, shall utilize a fall arrest system.
- Parapets at least 24 inches high are adequate for roofing operations where machinery is not used. Parapet walls must be 36 inches high where felt-laying machines or other equipment that is pulled by an operator who walks backwards or motorized equipment on which the operator rides is being used.
- When used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall be defined by a control line or by any other means that restricts access. Signs shall be posted to warn unauthorized employees to stay out of the controlled access zone.
- When control lines are used, they shall be erected not less than 6 feet nor more than 25 feet from the unprotected or leading edge, except when erecting pre-cast concrete members.
- When erecting pre-cast concrete members, the control line shall be erected not less than 6 feet nor more than 60 feet or half the length of the member being erected, whichever is less, from the leading edge.
- The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.
- The control line shall be connected on each side to a standard railing or wall, or securely anchored on each end.
- Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:
  - Each line shall be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.
  - Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the working level/working area and its highest point is not more than 45.
  - Each line shall have a minimum breaking strength of 200 pounds.

### **14.5.3 Safety Monitoring Systems**

- Personnel working at elevations where no feasible fall arrest system has been developed or implemented, at the discretion of the supervisor/competent person, may utilize a safety monitor as the sole means of protecting an individual from a fall.
- The Safety Monitor system must be accompanied by a written plan, for each structure or situation, that clearly describes why other fall protection measures are not feasible, clearly identify and describe fall hazards, and describe measures taken to eliminate fall hazards or reduce the severity or likelihood of such falls.
- Note: This provision does NOT and must NOT be used as a method to relieve the City of San Carlos, supervisors or other personnel from the responsibility for employing proper, active fall protection systems such as personal fall position/restraint/arrest devices.
- The employer shall designate a person to monitor safety of other employees and the employer shall ensure that the safety monitor shall:
  - Be competent to recognize fall hazards.
  - Capable of warning workers when it appears that the worker is unaware of a fall hazard or acting in an unsafe manner and able to detect unsafe work practices.
  - The safety monitor must be on the same level and within visual sighting distance of the employee and shall always be close enough to communicate orally
  - Must not engage in any other work activities or have other responsibilities which could take the monitors attention from the worker being monitored.
- No employee, other than an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.
- Each employee working in a controlled work zone shall be directed to comply promptly with fall hazard warnings from safety monitors.
- When the safety monitor system is utilized, no mechanical equipment shall be used or stored in the area where the safety monitor system is employed.

### **14.5.4 Fall Protection Plan**

Required when employers engaged in leading edge work who can demonstrate that it is infeasible or creates a greater hazard to use conventional fall protection systems then a Fall Protection Plan must be developed and strictly adhered to during the project work.

- The plan is designed to enable employers/employees to recognize the fall hazards on the job and establish procedures to be followed in order to prevent falls to lower levels or through holes, and openings in walking/working surfaces.
- The fall protection plan must include a detailed statement which provides the name of who is designated and authorized to work in the controlled access zone.

- The plan must identify in detail the company name, work location, rescue plan/procedures, prepared by, modified by, approved by, supervised by, employees covered by, etc.
- Start by completing a Job Hazard/Safety Analysis (JHA/JSA).
- The plan shall include a written detailed discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection provided by conventional fall protection systems. EXAMPLE: Discuss to what extent to which ladders, scaffold, or vehicle mounted work platforms can be used to provide a safer work surface and thereby reduce the hazard of falling.
- All the procedures shall be strictly adhered to except if doing so would expose them to a greater hazard.
- Any changes to the plan shall be approved by a competent person whose identity is also documented on the plan or program.
- A copy of the fall protection plan with all approved changes (by a qualified person) shall be maintained at the job site.
- The fall protection plan shall be implemented under the supervision of a competent person.

#### **14.6 FALL PROTECTION MAY BE NEEDED AS FOLLOWS:**

Backup Protection – In most cases, personal fall arrest equipment is designed and should serve as back-up protection – that is, it is passive until a fall occurs, at which time it either arrests the fall or acts to lower the falling person in a controlled manner. This protection must fit in with the mobility requirements of the work task to remain passive and provide continuous protection. It also must take into account other variables, such as obstructions below the workstation.

Restraint/Positioning Suspension – What is commonly referred to as fall protection may only be a means of restraint prevention from reaching an edge or support necessary to complete the work task. Equipment, such as full body harness with back D-ring and positioning lanyard are designed to enable workers to position themselves to prevent a fall from occurring while still enabling mobility to complete work tasks. Since this usually involves moving or repositioning the equipment, an independent backup lifeline is required. Any time a worker's balance is substituted by harness and lines, a backup fall arrest system is required. Restraint systems are particularly difficult to design because of workplace geometry and human factors. If the restraint system is too short, the worker will detach near the edge; if too long, free falls can be expected; and if leaning occurs near an edge, a backup system is required.

Restraint protection shall be rigged to allow the movement of employees only as far as the exposed edges of the working level or working area.

Means of Retrieval – In certain instances, such as vertical entry into a Confined Space, fall protection equipment also can be used for emergency retrieval. When a lifeline is worn by an entrant for protection against a vertical fall hazard while entering a space, rescuers should not

have to go inside the space to hook up the victim for retrieval. Also known as self rescue system. This reduces the emergency response time considerably, and doesn't subject rescuers to the same harmful conditions that overcame the entrant.

***In some situations more than one system may be required to provide continuous fall protection for worker safety:***

Transition Points – Examples: An operator climbs to the top of a fixed ladder and moves across to a platform; an inspector steps over an extended walkway onto the top of a tank truck to attach her lanyard to a horizontal cable; a maintenance worker uses the overhead pipe for an attachment while traveling down a pipe rack until he reaches a perpendicular structural support beam. Too often these transitions are made without protection. Fixed ladder climbing systems should have an extension that enables the climber to move onto the guarded platform before disconnecting his climbing protection sleeve. In some applications, a double Y-lanyard, a second lanyard or lifeline system may be necessary. The objective is to not permit unprotected exposure while traveling to or returning from the workstation as well as while working.

Multiple Users – Elevated work tasks that require more than one person to complete must be planned carefully. Most horizontal lifeline systems accommodate two or more workers. Independent lifelines may be suitable depending on available anchorage points and the ability to keep the lines from entangling. For large numbers of workers, measures such as personnel nets, perimeter cable protection, or catch platforms might be more efficient means of guarding.

Multiple Fall Hazard Control Measures – Personal fall protection equipment alone may not be adequate to provide continuous protection. A combination of fall arrest and prevention may be necessary. Aerial lifts can be used for access and personal fall protection while stationary at elevated workstation. Workers on sloped roofs can use a combination of horizontal and vertical lifelines for two-dimensional protection.

***Fundamental Grouping of worker activities at elevations:***

Climbing/Traversing: includes climbing fixed or temporary ladders as well as temporary and permanent structures (e.g. fixed ladders on towers, chimneys, buildings, ships, tanks or vessels, temporary structures typically under construction including buildings, vessels, bridges, pre-cast concrete and roofs; and permanent structures such as pipe racks, tanks, boilers and antennas).

Mobile Work Positioning Systems: involve the use of some type of suspension equipment to position a worker such as a winch. A backup lifeline is needed in the event of a suspension line failure or equipment collapse.

Aerial Lift: Man lifts, scissor lifts, bucket trucks, suspended platforms or work baskets that are used to access an elevated workstation or to position work. For work positioning use of such platforms, fall protection is always needed, because workers tend to overreach, which can lead to a fall and is a requirement of the regulation when using an aerial lift/bucket truck. Aerial lifts and other platforms are sometimes stabilized by applying forces to the platform railings under a truss or next to an exit point. This can lead to weakening of the platform attachments. It is better to tie the structure together to minimize platform movement.

Horizontal Travel: work that requires horizontal mobility, such as walking along pipe racks or elevated catwalks, and unguarded platforms or mezzanines.

Two-Dimensional Travel: access and work can often require travel in both vertical and horizontal directions, necessitating two-dimensional protection. Work on slope roofing is an example of this.

Escape: for workers who may become trapped at elevation, an emergency means of escape vertically or at an angle away from additional hazards may be needed. (E.g. feed storage silos)

Confined Space and Retrieval: reference the City of San Carlos written Confined Space program.

## **15.0 FALL PROTECTION TRAINING REQUIREMENTS**

### **15.1 FALL PROTECTION TRAINING**

- All employees exposed to fall hazards shall be trained in the recognition and minimization of such hazards prior to exposure. Training shall be arranged through the Safety Compliance Coordinator.
- Employees will be trained in the fundamentals of fall protection in accordance with California Occupational Safety and Health Administration Title 8 (Div. 1, Subchapter 4 Article 24)
- Training will be provided to ensure that the purpose, function, and proper use of fall protection relating to equipment and policies, is understood by employees and that the knowledge and skills required for the safe application and use is acquired by the employees.

- Employees will require initial or retraining under any of the following conditions:
  - New employees working at elevated heights.
  - Changes in the workplace render previous training obsolete.
  - Changes in the types of fall protection systems or equipment used render previous training obsolete.
  - Impact load fall accidents or any other fall incidents.
  - Employee injury or “near miss.”
  - Inadequacies in an employee’s knowledge of use of fall protection systems or equipment or observed behavior indicate that the employee has not retained the required training.
  
- **Information and Training**
  - Employees who work on ladders: All employees who use ladders with a working height of six feet or more shall be knowledgeable of the following:
    - How to inspect ladders for visible defects; and
    - Proper ladder use.
  
  - Employees who use Fall Protection Personal Protective Equipment to control fall hazards in their work area shall be knowledgeable:
    - The application limits of the equipment;
    - The proper hook-up, anchoring, and tie-off techniques including determination of elongation and deceleration distance;
    - Methods of use; and
    - Equipment inspection and storage.
  
  - Employees who use Aerial Lifts should be knowledgeable of the following:
    - The manufacturer operating instructions.
    - Pre-Start Inspection of the Lift.
    - Inspection of the work area for dangerous conditions such as uneven surfaces, overhead obstructions, such as power lines, and severe weather.
    - Load Capacities of the equipment.
    - Safe equipment movement.
    - Fall prevention and appropriate Fall Protection Personal Protective Equipment use. (PPE)
    - Minimum Safe Approach Distances from energized power lines.
  
  - Employees who work on Scaffolds - Specific training is required in the following:
    - Electrical hazards, fall hazards, and falling object hazards in the work area.



- The correct procedures for dealing with electrical hazards and for erecting, maintaining, and disassembling the fall protection systems and falling object protection systems.
  - Proper scaffold use and proper material handling while on scaffold.
  - The maximum intended load and the load carrying capacities of the scaffolds.
- Employees Assigned as Fall Protection Competent Persons

Supervisors and/or employees who act as the Competent Person for a work area or job site shall be trained and certified through a qualified Fall Protection Training Program to be qualified and knowledgeable in the following:

- The nature of falls in the work area.
  - The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems used.
  - The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line system, safety monitoring systems, controlled access zones, and other protection to be used.
  - The employee roles in safety monitoring systems.
  - The limitations on the use of mechanical equipment during the performance of roofing work on low-sloped roofs.
  - The correct procedures for the handling and storage of equipment and material, and the erection of overhead protection.
  - The role of employees in fall protection plans.
  - The appropriate OSHA Standards.
- Employees Assigned as Scaffold Competent Persons:
- Supervisors and/or employees who act as the Competent Person in the use of scaffoldings shall be additionally trained and certified through a Scaffold Competent Person Training Program to be qualified and knowledgeable of the following:
- The proper selection of scaffold for the task based upon the type of work conducted and the working load supported.
  - The correct procedures for scaffold erection.
  - The correct procedures for scaffold dismantling.
  - The correct procedures for moving scaffolds.
  - The correct procedures for altering scaffolds.
  - The Cal-OSHA Standards.

## **16.0 TRAINING RECORDS**

Completed training shall be documented with employee name, training course and date of successful completion. A copy of training records shall be sent to Risk Management.

## **17.0 FALL PROTECTION EQUIPMENT INSPECTION REQUIREMENTS**

### **17.1 PRE-USE INSPECTION**

All personal fall protection equipment must be pre-use inspected prior to every use in accordance with the outlined procedure located in each piece of equipment's user manual. These manuals shall be kept for immediate reference with all fall protection equipment. Several manuals are included with this general plan. Reference Appendix E equipment specific manuals and inspection requirements.

Note: Safety systems designed to prevent serious or fatal injury, visual inspections prior to each use and periodic inspections and maintenance are vital.

If pre-use inspection identifies personal fall protection equipment is damaged or defective, said equipment shall be immediately removed from service and eliminated from any future use until inspected and recertified by a **competent person and qualified person for any installed fall protection systems**.

- Assigned PFAS equipment requires a pre-use inspection as outlined by the manufacturer recommendations for each piece and located in their respective equipment manuals.
- It is required a "Competent Person" (someone other than the user) complete a thorough in-depth documented equipment inspection every 6 months for each piece of fall protection equipment and initialed on each piece of equipment's inspection tag.

Note: Any personal fall equipment subjected to a full impacting fall arresting load shall be immediately removed from service and destroyed to eliminate the possibility of any further use.

- When fall arrest systems (Self Retracting Lifeline, Rescue Retrieval Winch, Ladder Safety Device, Scaffolding, Aerial Lift, etc.) and any of its components have been used to arrest a fall (impact loading), the system shall immediately be removed from service until fully inspected by a Qualified Person in conjunction with the Manufacturer or Manufacturer Representative to be inspected, repaired and recertified prior to placing back in service. (See Appendix B for definition) The Qualified Person must either deem the equipment safe to continue using or deem the equipment unsafe and shall remove or replace with a new system and components.
- Any Personal Fall Arrest Protective Equipment (full-body harness, shock absorbing lanyard, positioning/restraint device, connectors carabineers, etc.) that has been used to arrest a fall (impact loading) shall be immediately removed (red tagged, destroyed) from service and replaced.

## **17.2 COMPETENT PERSON INSPECTION**

All personal fall protection equipment and fall protection systems shall have a documented more thorough detailed inspection completed by a competent person every 6 months (Title 8; CCR 1670 (b) (19) as required in the regulation. This inspection includes but is not limited to inspection for:

- Mold damage
- Chemical damage from corrosion by acids, bases, solvents, petroleum products, etc.
- Abrasive damage from dried concrete, resin, etc.
- Wear
- Distortion
- Cut, broken, torn, frayed, scraped straps or components
- Properly working buckles, latches, double locking snap hooks, adjustment devices, etc.

Note: Inspection protocols and procedure document (attached separately) includes necessary check lists to ensure this documented inspection is properly completed and documented as required.

- If, upon inspection, a piece of equipment shows any sign of wear or damage, it shall be immediately removed from service and the Supervisor shall be notified. It is the responsibility of the Supervisor to order or obtain replacement or new equipment prior to beginning any type of elevated work.
- Keep inspection written recordkeeping for the life of the equipment.
- Maintenance

When needed, fall protection devices may be washed in warm water using a mild detergent, rinsed thoroughly in clean water, and allowed to dry at room temperature. Stow equipment in clean area away from strong sunlight and extreme temperatures that could degrade materials. Check the manufacturer's recommendations for specific cleaning, maintenance, and storage information.

NOTE: Do not write on any part of the nylon webbing of any PFAS equipment, as this will void most manufacturers' liability. Only write on the undersides of attached equipment tags if necessary for inventory or personnel assignment identification.

## **18.0 FALL PROTECTION EQUIPMENT MAINTENANCE**

All personal fall protection and all other fall protection system equipment shall receive as prescribed and outlined by the manufacturer or manufacturer representative company with regard to require maintenance (repair), inspection and recertification of all such systems. (Typically manufacturers require this to be completed every 2 years but must reference manufacturer's requirements and complete accordingly).

## **19.0 FALL PROTECTION AND RESCUE PLANS**

### **19.1 FALL PROTECTION PROCEDURES**

The City of San Carlos will ensure that their emergency personnel have the availability to provide prompt rescue response for rescue needed from elevated work locations prior to the start of the elevated work project.

In the event that the Local Fire Department (LFD) or other emergency response agency is not capable of providing appropriate rescue services, arrangements will be made to have a contracted rescue crew on site to monitor the elevated work activity or the work will be contracted out.

In the event where a minimum of 2 workers are not present and self-rescue is not feasible. A worker who must climb a structure and use Personal Fall Arrest System as part of the work activity, shall follow these procedures:

Call the direct supervisor, or designated employee over the radio or cell phone to indicate that you will be working at an elevated work area such as roof top alone, further provide the following information:

1. Name of the work site and location you will be accessing or climbing too.
2. State the type of fall protection system or method to be use during the work activity.
3. How long you expect to be working on the worksite/when you expect to be back on the ground.
4. Call back same person upon completion of work and when you are back on the ground.

### **19.2 EMPLOYEE EMERGENCY ACTIONS**

Under no circumstances shall an employee, who is not trained in fall rescue, attempt to rescue another employee who has fallen from and elevated height while using a fall arrest system and is stranded. At a minimum fall rescue training is limited to self-rescue and whichever rescue equipment is available for the employee to use in the event of a rescue emergency.

## **Appendix A**

### **Regulatory References**

#### **Cal/OSHA Orders:**

- CCR, Title 8, Section 1539-1547 – Excavations
- CCR, Title 8, Section 1602 & 1603 – Work over or Near Water
- CCR, Title 8, Section 1620-1621 – Standard Railings
- CCR, Title 8, Section 1626 – Ramps, Runways, Stairwells, Stairs
- CCR, Title 8, Section 1629 – Access & Egress-Stairways and Ladders
- CCR, Title 8, Section 1632-1633 – Floor, Roof, Wall Openings
- CCR, Title 8, Section 1632-1633 – Scaffolds – General Requirements
- CCR, Title 8, Section 1640-1655 – Scaffolds – Various Types
- CCR, Title 8, Section 1658-1667 – Suspended Scaffolds
- CCR, Title 8, Section 1669-1672 – Fall Protection
- CCR, Title 8, Section 1675-1678 – Ladders
- CCR, Title 8, Section 1723-1730 – Roofing Operations & Equipment
- CCR, Title 8, Section 3209 – Standard Guardrails
- CCR, Title 8, Section 3210 – Elevated Locations
- CCR, Title 8, Section 3211 – Wall Openings
- CCR, Title 8, Section 3212 – Floor Openings, Floor Holes, Roofs
- CCR, Title 8, Section 3213 – Service Pits, Yard Surface Openings
- CCR, Title 8, Section 3271 – Openings
- CCR, Title 8, Section 3275 – Scaffolds
- CCR, Title 8, Section 3276 – Use of Ladders
- CCR, Title 8, Section 3277 – Fixed Ladders
- CCR, Title 8, Section 3278 – Wood Ladders
- CCR, Title 8, Section 3277 – Fixed Ladders
- CCR, Title 8, Section 3382-3286 – General Requirements for All Window Cleaning
- CCR, Title 8, Section 3420-3428 – Tree Work, Maintenance or Removal
- CCR, Title 8, Section 3458 – Fall Protection for Date Palm Operations
- CCR, Title 8, Section 3646-3648 - Elevating Work Platforms & Aerial Devices

## **Appendix A - Continue**

### **Regulatory References**

#### **ANSI Standards**

- ANSI A10.14.1991 – American National Standard for Construction & Demolition Operations – Requirements for Safety Harnesses, Lanyards, Lifelines
- ANSI Z359.1-1992 (R1999) – American National Standard – Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

## **Appendix B**

### **Terms and Definitions**

**Access** – A means of reaching a workspace or work area.

**Accessible** – Within reach from a workspace or work area.

**Aerial Lifts** – mechanical devices such as man lifts, man-baskets, scissor lifts and bucket trucks used for access to heights.

**Aisle** – a passageway for persons, elevated above the surrounding floor or ground level, such as a foot walk along shafting or a walkway between buildings.

**Anchorage** – A secure point of attachment for lifelines, lanyards or deceleration devices.

**ANSI - American National Standards Institute.**

Web address: <http://web.ansi.org/default.htm>

**Arresting Force** – the amount of force on a worker resulting from the fall protection system stopping the fall. This usually expresses the peak force experienced during the fall arrest.

**Body Belt** – A simple or compound strap with means for securing it about the waist and for securing a lanyard to it.

**Body Harness** – Straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.

**Body Restraint System** - a multiple strap that can be secured around a worker and to which he can attach to a load-bearing anchorage for travel restriction.

**Buckle** – any device for holding the body belt or body harness closed around the employee's body.

**Cage** – a guard that may be referred to as a cage or basket guard, which is an enclosure that is fastened to the side rails of the fixed ladder or to the structure to encircle the climbing space of the ladder for the safety of the person who must climb the ladder.

**CCR - California Code of Regulations.** Web address:

<http://www.dir.ca.gov/Samples/search/query.htm>

**CFR - Code of Federal Regulations.** Web address: <http://www.osha.gov>

**Cleats** – are ladder crosspieces of rectangular cross-section placed on edge on which a person may step to ascend or descend.

**Competent Persons** - individuals knowledgeable of a manufacturer's recommendations, instructions, and manufactured components, who are capable of identifying existing, predictable, and potential hazards and with the ability to properly, identify the proper fall protection equipment required for different scenarios, and who have the authorization to take prompt corrective measures to eliminate the potential hazards.

## **Appendix B - Continue**

### **Terms and Definitions**

**Connector** – a device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabineer, or it may be an integral component of part of the system (such as a buckle or de-ring sewn into a body belt or body harness, or a snap hook spliced or sewn to a lanyard or self-retracting lanyard).

**Continuous Fall Protection** - the design and use of a fall protection system such that no exposure to an elevated fall hazard occurs. This may require the use of more than one fall protection system or a combination of prevention or protection measures.

**Controlled Access Zone (CAZ)** – an area in which certain work may take place without the use of guardrails, personal fall arrest systems, or safety nets and access to the zone is controlled.

**Controlled Descent** - a descent at a constant mechanically controlled rate of speed.

**Deceleration Device** – any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

**Deceleration Distance** – the additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

**Defect** – any characteristic or condition which tends to weaken or reduce the strength or the safety of the tool, machine, object, or structure of which it is a part.

**Division** – the current Division of Occupational Safety and Health or any of its predecessors including the former Division of Industrial Safety or the Division of Occupational Safety and Health Administration. Reference to the former Division of Industrial Safety or Division of Occupational Safety and Health Administration in these Orders is meant to refer to their successor, the Division of Occupational Safety and Health, or any subsequent successor agency.

**Drop Line (Safety Line)** – a vertical line from a fixed anchorage, independent of the work surface, to which the lanyard is affixed.

**Elevated Locations** – any area where work is performed, or employees must travel that is in excess of 7 ½ feet from the following (perimeter of a structure, unprotected sides and/or edges, leading edges, through shaft ways and openings, towers, scaffolds, ladders, sloped roof surfaces steeper than 7:12, or sloped surfaces steeper than 40 degrees). (Approved personal fall arrest, personal fall restraint or positioning systems required).

**Other Elevated Locations** – the unprotected sides of elevated work locations that are not building or building structures where an employee is exposed to a fall of 4 feet or more.



## Appendix B - Continue

### Terms and Definitions

(Guardrails required) (I.e. roof openings, glazed sides of landings, balconies, porches, platforms, runways, ramps, or other working areas as defined in Section 3207 of the General Industry Safety Orders).

**Equivalent** – alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate will provide an equal or greater degree of safety for employees than the methods, materials or designs specified in the order.

**Failure** – load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.

**Fall Arrest System** – is required if the risk of falling from an elevated level of 7 ½ or more exists. It is designed to be passive and activate only in the event that a fall occurs and is a tested device and any necessary components that function together to arrest a free fall in such a way that the potential for injury is minimized.

**The following are the main components of a fall arrest system:**

- **Full Body Harness** - A Full Body Harness distributes the force of a fall throughout the body. It includes straps that may be secured about the worker in a manner that distributes the fall-arrest forces over at least the thighs, pelvis, waist, chest and shoulders with a means for attaching to the other components of a personal fall arrest system.
- **NOTE:** Effective January 1, 1998, body belts are not acceptable as part of a personal fall arrest system. A body belt is defined as a strap with means both for securing it about the waist and for attaching it to a lanyard, lifeline or deceleration device.
- **Fall Arresting and Connective Device** - A device that is used to arrest a fall while minimizing injury to the employee and couple with elements of a personal fall arrest system.
- **Shock Absorbing Lanyard** - A flexible line of rope, wire rope or strap that generally has a connector at each end for connecting the body harness to a deceleration device, lifeline or anchorage.
- **Self-retracting Lifeline/Lanyard** - A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under minimal tension during normal employee movement and which, when sudden tension is exerted (at onset of a fall) automatically locks drum and arrests the fall.
- **Rope Grab** - A device which attaches to a lifeline as an anchoring point that provides a means of arresting a fall.
- **Connector** - It may be an independent component of the system, such as a carabiner (an oblong ring snap hook) or it may be an integral component or part of the system (such as a buckle or D-ring sewn into a body harness), or a snap-hook spliced or sewn to a lanyard

## Appendix B - Continue

### Terms and Definitions

or self-retracting lanyard, which is used to connect a lifeline /lanyard to an anchor or other element of the Fall Arrest System.

- **Anchorage or Tie-Off Point** - A secure point of attachment for lifelines, lanyards or deceleration devices. It is commonly an eye bolt on a support beam or support structure. This point must be capable of supporting 5000 pounds per worker who may be attached to it.
- **Snap hook** - a conductor comprised of a hook shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and when released, automatically closes to retain the object. The locking snap hook is self-closing, has a self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection; it requires two separate forces to open the gate; one to deactivate the gate keeper and a second to depress and open the gate which automatically closes when released; used to minimize roll-out or accidental disengagement.
- **NOTE:** As of January 1, 1998, only locking Snap-hooks are permitted.

**Fall Distance** - the physical distance from the location of the worker's support prior to a fall and the place at which the person finally comes to a complete stop.

**Fall Hazard** - any position from which an accidental fall may reasonably produce an injury.

**Fall Prevention** - any means used to reasonably prevent exposure to an elevated fall hazard.

**Fall Restraint System** - a lanyard or device that is designed to restrain a worker in such a manner as to prevent a fall from occurring.

**Free Fall** – the act of falling before a personal fall arrest system begins to apply force to arrest the fall.

**Free Fall Distance** – the vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.

**Flume** - An elevated artificial channel or trough for conducting water. Water flumes may be constructed of wood, metal or concrete or combination of the preceding. They may be either open on top or partially covered by rigid members (caps) laid across the flume perpendicular to the water flow.

**Flume Patrol** - The on-site assessment/inspection of a flume's physical condition, and/or structural integrity conducted by a qualified person. The qualified person may inspect the flume or portions thereof from ground level, and/or from an elevated catwalk/walkway located above or along the flume.

## **Appendix B - Continue**

### **Terms and Definitions**

**Guardrail** (See Railing)

**Guardrail System** - a barrier erected to prevent employees from falling to lower levels.

**Handrail** – a rail used to provide employees with a handhold for support.

**Hazard** - an agent, energy or characteristic that may cause physical damage to personnel or property.

**Horizontal Lifeline** - a rail, wire, or synthetic cable that is installed in a horizontal plane and used for attachment of a worker's lanyard or lifeline device while moving horizontally; used to control dangerous pendulum-like swing falls.

### **Ladders -**

- Ladder – a device other than a ramp or stairway, designed for use in ascending or descending at an angle with the horizontal. A ladder is intended to be stationary while in service and consists of two side pieces called side rails, joined at short intervals by crosspieces called steps, rungs or cleats.
- Ladder, Extension - a ladder consisting of two or more sections, with guides or brackets so arranged that the ladder may be adjusted to different lengths by sliding and locking the movable section or sections.
- Ladder, Fixed - a ladder permanently fastened to a structure.
- Ladder, Job-built - a ladder that is fabricated by employees, typically at the construction site, and is not commercially manufactured.
- Ladder, Single-rail - a portable ladder with rungs, cleats, or steps mounted on a single rail instead of the normal two rails used on most other ladders.
- Ladder, Portable - a ladder, not permanently fixed in place, which may be used at various locations.
- Ladder, Stepladder- a ladder having treads and so constructed as to be self-supporting.
- Ladder, Steps - rungs, treads, or cleats.
- Ladder, Step stool - a self-supporting, collapsible, portable ladder, nonadjustable in length, 32 inches or less in overall size, with flat steps and without a pail shelf, designed to be climbed on the ladder top cap as well as all steps. The rails may continue above the top cap.
- Ladder, Trestle or “A” – ladder consisting of two special, single ladders hinged together at the top to form equal angles with the surface on which they stand.
- Ladder, Extension Trestle – a ladder consisting of an “A” or trestle ladder with an additional single ladder, which is supported in a vertical position by the “A” ladder.

- **Ladder, Double Cleat** - a ladder that is similar to a single cleat ladder, but is wider, with an additional center rail which will allow for two-way traffic for workers in ascending and descending.

**Lanyard** - a flexible line to secure a wearer of a safety belt or harness to a drop line, lifeline, or fixed anchorage.

**Leading Edge** - the edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an “unprotected side and edge” during periods when it is not actively and continuously under construction.

**Lifeline** - a horizontal line (i.e. catenary line) between two fixed anchorages, independent of the work surface, to which the lanyard is secured either by tying off or by means of a suitable sliding connection. For the purposes of these orders, lifelines may be vertical as well as horizontal (i.e. when used with a body harness).

**Linemen's Body Belt** - leather or web (cotton or nylon) belt designed specifically for employees working on poles. It consists of a waist belt, generally cushioned, with a front buckle, two D rings for attaching safety straps and a multiple-looped strap for holding, rings, snap-hooks, holsters and other tool holding devices.

**Mid-rail** - a rail approximately midway between the top rail and platform, that is secured to the uprights erected along the exposed sides and ends of platforms.

**NIOSH** - National Institute for Occupational Health and Safety. **Web address:**  
<http://www.cdc.gov/niosh>

**Opening** - an opening in any floor or platform that is 12 inches or more in the least horizontal dimension. It includes: stairway floor openings, ladder way floor openings, hatchways and chute floor openings.

**Personal Fall Arrest System** - a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.

**Personal Fall Restraint System** - a system used to prevent an employee from falling. It consists of anchorages, connectors, body belt/harness. It may include, lanyards, lifelines, and rope grabs designed for that purpose.

**Personal Fall Protection System** - a personal fall protection system includes personal fall arrest systems, positioning device systems, fall restraint systems, safety nets and guardrails.

**NOTE:** Effective January 1, 1998- Body Belts shall not be used as part of a fall arrest system.

**Personal Protective Equipment** - protection where modified by the words head, eye, body, hand, and foot, as required by the Orders in Subchapter 4, means the safeguarding obtained by means of safety devices and safeguards of the proper type for the exposure, and of such design, strength, and quality as to eliminate, preclude, or mitigate the hazard.

## **Appendix B - Continue**

### **Terms and Definitions**

**Positioning Device System** - a body belt or body harness system rigged to allow an employee to be supported on an elevated surface, such as a wall, and work with both hands free while leaning.

**Qualified Engineer** - an individual with a degree from an accredited institution or professional certificate who is capable of design, analysis, evaluation, specification and system safety planning in the area needed for fall protection.

**Qualified Person, Attendant or Operator** - a person designated by the employer who by reason of training, experience or instruction has demonstrated the ability to safely perform all assigned duties and, when required, and/or is properly licensed in accordance with federal, state, or local laws and regulations and who has special knowledge, training or experience in the areas needed for fall hazard control.

**Railing** - a barrier consisting of a top rail and a mid-rail secured to uprights and erected along the exposed sides and ends of platforms.

**Roll-Out** - the unintentional disengagement of a snap hook caused by the gate being depressed under torque or contact while twisting or turning; the reason locking gate keepers are now required.

**Rope Grab** - a deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.

**Runway** - an elevated passageway.

**Safety Belt or Harness** - a device specifically for the purpose of securing, suspending, or retrieving a worker in or from a hazardous work area.

**Safety Factor** - ratio of the ultimate breaking strength of a member or piece of material or equipment to the actual working stress or safe load when in use.

**Safety Line** - one that is provided to protect a worker from falls caused by failure of scaffolds, working platforms, or loss of balance, and shall extend to within 4 feet of ground or other stable surface.

**Safety-Monitoring System** - a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

**Self-Retracting Lifeline/Lanyard** - a deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.

**Safety Strap** - a web strap designed specifically for use in conjunction with a linemen's belt as an aid in climbing poles and to secure the employee to the pole in a manner that permits work with both hands.

## **Appendix B - Continue**

### **Terms and Definitions**

**Scaffold** - any temporary, elevated structure used for the support of a platform.

Note: The term “scaffold” is used with inclusion of the platform and all supporting members when reference is made to loading factors.

**Shock Absorbers** - a component of fall protection systems that dissipates energy by creating or extending the deceleration distance.

**Snap-hook** - a connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object.

**Standard** - Standard as referred to ladders, Roll Over Protection System, railings, etc., means as described elsewhere in the Orders, ultimately based upon standards established by ANSI, SAE, engineers competent in specialized fields, equipment manufacturers and other duly recognized authorities.

**Structural Competence** - the ability of the machine and its components to withstand the stresses imposed by applied loads.

**Swing fall** - a pendulum-like motion that can result from moving horizontally away from a fixed anchorage point and falling. Swing falls generate the same amount of energy as a fall through the same distance vertically but with the additional hazard of colliding with an obstruction other than the ground.

**Tie-Off** - the workers act securing the end of a lanyard to an anchorage point. Anchorage points are sometimes referred to as tie-off points.

**Toe-board** - a barrier secured along the sides and ends of a platform at the platform level used to guard against the falling of material.

**Unprotected Sides and Edges** - any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or standard guardrail or protection provided.

**Wall opening** - a gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition, through which employees can fall to a lower level.

## **Appendix C**

### **Fall Hazard Assessment Reports**

# Fall Hazard Assessment for: City of San Carlos, CA

Location: Youth Center, 1001 Chestnut Street, San Carlos, CA 94070

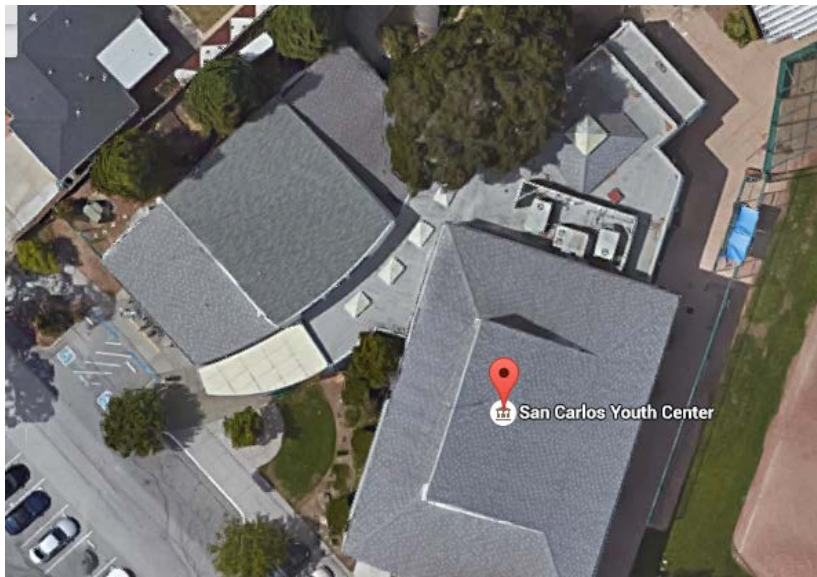
Assessed By: Jose M Mora – Du-All Safety

Date Assessed: 4-9-2015

**1. Physical Description:** ex: Ladder (vertical, extension, A-frame, 3-leg, steep stair, steeple), Roof (flat, steep slope, low slope, composite on felt), Catwalk, Tank, Vault (above ground, below ground, elevated), etc.



**Figure 1.** Youth Center – Low slope and steep slope roof (10'-30').



**Figure 3.** Top view – shingles roofing system.

**2. Work to Be Performed:** ex: Maintenance, repair, painting, cleaning, adjusting, replacement, etc.

Inspection, maintenance and/or repairs of roof, roof gutters, waterproofing, HVAC/chiller mechanical systems, basketball court signs, and lighting fixtures.

**3. Hazards:** ex: Fall to lower level, struck by object, environmental hazard, etc.

1. When ascending/descending on facility fix ladders and roof hatch.
2. When using and working from portable ladders.
3. When working on the roof near the roof edge or near the skylight.
4. When climbing onto and working from elevated work platforms (Scissor lift), bucket trucks and articulating boom lifts.

**4. Actions To Be Taken:** ex: Training, administrative control, etc.

## 1. Using Fix Ladders/Roof Hatch

- Inspect ladder before use to identify any damage, sharps, or missing fasteners.
- Face the ladder when ascending/descending.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Opening Roof Hatch (Hatch is heavy, requires some effort to open), there is potential for slip and fall from the ship ladder when pushing on the roof hatch with both hands.
- Close the hatch after transitioning to the roof to eliminate the roof opening hazard. If you need to bring tools or materials through the hatch, then an install a roof hatch guardrail as shown below on section 5 of this report.



- For buildings. Guardrails shall be provided on all open sides of unenclosed elevated work locations, such as: roof openings, open and glazed sides of landings, balconies or porches, platforms, runways, ramps, or working levels more than 30 inches above the floor, ground, or other working areas of a building as defined in Section 3207 of the General Industry Safety Orders. Where overhead clearance prohibits installation of a 42-inch guardrail, a lower rail or rails shall be installed. The railing shall be provided with a toeboard where the platform, runway, or ramp is 6 feet or more above places where employees normally work or pass and the lack of a toeboard could create a hazard from falling tools, material, or equipment.

**Recommendation:** Install roof hatch guardrail system.

**Regulatory Reference**

CCR, Title 8, Section 3278. Use of Fixed Ladders.

CCR Title 8, Section 3210. Guardrails at Elevated Locations.

## **2. Using Portable Extension and Step Ladders**

- Inspect ladder before use to identify any damage or deficiencies. Verify the ladder is either type 1 or 2 for the right load and working conditions.
- Do not place ladders where they can be accidentally struck or displaced.
- For extension ladders set-up ladder with a 4:1 angle ratio, for every four feet in the height of the structure, the foot of the ladder must be located one foot away from the leading edge where the ladder contacts the roof or surface (Note: it is very important that the roof overhang is taken into account when positioning the ladder.), extend ladder side rails to at least 3 feet above the landing unless handholds are provided.
- Face the ladder when ascending/descending.
- Have another person hold the ladder while the ladder is being secured to the building structure.
- Tie, block, or otherwise secure the extension portable ladder in use. Do not splice ladders together.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Do not use metal ladders for electrical work or near live electrical parts.
- For stepladder do not step on the top cap or the step below the top cap.
- For stepladder do not use the X-bracing on the rear section of the stepladder for climbing unless the ladder is so designed and provided with steps for climbing on both front and rear sections.
- For stepladder ensure that it is properly set-up with the spreader in the locked position before use.
- Do not use a step ladder as a lean-to-ladder.

**Regulatory Reference**

CCR Title 8, Section 1675-1678 Ladders

CCR Title 8, Section 3270-3280 Access, Work Space and Work Areas

## **3. Working on the Roof near the Roof Edge or Near the Skylight – Figure 1 and Figure 2.**

When working at elevated heights it is recommended to use the Hierarchy Methods to Control Fall Hazards listed in order of preference:

**For maintenance work above 7 ½ feet - 8 CCR 1670 Personal Fall Arrest Systems, Personal Fall Restraint Systems and Positioning Devices:** Approved personal fall arrest, personal fall restraint or positioning systems shall be worn by those employees whose work exposes them to fall in excess of 7 ½ feet from the perimeter of a structure, unprotected sides and edges, leading edges, through shaft-ways and openings, sloped roof surfaces

steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected under the provisions of these orders.

**For roofing operations single – unit roofs with slopes of 0:12 through 4:12 and more than 20 feet in height:** Options include Warning lines and headers, Personal Fall Protection Systems, Catch Platforms, Scaffold Platforms, Eave Barriers, Standard Railing and Toe Boards.

**For working near floor, roof, and wall openings / skylights / roof parapet walls:** This section shall apply to temporary or emergency conditions where there is danger of employees or materials falling through floor, roof, or wall openings, or from stairways or runways. Floor, roof and skylight openings shall be guarded by both temporary railings and toe boards or by covers. The railing shall be provided on all exposed sides, except at entrances to stairways.

Covers shall be capable of safely supporting the greater of 400 pounds or twice the weight of the employees, equipment and materials that may be imposed on any one square foot area of the cover at any time. Covers shall be secured in place to prevent accidental removal or displacement, and shall bear a pressure sensitized, painted, or stenciled sign with legible letters not less than one inch high, stating: “Opening--Do Not Remove.” Markings of chalk or keel shall not be used.

Ladder way floor openings or platforms shall be guarded by standard railings with standard toe boards on all exposed sides, except at entrance to opening, with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening.

Floor holes, into which persons can accidentally walk, shall be guarded by either a standard railing with standard toe board on all exposed sides, or a floor hole cover of standard strength and construction that is secured against accidental displacement. While the cover is not in place, the floor hole shall be protected by administrative control method.

(e) Any employee approaching within 6 feet of any skylight shall be protected from falling through the skylight or skylight opening by any one of the following methods:

(1) Skylight screens. The design, construction, and installation of skylight screens shall meet the strength requirements equivalent to that of covers specified in subsection (b) above. They shall also be of such design, construction and mounting that under design loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork, with openings not more than 4 inches by 4 inches or of slat work with openings not more than 2 inches wide with length unrestricted, or of other material of equal strength and similar configuration, or

(2) Guardrails meeting the requirements of Section 3209, or

(3) The use of a personal fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders, or

(4) Covers meeting the requirements of subsection (b) installed over the skylights, or

(5) A fall protection plan as prescribed in Section 1671.1 of the Construction Safety Orders when it can be demonstrated that the use of fall protection methods as contained in subsections (e) (1-4) of this Section is impractical or creates a greater hazard.

**Exception for this section:** When the work is of short duration and limited exposure such as measuring, roof inspection, electrical/mechanical equipment inspection, etc., and the time involved in rigging and installing the safety devices required in subsections (e)(1) through (e)(4) equal or exceed the performance of the designated tasks of measuring, roof inspection, electrical/mechanical equipment inspection, etc.; these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained.

(f) Access shall not be permitted on glazed surfaces such as roofs, vaults, canopies, or skylights glazed with transparent or translucent materials unless an engineer currently registered in the State of California and experienced in the design of such glazed structures has certified that the surface will support all anticipated loads. Employees working on such surfaces shall be protected by a fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders.

(g) When glazed surfaces cannot be safely accessed for maintenance in accordance with subsection (f), scaffolds, catwalks, rolling ladders, platforms or other methods of safe access shall be provided.

Floor, Roof and Wall Openings to Be Guarded – 8 CCR 1632 & 3212

#### **4. Working from Elevated Work Platforms – see below.**

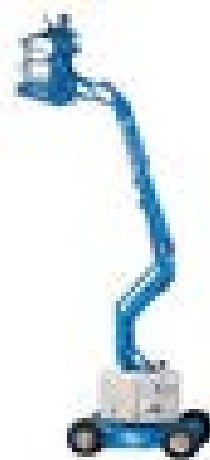
##### **The Hierarchy Methods to Control Fall Hazards:**

1. **Hazard Elimination** – Eliminate the need to access the fall hazard. Example - Work from an Aerial and Elevating work platform devices. **Aerial devices** such as articulating boom lifts may be vehicle – mounted or self-propelled and used to position employees. Employee must wear a fall protection system and attached to the boom or basket designated anchor. Safety belts/body belts used as part of a positioning device system shall be rigged such that an employee cannot free fall more than 2 feet. **Elevating work platform** equipment, such as vertical tower, scissor lift, and mast-climbing work platform may be used to position employees and materials.

##### **Operating/Working from Aerial Devices and Elevating Work Platforms**

The general safety requirements are as follows:




- Only authorized and trained employee may operate aerial devices.
- Aerial devices must not rest on any structure.
- Test controls before use.
- Employee must stand only on the floor of the basket. Do not use planks, ladders, or other means to gain additional height.
- Employee must wear a fall protection system and attached to the boom or basket designated anchor.
- Set breaks when employee is elevated.
- An aerial lift truck must not be moved when an employee is on the elevated boom.
- For scissor lifts, the platform deck shall be equipped with a guardrail or other structure around its upper edge. Where the guardrail is less than 39 inches high, a personal fall protection system is required.
- For scissor lift the platform shall have toe boards at sides and ends.
- No employees shall ride, nor tools, materials, or equipment be allowed on a traveling elevated platform.
- Do not load unit in excess of the designed working load.



**Other:** Information such as manufacturer's name, model, serial number, rated capacity at maximum platform height/maximum platform travel height, operating instructions and warning decals must be displayed on the device.

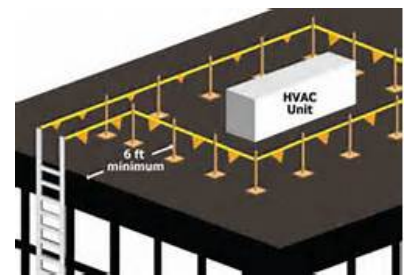
##### **Regulatory Reference**

**100 % tie off required – Aerial Lifts and Elevating Work Platforms – 8 CCR 3636-3648**

2. **Fall Prevention** – A physical barrier between a worker and the leading edge fall hazard. Example – Guardrail system. The system can be a fixed guardrail system or a temporary system that can be set-up prior the work taking place. The fixed guardrail has to meet at a minimum the design and construction of railing standards lay out by 8 CCR 1620. Other option is to use portable guardrail system which does not require rooftop surface attachments. The system requires being hoisted up to the roof top for set-up and hoisted down from the rooftop after takedown. Skylights safety netting can be use over skylights to eliminate the fall hazards when working near skylights.
3. **Fall Restraint** – Restrains a worker from reaching an edge. Example – Use Harness, Lanyard or Self Retracting Lanyard and Anchor. The system requires designating one or more non-certified or certified anchors on the roof structure. For additional information on non-certified vs certified anchors design load see additional attached Occupational Health & Safety “Certified vs Non-Certified Anchorages” 2007 Article reference. Installing anchors requires modification of the roof surfaces may cost more to install. A horizontal life-line system can be considered as well. Other option is to use non-penetrating anchor systems such as freestanding counterweight anchor. The non-penetrating roof anchor can be moved around near designated work areas. They can also be left on the roof top for future use. More than one unit may be required on a roof top depending on work load and personnel.  
(Feasible option – non-penetrating anchor system)
4. **Fall Arrest** – Arrests a fall after it has started. Example – Use Harness, Lifeline with Shock pack and Anchor. The system requires designating one or more anchors on the roof structure. Requires having a rescue plan. Additional risk includes free fall distance. If employee does not control lifeline slag, the employee may strike the ground upon a fall. Other option is to use a mobile fall protection anchor system that does not require roof penetration.
5. **Administrative Controls** – Warns of a fall hazard nearby but will not actively stop a fall. Example – Use of a Fall Protection Plan, Control Access Zone and/or Safety Monitor.

**Fall Protection Plan:** For construction operations when it can be shown that the use of conventional fall protection is impractical or creates a greater hazard and must in detail identify and document why the use of conventional fall protection systems (guardrails, personal fall arrest or safety nets) are infeasible or why their use would create a greater hazard and must include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection provided by conventional fall protection systems. The Fall Protection Plan (FPP) form can be found in the City of San Carlos written Fall Protection Plan policy appendix F.

1. Be prepared by a qualified person (QP) who is identified in the plan.
2. Be developed for a specific site or developed for essentially identical operations.
3. Be updated by the QP.
4. Document why a conventional fall protection (FP) system cannot be used.
5. Identify the competent person to implement and supervise the FPP.
6. Identify the controlled access zone for each location where a conventional FP system cannot be used.
7. Identify employees allowed in the Controlled Access Zone (CAZ).
8. Be implemented and supervised by the competent person.



Note: An up-to-date copy of the fall protection plan must be at the job site.

**Controlled Access Zones & Safety Monitoring System:** When used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall be defined by a control line or by any other means that restricts access. Signs shall be posted to warn unauthorized employees to stay out of the controlled access zone.

When control lines are used, they shall be erected not less than **6 feet nor more than 25 feet** from the unprotected or leading edge, except when erecting precast concrete members.

The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge. The control line shall be connected on each side to a standard railing or wall, or securely anchored on each end. Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

- a. Each line shall be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.
- b. Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the working level/working area and its highest point is not more than 45 inches.
- c. Each line shall have a minimum breaking strength of 200 pounds.

**Safety Monitoring Systems:** The employer shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements:

The safety monitor shall be competent to recognize fall hazards; The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner; The safety monitor shall be within visual sighting distance of the employee and shall always be in communication with the employee being monitored; and, The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function.

No employee, other than an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors.

## **Other**

**Roof work/inspections:** When the work is of short duration and limited exposure, such as minor patching, measuring, inspection, etc., and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in actual construction, these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained as determined by the competent person. Article 30 Roofing Operations and Equipment 8 CCR 1723 (c).

**General:** When the work is of short duration (i.e., non-repetitive) and limited exposure and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in the actual construction, these provisions may be temporarily suspended, provided adequate risk control is recognized and maintained under immediate, competent supervision. Article 24 Fall Protection 8 CCR 1669 (c).

## 5. Personal Protective Equipment Required/Recommended: Active Systems

☒ Full Body Harness



☐ Lanyard



☐ Fall Position/Restraint



☒ Self-Retracting Lifeline



☐ Fall Arrest System (Rope Grab System)



☒ Carabineer (5000lb)



☒ Approved anchor – see recommended units



Miller reusable anchor-  
#RA-35-1

☒ Life – lines



## 5. Personal Protective Equipment Required/Recommended: Passive Systems

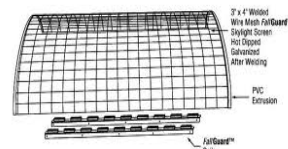
☒ Guardrails



☒ Guardrails/Roof Hatch











☒ Skylight Fall Guard



☐ Warning Line Systems/Control Access Zone



## 5. Personal Protective Equipment Required/Recommended: Other

<input checked="" type="checkbox"/> Gloves	<input checked="" type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Safety Boot/Shoe
<input checked="" type="checkbox"/> Stepladder 	<input checked="" type="checkbox"/> Extension Ladder 	<input type="checkbox"/> Extension Ladder Fascia Ladder Clamp 	<input checked="" type="checkbox"/> Extension Ladder Parapet Wall Ladder Clamp 
<input checked="" type="checkbox"/> Scissor –Lift /Boom Lift Devices 	<input checked="" type="checkbox"/> Tool Lanyard 	<input checked="" type="checkbox"/> Bags & Buckets 	<input checked="" type="checkbox"/> Gutter Cleaner with extended pole 

## 6. Comments:

Ensure all employees exposed to fall hazards have been properly trained in fall protection equipment.

Facility owner should use contracts requiring that contractors adhere to OSHA – required safety measures while construction or maintenance is being performed. Required contractors to have a formal safety and health program relating to construction or maintenance. Include a provision in your contracts for frequent and regular jobsite inspections by a competent person who has expertise in worker fall protection.

Keep inspections/recertification records of fall protection equipment used.



# Fall Hazard Assessment for: City of San Carlos, CA

Location: Community Center, 601 Chestnut Street, San Carlos, CA 94070

Assessed By: Jose M Mora – Du-All Safety

Date Assessed: 4-9-2015

**1. Physical Description:** ex: Ladder (vertical, extension, A-frame, 3-leg, steep stair, steeple), Roof (flat, steep slope, low slope, composite on felt), Catwalk, Tank, Vault (above ground, below ground, elevated), etc.



**Figure 1.** Residential shingle and steep slope roofing system.

**2. Work to Be Performed:** ex: Maintenance, repair, painting, cleaning, adjusting, replacement, etc.

Inspection, maintenance and/or repairs of roof, roof gutters, solar heating plumbing, and lighting fixtures.

**3. Hazards:** ex: Fall to lower level, struck by object, environmental hazard, etc.

1. When using and working from portable ladders.
2. When working on the roof near the roof edge or near the skylight

**4. Actions To Be Taken:** ex: Training, administrative control, etc.

## **1. Using Portable Extension and Step Ladders**

- Inspect ladder before use to identify any damage or deficiencies. Verify the ladder is either type 1 or 2 for the right load and working conditions.
- Do not place ladders where they can be accidentally struck or displaced.
- For extension ladders set-up ladder with a 4:1 angle ratio, for every four feet in the height of the structure, the foot of the ladder must be located one foot away from the leading edge where the ladder contacts the roof or surface (Note: it is very important that the roof overhang is taken into account when positioning the ladder.), extend ladder side rails to at least 3 feet above the landing unless handholds are provided.
- Face the ladder when ascending/descending.
- Have another person hold the ladder while the ladder is being secured to the building structure.
- Tie, block, or otherwise secure the extension portable ladder in use. Do not splice ladders together.
- Maintain a 3-point contact when ascending/descending from the ladder.



- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Do not use metal ladders for electrical work or near live electrical parts.
- For stepladder do not step on the top cap or the step below the top cap.
- For stepladder do not use the X-bracing on the rear section of the stepladder for climbing unless the ladder is so designed and provided with steps for climbing on both front and rear sections.
- For stepladder ensure that it is properly set-up with the spreader in the locked position before use.
- Do not use a step ladder as a lean-to-ladder.

### **Regulatory Reference**

CCR Title 8, Section 1675-1678 Ladders

CCR Title 8, Section 3270-3280 Access, Work Space and Work Areas

## **2. Working on the Roof near the Roof Edge or Near the Skylight – Figure 1.**

When working at elevated heights it is recommended to use the Hierarchy Methods to Control Fall Hazards listed in order of preference:

**For maintenance work above 7 ½ feet - 8 CCR 1670 Personal Fall Arrest Systems, Personal Fall Restraint Systems and Positioning Devices:** Approved personal fall arrest, personal fall restraint or positioning systems shall be worn by those employees whose work exposes them to fall in excess of 7 ½ feet from the perimeter of a structure, unprotected sides and edges, leading edges, through shaft-ways and openings, sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected under the provisions of these orders.

### **The Hierarchy Methods to Control Fall Hazards:**

1. **Hazard Elimination** – Eliminate the need to access the fall hazard. Example - Work from an Aerial and Elevating work platform devices. **Aerial devices** such as articulating boom lifts may be vehicle – mounted or self-propelled and used to position employees. Employee must wear a fall protection system and attached to the boom or basket designated anchor. Safety belts/body belts used as part of a positioning device system shall be rigged such that an employee cannot free fall more than 2 feet. **Elevating work platform** equipment, such as vertical tower, scissor lift, and mast-climbing work platform may be used to position employees and materials.

### **Operating/Working from Aerial Devices and Elevating Work Platforms**

The general safety requirements are as follows:

- Only authorized and trained employee may operate aerial devices.
- Aerial devices must not rest on any structure.
- Test controls before use.
- Employee must stand only on the floor of the basket. Do not use planks, ladders, or other means to gain additional height.
- Employee must wear a fall protection system and attached to the boom or basket designated anchor.
- Set breaks when employee is elevated.
- An aerial lift truck must not be moved when an employee is on the elevated boom.
- For scissor lifts, the platform deck shall be equipped with a guardrail or other structure around its upper edge. Where the guardrail is less than 39 inches



high, a personal fall protection system is required.

- For scissor lift the platform shall have toe boards at sides and ends.
- No employees shall ride, nor tools, materials, or equipment be allowed on a traveling elevated platform.
- Do not load unit in excess of the designed working load.

**Other:** Information such as manufacturer's name, model, serial number, rated capacity at maximum platform height/maximum platform travel height, operating instructions and warning decals must be displayed on the device.

### Regulatory Reference

**100 % tie off required** – Aerial Lifts and Elevating Work Platforms – 8 CCR 3636-3648

2. **Fall Restraint** – Restrains a worker from reaching an edge. Example – Use Harness, Lanyard or Self Retracting Lanyard and Anchor. The system requires designating one or more non-certified or certified anchors on the roof structure. For additional information on non-certified vs certified anchors design load see additional attached Occupational Health & Safety “Certified vs Non-Certified Anchorages” 2007 Article reference. Installing anchors requires modification of the roof surfaces may cost more to install. A horizontal life-line system can be considered as well. Other option is to use non-penetrating anchor systems such as freestanding counterweight anchor. The non-penetrating roof anchor can be moved around near designated work areas. They can also be left on the roof top for future use. More than one unit may be required on a roof top depending on work load and personnel.
3. **Fall Arrest** – Arrests a fall after it has started. Example – Use Harness, Lifeline with Shock pack and Anchor. The system requires designating one or more anchors on the roof structure. Requires having a rescue plan. Additional risk includes free fall distance. If employee does not control lifeline slag, the employee may strike the ground upon a fall. Other option is to use a mobile fall protection anchor system that does not require roof penetration.

## 5. Personal Protective Equipment Required/Recommended: Active Systems

☒ Full Body Harness



☐ Lanyard



☐ Fall Position/Restraint



☒ Self-Retracting Lifeline







☐ Fall Arrest System (Rope)



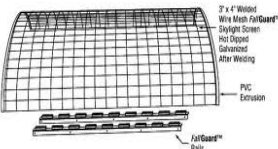

☒ Carabineer (5000lb)

☒ Approved anchor – see





☒ Life – lines





Grab System) 		recommended units    Miller reusable anchor- #RA-35-1	
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## 5. Personal Protective Equipment Required/Recommended: Passive Systems

<input type="checkbox"/> Guardrails 	<input type="checkbox"/> Guardrails/Roof Hatch 	<input type="checkbox"/> Skylight Fall Guard 	<input type="checkbox"/> Warning Line Systems/Control Access Zone 
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## 5. Personal Protective Equipment Required/Recommended: Other

<input checked="" type="checkbox"/> Gloves	<input checked="" type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Safety Boot/Shoe
<input checked="" type="checkbox"/> Stepladder 	<input checked="" type="checkbox"/> Extension Ladder 	<input checked="" type="checkbox"/> Extension Ladder Fascia Ladder Clamp 	<input type="checkbox"/> Extension Ladder Parapet Wall Ladder Clamp 
<input checked="" type="checkbox"/> Scissor -Lift /Boom Lift	<input checked="" type="checkbox"/> Tool Lanyard	<input checked="" type="checkbox"/> Bags & Buckets	<input checked="" type="checkbox"/> Gutter Cleaner with extended

<p>Devices</p> 			<p>pole</p> 
<p><b>6. Comments:</b></p>			
<p>Ensure all employees exposed to fall hazards have been properly trained in fall protection equipment.</p> <p>Facility owner should use contracts requiring that contractors adhere to OSHA – required safety measures while construction or maintenance is being performed. Required contractors to have a formal safety and health program relating to construction or maintenance. Include a provision in your contracts for frequent and regular jobsite inspections by a competent person who has expertise in worker fall protection.</p> <p>Keep inspections/recertification records of fall protection equipment used.</p>			

# Fall Hazard Assessment for: City of San Carlos, CA

Location: Pulgas Creek Pump Station, San Carlos, CA 94070

Assessed By: Jose M Mora – Du-All Safety

Date Assessed: 4-9-2015

**1. Physical Description:** ex: Ladder (vertical, extension, A-frame, 3-leg, steep stair, steeple), Roof (flat, steep slope, low slope, composite on felt), Catwalk, Tank, Vault (above ground, below ground, elevated), etc.



**Figure 1.** Confined space access to lower level wet well. Employees do not use fixed ladder.



**Figure 2.** Confined space vaults screen and guardrails to prevent fall to lower level water channel. Use concrete anchors when work requires removal of guardrails. Do not use guardrails as fall protection anchors.

**2. Work to Be Performed:** ex: Maintenance, repair, painting, cleaning, adjusting, replacement, etc.

Inspection, maintenance and/or repairs, confined space entry to lower levels, and work near the water channel lower level.

**3. Hazards:** ex: Fall to lower level, struck by object, environmental hazard, etc.

1. When ascending/descending into Figure 1 Confined Space.
2. When using and working from portable ladders.
3. When working near open holes such as confined space man holes and vaults Figure 2.

**4. Actions To Be Taken:** ex: Training, administrative control, etc.

1. Using Portable Extension and Step Ladders



- Inspect ladder before use to identify any damage or deficiencies. Verify the ladder is either type 1 or 2 for the right load and working conditions.
- Do not place ladders where they can be accidentally struck or displaced.
- For extension ladders set-up ladder with a 4:1 angle ratio, for every four feet in the height of the structure, the foot of the ladder must be located one foot away from the leading edge where the ladder contacts the roof or surface (Note: it is very important that the roof overhang is taken into account when positioning the ladder.), extend ladder side rails to at least 3 feet above the landing unless handholds are provided.
- Face the ladder when ascending/descending.
- Have another person hold the ladder while the ladder is being secured to the building structure.
- Tie, block, or otherwise secure the extension portable ladder in use. Do not splice ladders together.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Do not use metal ladders for electrical work or near live electrical parts.
- For stepladder do not step on the top cap or the step below the top cap.
- For stepladder do not use the X-bracing on the rear section of the stepladder for climbing unless the ladder is so designed and provided with steps for climbing on both front and rear sections.
- For stepladder ensure that it is properly set-up with the spreader in the locked position before use.
- Do not use a step ladder as a lean-to-ladder.



#### **Regulatory Reference**

CCR Title 8, Section 1675-1678 Ladders








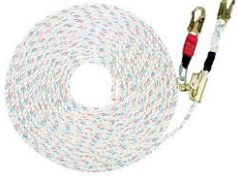
CCR Title 8, Section 3270-3280 Access, Work Space and Work Areas

## **2. Working Over Open Confined Space Vault Covers or Man Holes.**



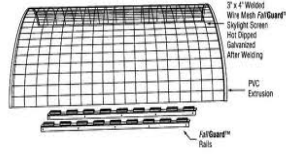

- Use tripod system with personal fall arrest harness, hoisting equipment and self-retracting lanyard.
- A guardrail is needed for the attendant when the attendant is exposed to a fall hazard below.
- Use re-usable or temporary concrete anchors that can be installed on 3000 psi rated concrete structure for additional tie-off anchors when using a guardrail is not feasible.
- Example - Miller Grip Model #496 is designed to be used for fall protection applications, work positioning and restraint. It is not to be used in any other anchoring situation. Only trained and competent personnel should install and use this equipment.
- Concrete must have a compressive strength of at least 3,000 PSI (20.7MPa).
- <https://www.millerfallprotection.com/fall-protection-products/temporary-anchorage-connectors/miller-grip-portable-reusable-anchorage-connectors>

## **5. Personal Protective Equipment Required/Recommended: Active Systems**

<input checked="" type="checkbox"/> Full Body Harness	<input type="checkbox"/> Lanyard	<input type="checkbox"/> Fall Position/Restraint	<input checked="" type="checkbox"/> Self-Retracting Lifeline
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<input type="checkbox"/> Fall Arrest System (Rope Grab System)	<input checked="" type="checkbox"/> Carabineer (5000lb)	<input checked="" type="checkbox"/> Approved anchor – see recommended units	<input type="checkbox"/> Life – lines
			

### 5. Personal Protective Equipment Required/Recommended: Passive Systems

<input checked="" type="checkbox"/> Guardrails	<input type="checkbox"/> Guardrails/Roof Hatch	<input type="checkbox"/> Skylight Fall Guard	<input type="checkbox"/> Warning Line Systems/Control Access Zone
			

### 5. Personal Protective Equipment Required/Recommended: Other

<input checked="" type="checkbox"/> Gloves	<input checked="" type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Safety Boot/Shoe
<input type="checkbox"/> Stepladder	<input checked="" type="checkbox"/> Extension Ladder	<input type="checkbox"/> Extension Ladder Fascia Ladder Clamp	<input type="checkbox"/> Extension Ladder Parapet Wall Ladder Clamp

			
<input type="checkbox"/> Scissor –Lift /Boom Lift Devices 	<input checked="" type="checkbox"/> Tool Lanyard 	<input checked="" type="checkbox"/> Bags & Buckets 	<input type="checkbox"/> Gutter Cleaner with extended pole 

## 6. Comments:

Ensure all employees exposed to fall hazards have been properly trained in fall protection equipment. All employees with exposure to confined space hazards shall be train in confined space entry procedures.

Roof has a parapet wall of 4 feet in height around the entire perimeter. Fall protection required when personnel works from and near the roof hatch which is 4'X4'.

Facility owner should use contracts requiring that contractors adhere to OSHA – required safety measures while construction or maintenance is being performed. Required contractors to have a formal safety and health program relating to construction or maintenance. Include a provision in your contracts for frequent and regular jobsite inspections by a competent person who has expertise in worker fall protection.

Keep inspections/recertification records of fall protection equipment used.



# Fall Hazard Assessment for: City of San Carlos, CA

Location: Parks, San Carlos, CA 94070

Assessed By: Jose M Mora – Du-All Safety

Date Assessed: 4-9-2015

**1. Physical Description:** ex: Ladder (vertical, extension, A-frame, 3-leg, steep stair, steeple), Roof (flat, steep slope, low slope, composite on felt), Catwalk, Tank, Vault (above ground, below ground, elevated), etc.



**Figure 1.** Park public restrooms roofs.



**Figure 2.** Kiwanis park stage roof.



**Figure 3.** Kiwanis building/park roof.



**Figure 4.** Laureola park building roof.

**2. Work to Be Performed:** ex: Maintenance, repair, painting, cleaning, adjusting, replacement, etc.

Inspection, maintenance and/or repairs of roof, roof gutters, basketball court equipment, and lighting fixtures.

**3. Hazards:** ex: Fall to lower level, struck by object, environmental hazard, etc.

1. When using and working from portable ladders.
2. When working on the low slope roof near the roof edge.

**4. Actions To Be Taken:** ex: Training, administrative control, etc.

## **1. Using Portable Extension and Step Ladders**

- Inspect ladder before use to identify any damage or deficiencies. Verify the ladder is either type 1 or 2 for the right load and working conditions.
- Do not place ladders where they can be accidentally struck or displaced.
- For extension ladders set-up ladder with a 4:1 angle ratio, for every four feet in the height of the structure, the foot of the ladder must be located one foot away from the leading edge where the ladder contacts the roof or surface (Note: it is very important that the roof overhang is taken into account when positioning the ladder.), extend ladder side rails to at least 3 feet above the landing unless handholds are provided.
- Face the ladder when ascending/descending.
- Have another person hold the ladder while the ladder is being secured to the building structure.
- Tie, block, or otherwise secure the extension portable ladder in use. Do not splice ladders together.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.

- Do not use metal ladders for electrical work or near live electrical parts.
- For stepladder do not step on the top cap or the step below the top cap.
- For stepladder do not use the X-bracing on the rear section of the stepladder for climbing unless the ladder is so designed and provided with steps for climbing on both front and rear sections.
- For stepladder ensure that it is properly set-up with the spreader in the locked position before use.
- Do not use a step ladder as a lean-to-ladder.

#### **Regulatory Reference**

CCR Title 8, Section 1675-1678 Ladders

CCR Title 8, Section 3270-3280 Access, Work Space and Work Areas

## **2. Working on the Roof near the Roof Edge**

When working at elevated heights it is recommended to use the Hierarchy Methods to Control Fall Hazards listed in order of preference:

**For general maintenance work above 7 ½ feet - 8 CCR 1670 Personal Fall Arrest Systems, Personal Fall Restraint Systems and Positioning Devices:** Approved personal fall arrest, personal fall restraint or positioning systems shall be worn by those employees whose work exposes them to fall in excess of 7 ½ feet from the perimeter of a structure, unprotected sides and edges, leading edges, through shaft-ways and openings, sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected under the provisions of these orders.

**For roofing operations single – unit roofs with slopes of 0:12 through 4:12 and more than 20 feet in height:** Options include Warning lines and headers, Personal Fall Protection Systems, Catch Platforms, Scaffold Platforms, Eave Barriers, Standard Railing and Toe Boards.

**For working near floor, roof, and wall openings / skylights / roof parapet walls:** This section shall apply to temporary or emergency conditions where there is danger of employees or materials falling through floor, roof, or wall openings, or from stairways or runways. Floor, roof and skylight openings shall be guarded by both temporary railings and toe boards or by covers. The railing shall be provided on all exposed sides, except at entrances to stairways.

Covers shall be capable of safely supporting the greater of 400 pounds or twice the weight of the employees, equipment and materials that may be imposed on any one square foot area of the cover at any time. Covers shall be secured in place to prevent accidental removal or displacement, and shall bear a pressure sensitized, painted, or stenciled sign with legible letters not less than one inch high, stating: “Opening--Do Not Remove.” Markings of chalk or keel shall not be used.

Ladder way floor openings or platforms shall be guarded by standard railings with standard toe boards on all exposed sides, except at entrance to opening, with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening.

Floor holes, into which persons can accidentally walk, shall be guarded by either a standard railing with standard toe board on all exposed sides, or a floor hole cover of standard strength and construction that is secured against accidental displacement. While the cover is not in place, the floor hole shall be protected by administrative control method.

(e) Any employee approaching within 6 feet of any skylight shall be protected from falling through the skylight or skylight opening by any one of the following methods:

(1) Skylight screens. The design, construction, and installation of skylight screens shall meet the strength requirements equivalent to that of covers specified in subsection (b) above. They shall also be of such design, construction and mounting that under design loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork, with openings not more than 4 inches by 4 inches or

of slat work with openings not more than 2 inches wide with length unrestricted, or of other material of equal strength and similar configuration, or

(2) Guardrails meeting the requirements of Section 3209, or

(3) The use of a personal fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders, or

(4) Covers meeting the requirements of subsection (b) installed over the skylights, or

(5) A fall protection plan as prescribed in Section 1671.1 of the Construction Safety Orders when it can be demonstrated that the use of fall protection methods as contained in subsections (e) (1-4) of this Section is impractical or creates a greater hazard.

**Exception for this section:** When the work is of short duration and limited exposure such as measuring, roof inspection, electrical/mechanical equipment inspection, etc., and the time involved in rigging and installing the safety devices required in subsections (e)(1) through (e)(4) equal or exceed the performance of the designated tasks of measuring, roof inspection, electrical/mechanical equipment inspection, etc.; these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained.

(f) Access shall not be permitted on glazed surfaces such as roofs, vaults, canopies, or skylights glazed with transparent or translucent materials unless an engineer currently registered in the State of California and experienced in the design of such glazed structures has certified that the surface will support all anticipated loads. Employees working on such surfaces shall be protected by a fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders.

(g) When glazed surfaces cannot be safely accessed for maintenance in accordance with subsection (f), scaffolds, catwalks, rolling ladders, platforms or other methods of safe access shall be provided.

Floor, Roof and Wall Openings to Be Guarded – 8 CCR 1632 & 3212

### 3. Working from Elevated Work Platforms – see below.

#### The Hierarchy Methods to Control Fall Hazards:

**Hazard Elimination** – Eliminate the need to access the fall hazard. Example - Work from an Aerial and Elevating work platform devices. **Aerial devices** such as articulating boom lifts may be vehicle – mounted or self-propelled and used to position employees. Employee must wear a fall protection system and attached to the boom or basket designated anchor. Safety belts/body belts used as part of a positioning device system shall be rigged such that an employee cannot free fall more than 2 feet. **Elevating work platform** equipment, such as vertical tower, scissor lift, and mast-climbing work platform may be used to position employees and materials.

#### **Operating/Working from Aerial Devices and Elevating Work Platforms**

The general safety requirements are as follows:

- Only authorized and trained employee may operate aerial devices.
- Aerial devices must not rest on any structure.
- Test controls before use.
- Employee must stand only on the floor of the basket. Do not use planks, ladders, or other means to gain additional height.
- Employee must wear a fall protection system and attached to the boom or basket designated anchor.
- Set breaks when employee is elevated.



- An aerial lift truck must not be moved when an employee is on the elevated boom.
- For scissor lifts, the platform deck shall be equipped with a guardrail or other structure around its upper edge. Where the guardrail is less than 39 inches high, a personal fall protection system is required.
- For scissor lift the platform shall have toe boards at sides and ends.
- No employees shall ride, nor tools, materials, or equipment be allowed on a traveling elevated platform.
- Do not load unit in excess of the designed working load.

**Other:** Information such as manufacturer's name, model, serial number, rated capacity at maximum platform height/maximum platform travel height, operating instructions and warning decals must be displayed on the device.

### Regulatory Reference

**100 % tie off required** – Aerial Lifts and Elevating Work Platforms – 8 CCR 3636-3648

2. **Fall Prevention** – A physical barrier between a worker and the leading edge fall hazard. Example – Guardrail system. The system can be a fixed guardrail system or a temporary system that can be set-up prior the work taking place. The fixed guardrail has to meet at a minimum the design and construction of railing standards lay out by 8 CCR 1620. Other option is to use portable guardrail system which does not require rooftop surface attachments. The system requires being hoisted up to the roof top for set-up and hoisted down from the rooftop after takedown. Skylights safety netting can be use over skylights to eliminate the fall hazards when working near skylights.



3. **Fall Restraint** – Restrains a worker from reaching an edge. Example – Use Harness, Lanyard or Self Retracting Lanyard and Anchor. The system requires designating one or more non-certified or certified anchors on the roof structure. For additional information on non-certified vs certified anchors design load see additional attached Occupational Health & Safety “Certified vs Non-Certified Anchorages” 2007 Article reference. Installing anchors requires modification of the roof surfaces may cost more to install. More than one unit may be required on a roof top depending on work load and personnel. **(Prefer method for residential low slope roof work – use reusable anchor as shown on the left picture).**



4. **Fall Arrest** – Arrests a fall after it has started. Example – Use Harness, Lifeline with Shock pack and Anchor. The system requires designating one or more anchors on the roof structure. Requires having a rescue plan. Additional risk includes free fall distance. If employee does not control lifeline slag, the employee may strike the ground upon a fall.
5. **Administrative Controls** – Warns of a fall hazard nearby but will not actively stop a fall. Example – Use of a Fall Protection Plan, Control Access Zone and/or Safety Monitor.

**Fall Protection Plan:** For construction operations when it can be shown that the use of conventional fall protection is impractical or creates a greater hazard and must in detail identify and document why the use of conventional fall protection systems (guardrails, personal fall arrest or safety nets) are infeasible or why their use would create a greater hazard and must include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection provided by conventional fall protection systems. The Fall Protection Plan (FPP) form can be found in the City of San Carlos written Fall Protection Plan policy appendix F.

1. Be prepared by a qualified person (QP) who is identified in the plan.

2. Be developed for a specific site or developed for essentially identical operations.
3. Be updated by the QP.
4. Document why a conventional fall protection (FP) system cannot be used.
5. Identify the competent person to implement and supervise the FPP.
6. Identify the controlled access zone for each location where a conventional FP system cannot be used.
7. Identify employees allowed in the Controlled Access Zone (CAZ).
8. Be implemented and supervised by the competent person.

Note: An up-to-date copy of the fall protection plan must be at the job site.

**Controlled Access Zones & Safety Monitoring System:** When used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall be defined by a control line or by any other means that restricts access. Signs shall be posted to warn unauthorized employees to stay out of the controlled access zone.

When control lines are used, they shall be erected not less than **6 feet nor more than 25 feet** from the unprotected or leading edge, except when erecting precast concrete members.

The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge. The control line shall be connected on each side to a standard railing or wall, or securely anchored on each end. Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

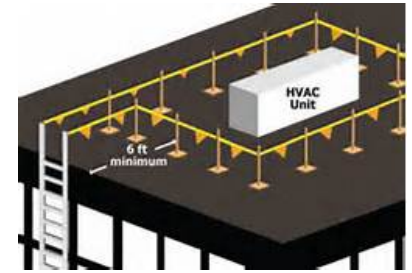
- a. Each line shall be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.
- b. Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the working level/working area and its highest point is not more than 45 inches.
- c. Each line shall have a minimum breaking strength of 200 pounds.

**Safety Monitoring Systems:** The employer shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements:

The safety monitor shall be competent to recognize fall hazards; The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner; The safety monitor shall be within visual sighting distance of the employee and shall always be in communication with the employee being monitored; and, The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function.

No employee, other than an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors.



## Other









**Roof work/inspections:** When the work is of short duration and limited exposure, such as minor patching, measuring, inspection, etc., and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in actual construction, these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained as determined by the competent person. Article 30 Roofing





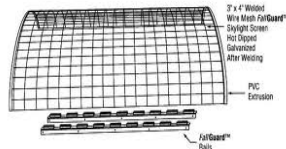

Operations and Equipment 8 CCR 1723 (c).

**General:** When the work is of short duration (i.e., non-repetitive) and limited exposure and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in the actual construction, these provisions may be temporarily suspended, provided adequate risk control is recognized and maintained under immediate, competent supervision. Article 24 Fall Protection 8 CCR 1669 (c).









### 5. Personal Protective Equipment Required/Recommended: Active Systems

<input checked="" type="checkbox"/> Full Body Harness 	<input type="checkbox"/> Lanyard 	<input type="checkbox"/> Fall Position/Restraint 	<input checked="" type="checkbox"/> Self-Retracting Lifeline 
<input type="checkbox"/> Fall Arrest System (Rope Grab System) 	<input checked="" type="checkbox"/> Carabineer (5000lb) 	<input checked="" type="checkbox"/> Approved anchor – see recommended units   Miller reusable anchor- #RA-35-1	<input checked="" type="checkbox"/> Life – lines 

### 5. Personal Protective Equipment Required/Recommended: Passive Systems

<input type="checkbox"/> Guardrails 	<input type="checkbox"/> Guardrails/Roof Hatch 	<input type="checkbox"/> Skylight Fall Guard 	<input type="checkbox"/> Warning Line Systems/Control Access Zone 
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## 5. Personal Protective Equipment Required/Recommended: Other

<input checked="" type="checkbox"/> Gloves	<input checked="" type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Safety Boot/Shoe
<input checked="" type="checkbox"/> Stepladder 	<input checked="" type="checkbox"/> Extension Ladder 	<input checked="" type="checkbox"/> Extension Ladder Fascia Ladder Clamp 	<input type="checkbox"/> Extension Ladder Parapet Wall Ladder Clamp 
<input checked="" type="checkbox"/> Scissor –Lift /Boom Lift Devices 	<input checked="" type="checkbox"/> Tool Lanyard 	<input checked="" type="checkbox"/> Bags & Buckets 	<input checked="" type="checkbox"/> Gutter Cleaner with extended pole 

## 6. Comments:

Ensure all employees exposed to fall hazards have been properly trained in fall protection equipment.

Facility owner should use contracts requiring that contractors adhere to OSHA – required safety measures while construction or maintenance is being performed. Required contractors to have a formal safety and health program relating to construction or maintenance. Include a provision in your contracts for frequent and regular jobsite inspections by a competent person who has expertise in worker fall protection.

Keep inspections/recertification records of fall protection equipment used.

# Fall Hazard Assessment for: City of San Carlos, CA

Location: Library, 610 Elm Street, San Carlos, CA 94070

Assessed By: Jose M Mora – Du-All Safety

Date Assessed: 4-9-2015

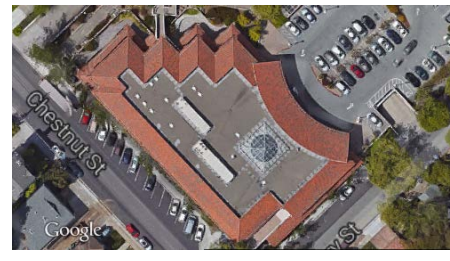
**1. Physical Description:** ex: Ladder (vertical, extension, A-frame, 3-leg, steep stair, steeple), Roof (flat, steep slope, low slope, composite on felt), Catwalk, Tank, Vault (above ground, below ground, elevated), etc.



**Figure 1.** Library



**Figure 2.** Multi low-slope roof.



**Figure 3.** Flat roof with skylight and mechanical equipment.

**2. Work to Be Performed:** ex: Maintenance, repair, painting, cleaning, adjusting, replacement, etc.

Inspection, maintenance and/or repairs of roof, roof gutters, lighting fixtures, traffic control signs, and roof top antennas.

**3. Hazards:** ex: Fall to lower level, struck by object, environmental hazard, etc.

1. When ascending/descending on facility fix ladders and roof hatch.
2. When using and working from portable ladders.
3. When working on the roof near the roof edge or near the skylight.
4. When climbing onto and working from elevated work platforms (Scissor lift), bucket trucks and articulating boom lifts.

**4. Actions To Be Taken:** ex: Training, administrative control, etc.

## 1. Using Fix Ladders/Roof Hatch

- Inspect ladder before use to identify any damage, sharps, or missing fasteners.
- Face the ladder when ascending/descending.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Opening Roof Hatch (Hatch is heavy, requires some effort to open), there is potential for slip and fall from the ship ladder when pushing on the roof hatch with both hands.
- Close the hatch after transitioning to the roof to eliminate the roof opening hazard. If you need to bring tools or materials through the hatch, then an install a roof hatch guardrail as shown below on section 5 of this report.
- For buildings. Guardrails shall be provided on all open sides of unenclosed elevated work locations, such as: roof openings, open and glazed sides of landings, balconies or porches, platforms, runways, ramps, or working levels more than 30 inches above the floor, ground, or other working areas of a building as defined in Section 3207 of the General Industry Safety Orders. Where overhead clearance prohibits installation of a 42-inch guardrail, a lower rail or rails shall be installed. The railing shall be provided with a toeboard where the platform, runway, or ramp is 6 feet or more above places where employees normally work or pass and the lack of a toeboard could create a hazard from falling tools, material, or equipment.



**Recommendation:** Install roof hatch guardrail system.

**Regulatory Reference**

CCR, Title 8, Section 3278. Use of Fixed Ladders.

CCR Title 8, Section 3210. Guardrails at Elevated Locations.

**2. Using Portable Extension and Step Ladders**

- Inspect ladder before use to identify any damage or deficiencies. Verify the ladder is either type 1 or 2 for the right load and working conditions.
- Do not place ladders where they can be accidentally struck or displaced.
- For extension ladders set-up ladder with a 4:1 angle ratio, for every four feet in the height of the structure, the foot of the ladder must be located one foot away from the leading edge where the ladder contacts the roof or surface (Note: it is very important that the roof overhang is taken into account when positioning the ladder.), extend ladder side rails to at least 3 feet above the landing unless handholds are provided.
- Face the ladder when ascending/descending.
- Have another person hold the ladder while the ladder is being secured to the building structure.
- Tie, block, or otherwise secure the extension portable ladder in use. Do not splice ladders together.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Do not use metal ladders for electrical work or near live electrical parts.
- For stepladder do not step on the top cap or the step below the top cap.
- For stepladder do not use the X-bracing on the rear section of the stepladder for climbing unless the ladder is so designed and provided with steps for climbing on both front and rear sections.
- For stepladder ensure that it is properly set-up with the spreader in the locked position before use.
- Do not use a step ladder as a lean-to-ladder.

**Regulatory Reference**

CCR Title 8, Section 1675-1678 Ladders

CCR Title 8, Section 3270-3280 Access, Work Space and Work Areas

**3. Working on the Roof near the Roof Edge or Near the Skylight – Figure 2 and Figure 3.**

When working at elevated heights it is recommended to use the Hierarchy Methods to Control Fall Hazards listed in order of preference:

**For maintenance work above 7 ½ feet - 8 CCR 1670 Personal Fall Arrest Systems, Personal Fall Restraint Systems and Positioning Devices:** Approved personal fall arrest, personal fall restraint or positioning systems shall be worn by those employees whose work exposes them to fall in excess of 7 ½ feet from the perimeter of a structure, unprotected sides and edges, leading edges, through shaft-ways and openings, sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected under the provisions of these orders.

**For roofing operations single – unit roofs with slopes of 0:12 through 4:12 and more than 20 feet in height:** Options include Warning lines and headers, Personal Fall Protection Systems, Catch Platforms, Scaffold Platforms, Eave Barriers, Standard Railing and Toe Boards.

**For working near floor, roof, and wall openings / skylights / roof parapet walls:** This section shall apply to

temporary or emergency conditions where there is danger of employees or materials falling through floor, roof, or wall openings, or from stairways or runways. Floor, roof and skylight openings shall be guarded by both temporary railings and toe boards or by covers. The railing shall be provided on all exposed sides, except at entrances to stairways.

Covers shall be capable of safely supporting the greater of 400 pounds or twice the weight of the employees, equipment and materials that may be imposed on any one square foot area of the cover at any time. Covers shall be secured in place to prevent accidental removal or displacement, and shall bear a pressure sensitized, painted, or stenciled sign with legible letters not less than one inch high, stating: "Opening--Do Not Remove." Markings of chalk or keel shall not be used.

Ladder way floor openings or platforms shall be guarded by standard railings with standard toe boards on all exposed sides, except at entrance to opening, with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening.

Floor holes, into which persons can accidentally walk, shall be guarded by either a standard railing with standard toe board on all exposed sides, or a floor hole cover of standard strength and construction that is secured against accidental displacement. While the cover is not in place, the floor hole shall be protected by administrative control method.

(e) Any employee approaching within 6 feet of any skylight shall be protected from falling through the skylight or skylight opening by any one of the following methods:

(1) Skylight screens. The design, construction, and installation of skylight screens shall meet the strength requirements equivalent to that of covers specified in subsection (b) above. They shall also be of such design, construction and mounting that under design loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork, with openings not more than 4 inches by 4 inches or of slat work with openings not more than 2 inches wide with length unrestricted, or of other material of equal strength and similar configuration, or

(2) Guardrails meeting the requirements of Section 3209, or

(3) The use of a personal fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders, or

(4) Covers meeting the requirements of subsection (b) installed over the skylights, or

(5) A fall protection plan as prescribed in Section 1671.1 of the Construction Safety Orders when it can be demonstrated that the use of fall protection methods as contained in subsections (e) (1-4) of this Section is impractical or creates a greater hazard.

**Exception for this section:** When the work is of short duration and limited exposure such as measuring, roof inspection, electrical/mechanical equipment inspection, etc., and the time involved in rigging and installing the safety devices required in subsections (e)(1) through (e)(4) equal or exceed the performance of the designated tasks of measuring, roof inspection, electrical/mechanical equipment inspection, etc.; these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained.

(f) Access shall not be permitted on glazed surfaces such as roofs, vaults, canopies, or skylights glazed with transparent or translucent materials unless an engineer currently registered in the State of California and experienced in the design of such glazed structures has certified that the surface will support all anticipated loads. Employees working on such surfaces shall be protected by a fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders.

(g) When glazed surfaces cannot be safely accessed for maintenance in accordance with subsection (f), scaffolds,

catwalks, rolling ladders, platforms or other methods of safe access shall be provided.

Floor, Roof and Wall Openings to Be Guarded – 8 CCR 1632 & 3212

#### 4. Working from Elevated Work Platforms – see below.

##### The Hierarchy Methods to Control Fall Hazards:

1. **Hazard Elimination** – Eliminate the need to access the fall hazard. Example - Work from an Aerial and Elevating work platform devices. **Aerial devices** such as articulating boom lifts may be vehicle – mounted or self-propelled and used to position employees. Employee must wear a fall protection system and attached to the boom or basket designated anchor. Safety belts/body belts used as part of a positioning device system shall be rigged such that an employee cannot free fall more than 2 feet. **Elevating work platform** equipment, such as vertical tower, scissor lift, and mast-climbing work platform may be used to position employees and materials.

##### **Operating/Working from Aerial Devices and Elevating Work Platforms**

The general safety requirements are as follows:

- Only authorized and trained employee may operate aerial devices.
- Aerial devices must not rest on any structure.
- Test controls before use.
- Employee must stand only on the floor of the basket. Do not use planks, ladders, or other means to gain additional height.
- Employee must wear a fall protection system and attached to the boom or basket designated anchor.
- Set breaks when employee is elevated.
- An aerial lift truck must not be moved when an employee is on the elevated boom.
- For scissor lifts, the platform deck shall be equipped with a guardrail or other structure around its upper edge. Where the guardrail is less than 39 inches high, a personal fall protection system is required.
- For scissor lift the platform shall have toe boards at sides and ends.
- No employees shall ride, nor tools, materials, or equipment be allowed on a traveling elevated platform.
- Do not load unit in excess of the designed working load.



**Other:** Information such as manufacturer's name, model, serial number, rated capacity at maximum platform height/maximum platform travel height, operating instructions and warning decals must be displayed on the device.

##### **Regulatory Reference**

**100 % tie off required** – Aerial Lifts and Elevating Work Platforms – 8 CCR 3636-3648

2. **Fall Prevention** – A physical barrier between a worker and the leading edge fall hazard. Example – Guardrail system. The system can be a fixed guardrail system or a temporary system that can be set-up prior the work taking place. The fixed guardrail has to meet at a minimum the design and construction of railing standards lay out by 8 CCR 1620. Other option is to use portable guardrail system which does not require rooftop surface attachments. The system requires being hoisted



up to the roof top for set-up and hoisted down from the rooftop after takedown. Skylights safety netting can be use over skylights to eliminate the fall hazards when working near skylights.

3. **Fall Restraint** – Restrains a worker from reaching an edge. Example – Use Harness, Lanyard or Self Retracting Lanyard and Anchor. The system requires designating one or more non-certified or certified anchors on the roof structure. For additional information on non-certified vs certified anchors design load see additional attached Occupational Health & Safety “Certified vs Non-Certified Anchorages” 2007 Article reference. Installing anchors requires modification of the roof surfaces may cost more to install. A horizontal life-line system can be considered as well. Other option is to use non-penetrating anchor systems such as freestanding counterweight anchor. The non-penetrating roof anchor can be moved around near designated work areas. They can also be left on the roof top for future use. More than one unit may be required on a roof top depending on work load and personnel.



(Feasible option – non-penetrating anchor system)

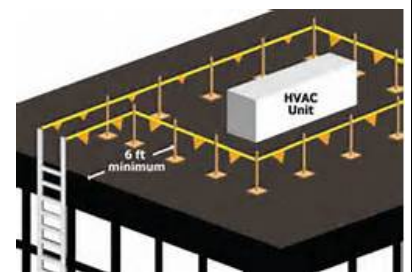
4. **Fall Arrest** – Arrests a fall after it has started. Example – Use Harness, Lifeline with Shock pack and Anchor. The system requires designating one or more anchors on the roof structure. Requires having a rescue plan. Additional risk includes free fall distance. If employee does not control lifeline slag, the employee may strike the ground upon a fall. Other option is to use a mobile fall protection anchor system that does not require roof penetration.
5. **Administrative Controls** – Warns of a fall hazard nearby but will not actively stop a fall. Example – Use of a Fall Protection Plan, Control Access Zone and/or Safety Monitor.



**Fall Protection Plan:** For construction operations when it can be shown that the use of conventional fall protection is impractical or creates a greater hazard and must in detail identify and document why the use of conventional fall protection systems (guardrails, personal fall arrest or safety nets) are infeasible or why their use would create a greater hazard and must include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection provided by conventional fall protection systems. The Fall Protection Plan (FPP) form can be found in the City of San Carlos written Fall Protection Plan policy appendix F.

1. Be prepared by a qualified person (QP) who is identified in the plan.
2. Be developed for a specific site or developed for essentially identical operations.
3. Be updated by the QP.
4. Document why a conventional fall protection (FP) system cannot be used.
5. Identify the competent person to implement and supervise the FPP.
6. Identify the controlled access zone for each location where a conventional FP system cannot be used.
7. Identify employees allowed in the Controlled Access Zone (CAZ).
8. Be implemented and supervised by the competent person.

Note: An up-to-date copy of the fall protection plan must be at the job site.



**Controlled Access Zones & Safety Monitoring System:** When used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall be defined by a control line or by any other means that restricts access. Signs shall be posted to warn unauthorized employees to stay out of the

controlled access zone.

When control lines are used, they shall be erected not less than **6 feet nor more than 25 feet** from the unprotected or leading edge, except when erecting precast concrete members.

The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge. The control line shall be connected on each side to a standard railing or wall, or securely anchored on each end. Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

- a. Each line shall be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.
- b. Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the working level/working area and its highest point is not more than 45 inches.
- c. Each line shall have a minimum breaking strength of 200 pounds.

**Safety Monitoring Systems:** The employer shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements:

The safety monitor shall be competent to recognize fall hazards; The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner; The safety monitor shall be within visual sighting distance of the employee and shall always be in communication with the employee being monitored; and, The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function.

No employee, other than an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors.








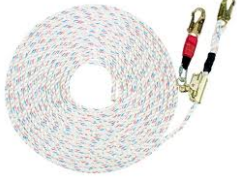
## **Other**

**Roof work/inspections:** When the work is of short duration and limited exposure, such as minor patching, measuring, inspection, etc., and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in actual construction, these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained as determined by the competent person. Article 30 Roofing Operations and Equipment 8 CCR 1723 (c).



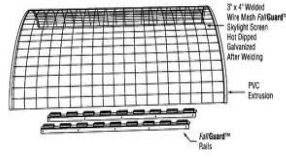

**General:** When the work is of short duration (i.e., non-repetitive) and limited exposure and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in the actual construction, these provisions may be temporarily suspended, provided adequate risk control is recognized and maintained under immediate, competent supervision. Article 24 Fall Protection 8 CCR 1669 (c).

## **5. Personal Protective Equipment Required/Recommended: Active Systems**

<input checked="" type="checkbox"/> Full Body Harness	<input type="checkbox"/> Lanyard	<input type="checkbox"/> Fall Position/Restraint	<input checked="" type="checkbox"/> Self-Retracting Lifeline
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<input type="checkbox"/> Fall Arrest System (Rope Grab System)	<input checked="" type="checkbox"/> Carabineer (5000lb)	<input checked="" type="checkbox"/> Approved anchor – see recommended units	<input checked="" type="checkbox"/> Life – lines
			

### 5. Personal Protective Equipment Required/Recommended: Passive Systems

<input checked="" type="checkbox"/> Guardrails	<input checked="" type="checkbox"/> Guardrails/Roof Hatch	<input checked="" type="checkbox"/> Skylight Fall Guard	<input type="checkbox"/> Warning Line Systems/Control Access Zone
			

### 5. Personal Protective Equipment Required/Recommended: Other

<input checked="" type="checkbox"/> Gloves	<input checked="" type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Safety Boot/Shoe
<input checked="" type="checkbox"/> Stepladder	<input checked="" type="checkbox"/> Extension Ladder	<input checked="" type="checkbox"/> Extension Ladder Fascia Ladder Clamp	<input type="checkbox"/> Extension Ladder Parapet Wall Ladder Clamp

			
<input checked="" type="checkbox"/> Scissor –Lift /Boom Lift Devices 	<input checked="" type="checkbox"/> Tool Lanyard 	<input checked="" type="checkbox"/> Bags & Buckets 	<input checked="" type="checkbox"/> Gutter Cleaner with extended pole 

## 6. Comments:

Ensure all employees exposed to fall hazards have been properly trained in fall protection equipment.

Facility owner should use contracts requiring that contractors adhere to OSHA – required safety measures while construction or maintenance is being performed. Required contractors to have a formal safety and health program relating to construction or maintenance. Include a provision in your contracts for frequent and regular jobsite inspections by a competent person who has expertise in worker fall protection.

Keep inspections/recertification records of fall protection equipment used.



# Fall Hazard Assessment for: City of San Carlos, CA

Location: Fire Station #16, 1280 Alameda de Las Pulgast, San Carlos, CA 94070

Assessed By: Jose M Mora – Du-All Safety

Date Assessed: 4-9-2015

**1. Physical Description:** ex: Ladder (vertical, extension, A-frame, 3-leg, steep stair, steeple), Roof (flat, steep slope, low slope, composite on felt), Catwalk, Tank, Vault (above ground, below ground, elevated), etc.



**Figure 1.** Low slope roof.

**2. Work to Be Performed:** ex: Maintenance, repair, painting, cleaning, adjusting, replacement, etc.

Inspection, maintenance and/or repairs of roof, roof gutters, HVAC mechanical equipment, and lighting fixtures.

**3. Hazards:** ex: Fall to lower level, struck by object, environmental hazard, etc.

1. When using and working from portable ladders.
2. When working on the roof near the roof edge.

**4. Actions To Be Taken:** ex: Training, administrative control, etc.

## **1. Using Portable Extension and Step Ladders**

- Inspect ladder before use to identify any damage or deficiencies. Verify the ladder is either type 1 or 2 for the right load and working conditions.
- Do not place ladders where they can be accidentally struck or displaced.
- For extension ladders set-up ladder with a 4:1 angle ratio, for every four feet in the height of the structure, the foot of the ladder must be located one foot away from the leading edge where the ladder contacts the roof or surface (Note: it is very important that the roof overhang is taken into account when positioning the ladder.), extend ladder side rails to at least 3 feet above the landing unless handholds are provided.
- Face the ladder when ascending/descending.
- Have another person hold the ladder while the ladder is being secured to the building structure.
- Tie, block, or otherwise secure the extension portable ladder in use. Do not splice ladders together.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Do not use metal ladders for electrical work or near live electrical parts.
- For stepladder do not step on the top cap or the step below the top cap.
- For stepladder do not use the X-bracing on the rear section of the stepladder for climbing unless the ladder is



so designed and provided with steps for climbing on both front and rear sections.

- For stepladder ensure that it is properly set-up with the spreader in the locked position before use.
- Do not use a step ladder as a lean-to-ladder.

### **Regulatory Reference**

CCR Title 8, Section 1675-1678 Ladders

CCR Title 8, Section 3270-3280 Access, Work Space and Work Areas

## **2. Working on the Roof near the Roof Edge**

When working at elevated heights it is recommended to use the Hierarchy Methods to Control Fall Hazards listed in order of preference:

**For maintenance work above 7 ½ feet - 8 CCR 1670 Personal Fall Arrest Systems, Personal Fall Restraint Systems and Positioning Devices:** Approved personal fall arrest, personal fall restraint or positioning systems shall be worn by those employees whose work exposes them to fall in excess of 7 ½ feet from the perimeter of a structure, unprotected sides and edges, leading edges, through shaft-ways and openings, sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected under the provisions of these orders.

**For roofing operations single – unit roofs with slopes of 0:12 through 4:12 and more than 20 feet in height:** Options include Warning lines and headers, Personal Fall Protection Systems, Catch Platforms, Scaffold Platforms, Eave Barriers, Standard Railing and Toe Boards.

**For working near floor, roof, and wall openings / skylights / roof parapet walls:** This section shall apply to temporary or emergency conditions where there is danger of employees or materials falling through floor, roof, or wall openings, or from stairways or runways. Floor, roof and skylight openings shall be guarded by both temporary railings and toe boards or by covers. The railing shall be provided on all exposed sides, except at entrances to stairways.

Covers shall be capable of safely supporting the greater of 400 pounds or twice the weight of the employees, equipment and materials that may be imposed on any one square foot area of the cover at any time. Covers shall be secured in place to prevent accidental removal or displacement, and shall bear a pressure sensitized, painted, or stenciled sign with legible letters not less than one inch high, stating: “Opening--Do Not Remove.” Markings of chalk or keel shall not be used.

Ladder way floor openings or platforms shall be guarded by standard railings with standard toe boards on all exposed sides, except at entrance to opening, with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening.

Floor holes, into which persons can accidentally walk, shall be guarded by either a standard railing with standard toe board on all exposed sides, or a floor hole cover of standard strength and construction that is secured against accidental displacement. While the cover is not in place, the floor hole shall be protected by administrative control method.

(e) Any employee approaching within 6 feet of any skylight shall be protected from falling through the skylight or skylight opening by any one of the following methods:

(1) Skylight screens. The design, construction, and installation of skylight screens shall meet the strength requirements equivalent to that of covers specified in subsection (b) above. They shall also be of such design, construction and mounting that under design loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork, with openings not more than 4 inches by 4 inches or of slat work with openings not more than 2 inches wide with length unrestricted, or of other material of equal strength and similar configuration, or

- (2) Guardrails meeting the requirements of Section 3209, or
- (3) The use of a personal fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders, or
- (4) Covers meeting the requirements of subsection (b) installed over the skylights, or
- (5) A fall protection plan as prescribed in Section 1671.1 of the Construction Safety Orders when it can be demonstrated that the use of fall protection methods as contained in subsections (e) (1-4) of this Section is impractical or creates a greater hazard.

**Exception for this section:** When the work is of short duration and limited exposure such as measuring, roof inspection, electrical/mechanical equipment inspection, etc., and the time involved in rigging and installing the safety devices required in subsections (e)(1) through (e)(4) equal or exceed the performance of the designated tasks of measuring, roof inspection, electrical/mechanical equipment inspection, etc.; these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained.

(f) Access shall not be permitted on glazed surfaces such as roofs, vaults, canopies, or skylights glazed with transparent or translucent materials unless an engineer currently registered in the State of California and experienced in the design of such glazed structures has certified that the surface will support all anticipated loads. Employees working on such surfaces shall be protected by a fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders.

(g) When glazed surfaces cannot be safely accessed for maintenance in accordance with subsection (f), scaffolds, catwalks, rolling ladders, platforms or other methods of safe access shall be provided.

Floor, Roof and Wall Openings to Be Guarded – 8 CCR 1632 & 3212

### 3. Working from Elevated Work Platforms – see below.

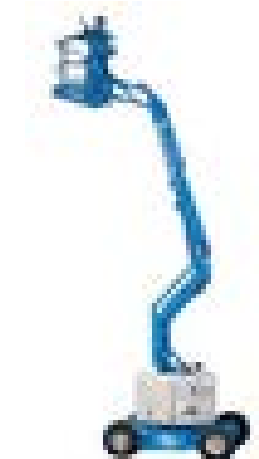
#### The Hierarchy Methods to Control Fall Hazards:

1. **Hazard Elimination** – Eliminate the need to access the fall hazard. Example - Work from an Aerial and Elevating work platform devices. **Aerial devices** such as articulating boom lifts may be vehicle – mounted or self-propelled and used to position employees. Employee must wear a fall protection system and attached to the boom or basket designated anchor. Safety belts/body belts used as part of a positioning device system shall be rigged such that an employee cannot free fall more than 2 feet.

#### **Operating/Working from Aerial Devices**

The general safety requirements are as follows:

- Only authorized and trained employee may operate aerial devices.
- Aerial devices must not rest on any structure.
- Test controls before use.
- Employee must stand only on the floor of the basket. Do not use planks, ladders, or other means to gain additional height.
- Employee must wear a fall protection system and attached to the boom or basket designated anchor.
- Set breaks when employee is elevated.





- An aerial lift truck must not be moved when an employee is on the elevated boom.
- No employees shall ride, nor tools, materials, or equipment be allowed on a traveling elevated platform.
- Do not load unit in excess of the designed working load.

**Other:** Information such as manufacturer's name, model, serial number, rated capacity at maximum platform height/maximum platform travel height, operating instructions and warning decals must be displayed on the device.

### **Regulatory Reference**

**100 % tie off required** – Aerial Lifts and Elevating Work Platforms – 8 CCR 3636-3648

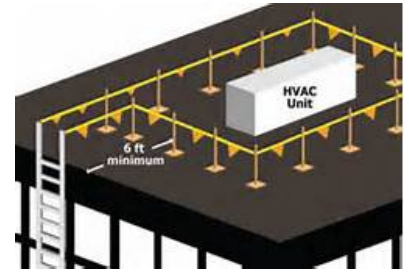
2. **Fall Prevention** – A physical barrier between a worker and the leading edge fall hazard. Example – Guardrail system. The system can be a fixed guardrail system or a temporary system that can be set-up prior the work taking place. The fixed guardrail has to meet at a minimum the design and construction of railing standards lay out by 8 CCR 1620. Other option is to use portable guardrail system which does not require rooftop surface attachments. The system requires being hoisted up to the roof top for set-up and hoisted down from the rooftop after takedown. Skylights safety netting can be use over skylights to eliminate the fall hazards when working near skylights.
 
3. **Fall Restraint** – Restrains a worker from reaching an edge. Example – Use Harness, Lanyard or Self Retracting Lanyard and Anchor. The system requires designating one or more non-certified or certified anchors on the roof structure. For additional information on non-certified vs certified anchors design load see additional attached Occupational Health & Safety “Certified vs Non-Certified Anchorages” 2007 Article reference. Installing anchors requires modification of the roof surfaces may cost more to install. A horizontal life-line system can be considered as well. Other option is to use non-penetrating anchor systems such as freestanding counterweight anchor. The non-penetrating roof anchor can be moved around near designated work areas. They can also be left on the roof top for future use. More than one unit may be required on a roof top depending on work load and personnel.
 

(Feasible option – non-penetrating anchor system)
4. **Fall Arrest** – Arrests a fall after it has started. Example – Use Harness, Lifeline with Shock pack and Anchor. The system requires designating one or more anchors on the roof structure. Requires having a rescue plan. Additional risk includes free fall distance. If employee does not control lifeline slag, the employee may strike the ground upon a fall. Other option is to use a mobile fall protection anchor system that does not require roof penetration.
5. **Administrative Controls** – Warns of a fall hazard nearby but will not actively stop a fall. Example – Use of a Fall Protection Plan, Control Access Zone and/or Safety Monitor.

**Fall Protection Plan:** For construction operations when it can be shown that the use of conventional fall protection is impractical or creates a greater hazard and must in detail identify and document why the use of conventional fall protection systems (guardrails, personal fall arrest or safety nets) are infeasible or why their use would create a greater hazard and must include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection provided by conventional fall protection systems. The Fall Protection Plan (FPP) form can be found in the City of San Carlos written Fall Protection Plan policy appendix F.

1. Be prepared by a qualified person (QP) who is identified in the plan.
2. Be developed for a specific site or developed for essentially identical operations.
3. Be updated by the QP.
4. Document why a conventional fall protection (FP) system cannot be used.
5. Identify the competent person to implement and supervise the FPP.
6. Identify the controlled access zone for each location where a conventional FP system cannot be used.
7. Identify employees allowed in the Controlled Access Zone (CAZ).
8. Be implemented and supervised by the competent person.

Note: An up-to-date copy of the fall protection plan must be at the job site.



**Controlled Access Zones & Safety Monitoring System:** When used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall be defined by a control line or by any other means that restricts access. Signs shall be posted to warn unauthorized employees to stay out of the controlled access zone.

When control lines are used, they shall be erected not less than **6 feet nor more than 25 feet** from the unprotected or leading edge, except when erecting precast concrete members.

The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge. The control line shall be connected on each side to a standard railing or wall, or securely anchored on each end. Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

- a. Each line shall be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.
- b. Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the working level/working area and its highest point is not more than 45 inches.
- c. Each line shall have a minimum breaking strength of 200 pounds.

**Safety Monitoring Systems:** The employer shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements:

The safety monitor shall be competent to recognize fall hazards; The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner; The safety monitor shall be within visual sighting distance of the employee and shall always be in communication with the employee being monitored; and, The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function.

No employee, other than an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors.

## **Other**

**Roof work/inspections:** When the work is of short duration and limited exposure, such as minor patching, measuring, inspection, etc., and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in actual construction, these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained as determined by the competent person. Article 30 Roofing

Operations and Equipment 8 CCR 1723 (c).

**General:** When the work is of short duration (i.e., non-repetitive) and limited exposure and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in the actual construction, these provisions may be temporarily suspended, provided adequate risk control is recognized and maintained under immediate, competent supervision. Article 24 Fall Protection 8 CCR 1669 (c).

### 5. Personal Protective Equipment Required/Recommended: Active Systems

☒ Full Body Harness



☐ Lanyard



☐ Fall Position/Restraint



☒ Self-Retracting Lifeline



☐ Fall Arrest System (Rope Grab System)



☒ Carabineer (5000lb)



☒ Approved anchor – see recommended units



☒ Life – lines



### 5. Personal Protective Equipment Required/Recommended: Passive Systems

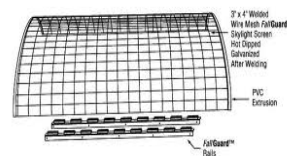
☐ Guardrails



☐ Guardrails/Roof Hatch











☐ Skylight Fall Guard



☒ Warning Line Systems/Control Access Zone



## 5. Personal Protective Equipment Required/Recommended: Other

<input checked="" type="checkbox"/> Gloves	<input checked="" type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Safety Boot/Shoe
<input checked="" type="checkbox"/> Stepladder 	<input checked="" type="checkbox"/> Extension Ladder 	<input checked="" type="checkbox"/> Extension Ladder Fascia Ladder Clamp 	<input type="checkbox"/> Extension Ladder Parapet Wall Ladder Clamp 
<input type="checkbox"/> Scissor –Lift /Boom Lift Devices 	<input checked="" type="checkbox"/> Tool Lanyard 	<input checked="" type="checkbox"/> Bags & Buckets 	<input checked="" type="checkbox"/> Gutter Cleaner with extended pole 

## 6. Comments:

Ensure all employees exposed to fall hazards have been properly trained in fall protection equipment.

Facility owner should use contracts requiring that contractors adhere to OSHA – required safety measures while construction or maintenance is being performed. Required contractors to have a formal safety and health program relating to construction or maintenance. Include a provision in your contracts for frequent and regular jobsite inspections by a competent person who has expertise in worker fall protection.

Keep inspections/recertification records of fall protection equipment used.



# Fall Hazard Assessment for: City of San Carlos, CA

Location: Fire Station #13, 525 Laurel Street, San Carlos, CA 94070

Assessed By: Jose M Mora – Du-All Safety

Date Assessed: 4-9-2015

**1. Physical Description:** ex: Ladder (vertical, extension, A-frame, 3-leg, steep stair, steeple), Roof (flat, steep slope, low slope, composite on felt), Catwalk, Tank, Vault (above ground, below ground, elevated), etc.



**Figure 1.** Fire Station #13



**Figure 2.** Fire Station #13 – Slope/Terra Cota roofing system.



**Figure 3.** Top roof view.

**2. Work to Be Performed:** ex: Maintenance, repair, painting, cleaning, adjusting, replacement, etc.

Inspection, maintenance and/or repairs of HVAC/Chillers units, roof gutters, and lighting fixtures.

**3. Hazards:** ex: Fall to lower level, struck by object, environmental hazard, etc.

1. When ascending/descending on facility fix ladders and roof hatch.
2. When using and working from portable ladders.
3. When working on the roof near the roof edge or near the skylight.
4. When climbing onto and working from elevated work platforms (Scissor lift), bucket trucks and articulating boom lifts.

**4. Actions To Be Taken:** ex: Training, administrative control, etc.

### **1. Using Fix Ladders/Roof Hatch – Figure 3.**

- Inspect ladder before use to identify any damage, sharps, or missing fasteners.
- Face the ladder when ascending/descending.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Opening Roof Hatch (Hatch is heavy, requires some effort to open), there is potential for slip and fall from the ship ladder when pushing on the roof hatch with both hands.
- Close the hatch after transitioning to the roof to eliminate the roof opening hazard. If you need to bring tools or materials through the hatch, then an install a roof hatch guardrail as shown below on section 5 of this report.
- For buildings. Guardrails shall be provided on all open sides of unenclosed elevated work locations, such as: roof openings, open and glazed sides of landings, balconies or porches, platforms, runways, ramps, or working levels more than 30 inches above the floor, ground, or other working areas of a building as defined in Section 3207 of the General Industry Safety Orders. Where overhead clearance prohibits installation of a 42-inch guardrail, a lower rail or rails shall be installed. The railing shall be provided with a toeboard where the platform, runway, or ramp is 6 feet or more above places where employees normally work or pass and the lack of a toeboard could create a hazard from falling tools, material, or equipment.

**Recommendation:** Install roof hatch guardrail system.

#### **Regulatory Reference**

CCR, Title 8, Section 3278. Use of Fixed Ladders.

CCR Title 8, Section 3210. Guardrails at Elevated Locations.

### **2. Using Portable Extension and Step Ladders**

- Inspect ladder before use to identify any damage or deficiencies. Verify the ladder is either type 1 or 2 for the right load and working conditions.
- Do not place ladders where they can be accidentally struck or displaced.
- For extension ladders set-up ladder with a 4:1 angle ratio, for every four feet in the height of the structure, the foot of the ladder must be located one foot away from the leading edge where the ladder contacts the roof or surface (Note: it is very important that the roof overhang is taken into account when positioning the ladder.), extend ladder side rails to at least 3 feet above the landing unless handholds are provided.
- Face the ladder when ascending/descending.
- Have another person hold the ladder while the ladder is being secured to the building structure.
- Tie, block, or otherwise secure the extension portable ladder in use. Do not splice ladders together.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Do not use metal ladders for electrical work or near live electrical parts.
- For stepladder do not step on the top cap or the step below the top cap.
- For stepladder do not use the X-bracing on the rear section of the stepladder for climbing unless the ladder is so designed and provided with steps for climbing on both front and rear sections.
- For stepladder ensure that it is properly set-up with the spreader in the locked position before use.
- Do not use a step ladder as a lean-to-ladder.

#### **Regulatory Reference**

CCR Title 8, Section 1675-1678 Ladders

CCR Title 8, Section 3270-3280 Access, Work Space and Work Areas

### **3. Working on the Roof near the Roof Edge or Near the Skylight – Figure 3.**

When working at elevated heights it is recommended to use the Hierarchy Methods to Control Fall Hazards listed in order of preference:



**For maintenance work above 7 ½ feet - 8 CCR 1670 Personal Fall Arrest Systems, Personal Fall Restraint Systems and Positioning Devices:** Approved personal fall arrest, personal fall restraint or positioning systems shall be worn by those employees whose work exposes them to fall in excess of 7 ½ feet from the perimeter of a structure, unprotected sides and edges, leading edges, through shaft-ways and openings, sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected under the provisions of these orders.

**For roofing operations single – unit roofs with slopes of 0:12 through 4:12 and more than 20 feet in height:** Options include Warning lines and headers, Personal Fall Protection Systems, Catch Platforms, Scaffold Platforms, Eave Barriers, Standard Railing and Toe Boards.

**For working near floor, roof, and wall openings / skylights / roof parapet walls:** This section shall apply to temporary or emergency conditions where there is danger of employees or materials falling through floor, roof, or wall openings, or from stairways or runways. Floor, roof and skylight openings shall be guarded by both temporary railings and toe boards or by covers. The railing shall be provided on all exposed sides, except at entrances to stairways.

Covers shall be capable of safely supporting the greater of 400 pounds or twice the weight of the employees, equipment and materials that may be imposed on any one square foot area of the cover at any time. Covers shall be secured in place to prevent accidental removal or displacement, and shall bear a pressure sensitized, painted, or stenciled sign with legible letters not less than one inch high, stating: “Opening--Do Not Remove.” Markings of chalk or keel shall not be used.

Ladder way floor openings or platforms shall be guarded by standard railings with standard toe boards on all exposed sides, except at entrance to opening, with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening.

Floor holes, into which persons can accidentally walk, shall be guarded by either a standard railing with standard toe board on all exposed sides, or a floor hole cover of standard strength and construction that is secured against accidental displacement. While the cover is not in place, the floor hole shall be protected by administrative control method.

( e) Any employee approaching within 6 feet of any skylight shall be protected from falling through the skylight or skylight opening by any one of the following methods:

(1) Skylight screens. The design, construction, and installation of skylight screens shall meet the strength requirements equivalent to that of covers specified in subsection (b) above. They shall also be of such design, construction and mounting that under design loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork, with openings not more than 4 inches by 4 inches or of slat work with openings not more than 2 inches wide with length unrestricted, or of other material of equal strength and similar configuration, or

(2) Guardrails meeting the requirements of Section 3209, or

(3) The use of a personal fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders, or

(4) Covers meeting the requirements of subsection (b) installed over the skylights, or

(5) A fall protection plan as prescribed in Section 1671.1 of the Construction Safety Orders when it can be demonstrated that the use of fall protection methods as contained in subsections (e) (1-4) of this Section is impractical or creates a greater hazard.

**Exception for this section:** When the work is of short duration and limited exposure such as measuring, roof inspection, electrical/mechanical equipment inspection, etc., and the time involved in rigging and installing the

safety devices required in subsections (e)(1) through (e)(4) equal or exceed the performance of the designated tasks of measuring, roof inspection, electrical/mechanical equipment inspection, etc.; these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained.

(f) Access shall not be permitted on glazed surfaces such as roofs, vaults, canopies, or skylights glazed with transparent or translucent materials unless an engineer currently registered in the State of California and experienced in the design of such glazed structures has certified that the surface will support all anticipated loads. Employees working on such surfaces shall be protected by a fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders.

(g) When glazed surfaces cannot be safely accessed for maintenance in accordance with subsection (f), scaffolds, catwalks, rolling ladders, platforms or other methods of safe access shall be provided.

Floor, Roof and Wall Openings to Be Guarded – 8 CCR 1632 & 3212

#### 4. When Working Over Heavy Equipment at Elevated Heights.

- Use a personal man lift such as the JLG lift pod that can be used as an independent work platform away from the fall hazard.
- <http://www.jlg.com/en/equipment/vertical-lifts-stock-pickers/personal-portable>

#### 5. Working from Elevated Work Platforms – see below.

##### The Hierarchy Methods to Control Fall Hazards:

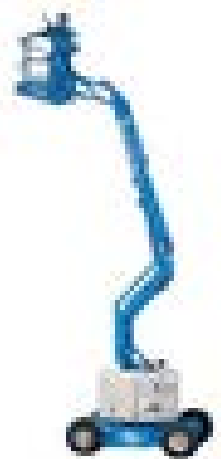
1. **Hazard Elimination** – Eliminate the need to access the fall hazard. Example - Work from an Aerial and Elevating work platform devices. **Aerial devices** such as articulating boom lifts may be vehicle – mounted or self-propelled and used to position employees. Employee must wear a fall protection system and attached to the boom or basket designated anchor. Safety belts/body belts used as part of a positioning device system shall be rigged such that an employee cannot free fall more than 2 feet. **Elevating work platform** equipment, such as vertical tower, scissor lift, and mast-climbing work platform may be used to position employees and materials.



##### **Operating/Working from Aerial Devices and Elevating Work Platforms**

The general safety requirements are as follows:

- Only authorized and trained employee may operate aerial devices.
- Aerial devices must not rest on any structure.
- Test controls before use.
- Employee must stand only on the floor of the basket. Do not use planks, ladders, or other means to gain additional height.
- Employee must wear a fall protection system and attached to the boom or basket designated anchor.
- Set breaks when employee is elevated.
- An aerial lift truck must not be moved when an employee is on the elevated boom.
- For scissor lifts, the platform deck shall be equipped with a guardrail or other structure around its upper edge. Where the guardrail is less than 39 inches high, a personal fall protection system is required.
- For scissor lift the platform shall have toe boards at sides and ends.
- No employees shall ride, nor tools, materials, or equipment be allowed on a traveling elevated platform.



- Do not load unit in excess of the designed working load.

**Other:** Information such as manufacturer's name, model, serial number, rated capacity at maximum platform height/maximum platform travel height, operating instructions and warning decals must be displayed on the device.

### Regulatory Reference

**100 % tie off required** – Aerial Lifts and Elevating Work Platforms – 8 CCR 3636-3648

2. **Fall Prevention** – A physical barrier between a worker and the leading edge fall hazard. Example – Guardrail system. The system can be a fixed guardrail system or a temporary system that can be set-up prior the work taking place. The fixed guardrail has to meet at a minimum the design and construction of railing standards lay out by 8 CCR 1620. Other option is to use portable guardrail system which does not require rooftop surface attachments. The system requires being hoisted up to the roof top for set-up and hoisted down from the rooftop after takedown. Skylights safety netting can be use over skylights to eliminate the fall hazards when working near skylights.
3. **Fall Restraint** – Restrains a worker from reaching an edge. Example – Use Harness, Lanyard or Self Retracting Lanyard and Anchor. The system requires designating one or more non-certified or certified anchors on the roof structure. For additional information on non-certified vs certified anchors design load see additional attached Occupational Health & Safety “Certified vs Non-Certified Anchorages” 2007 Article reference. Installing anchors requires modification of the roof surfaces may cost more to install. A horizontal life-line system



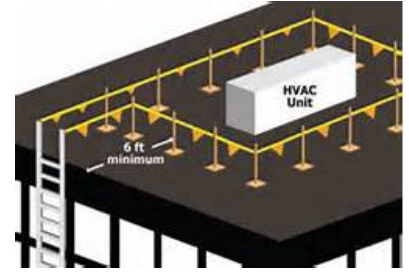
can be considered as well. Other option is to use non-penetrating anchor systems such as freestanding counterweight anchor. The non-penetrating roof anchor can be moved around near designated work areas. They can also be left on the roof top for future use. More than one unit may be required on a roof top depending on work load and personnel.

(Feasible option – non-penetrating anchor system)

4. **Fall Arrest** – Arrests a fall after it has started. Example – Use Harness, Lifeline with Shock pack and Anchor. The system requires designating one or more anchors on the roof structure. Requires having a rescue plan. Additional risk includes free fall distance. If employee does not control lifeline slag, the employee may strike the ground upon a fall. Other option is to use a mobile fall protection anchor system that does not require roof penetration.
5. **Administrative Controls** – Warns of a fall hazard nearby but will not actively stop a fall. Example – Use of a Fall Protection Plan, Control Access Zone and/or Safety Monitor.

**Fall Protection Plan:** For construction operations when it can be shown that the use of conventional fall protection is impractical or creates a greater hazard and must in detail identify and document why the use of conventional fall protection systems (guardrails, personal fall arrest or safety nets) are infeasible or why their use would create a greater hazard and must include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection provided by conventional fall protection systems. The Fall Protection Plan (FPP) form can be found in the City of San Carlos written Fall Protection Plan policy appendix F.

1. Be prepared by a qualified person (QP) who is identified in the plan.
  2. Be developed for a specific site or developed for essentially identical operations.
  3. Be updated by the QP.
  4. Document why a conventional fall protection (FP) system cannot be used.
  5. Identify the competent person to implement and supervise the FPP.
  6. Identify the controlled access zone for each location where a conventional FP system cannot be used.
  7. Identify employees allowed in the Controlled Access Zone (CAZ).
  8. Be implemented and supervised by the competent person.
- Note: An up-to-date copy of the fall protection plan must be at the job site.



**Controlled Access Zones & Safety Monitoring System:** When used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall be defined by a control line or by any other means that restricts access. Signs shall be posted to warn unauthorized employees to stay out of the controlled access zone.

When control lines are used, they shall be erected not less than **6 feet nor more than 25 feet** from the unprotected or leading edge, except when erecting precast concrete members.

The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge. The control line shall be connected on each side to a standard railing or wall, or securely anchored on each end. Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

- a. Each line shall be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.
- b. Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the working level/working area and its highest point is not more than 45 inches.
- c. Each line shall have a minimum breaking strength of 200 pounds.

**Safety Monitoring Systems:** The employer shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements:

The safety monitor shall be competent to recognize fall hazards; The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner; The safety monitor shall be within visual sighting distance of the employee and shall always be in communication with the employee being monitored; and, The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function.

No employee, other than an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors.








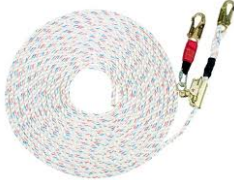
## Other

**Roof work/inspections:** When the work is of short duration and limited exposure, such as minor patching, measuring,



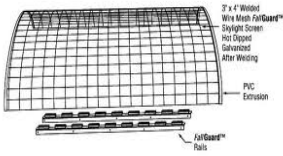

inspection, etc., and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in actual construction, these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained as determined by the competent person. Article 30 Roofing Operations and Equipment 8 CCR 1723 (c).

**General:** When the work is of short duration (i.e., non-repetitive) and limited exposure and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in the actual construction, these provisions may be temporarily suspended, provided adequate risk control is recognized and maintained under immediate, competent supervision. Article 24 Fall Protection 8 CCR 1669 (c).









## 5. Personal Protective Equipment Required/Recommended: Active Systems

<input checked="" type="checkbox"/> Full Body Harness 	<input type="checkbox"/> Lanyard 	<input type="checkbox"/> Fall Position/Restraint 	<input checked="" type="checkbox"/> Self-Retracting Lifeline 
<input type="checkbox"/> Fall Arrest System (Rope Grab System) 	<input checked="" type="checkbox"/> Carabineer (5000lb) 	<input checked="" type="checkbox"/> Approved anchor – see recommended units 	<input checked="" type="checkbox"/> Life – lines 

## 5. Personal Protective Equipment Required/Recommended: Passive Systems

<input type="checkbox"/> Guardrails 	<input checked="" type="checkbox"/> Guardrails/Roof Hatch 	<input type="checkbox"/> Skylight Fall Guard 	<input type="checkbox"/> Warning Line Systems/Control Access Zone 
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## 5. Personal Protective Equipment Required/Recommended: Other

<input checked="" type="checkbox"/> Gloves	<input checked="" type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Safety Boot/Shoe
<input checked="" type="checkbox"/> Stepladder 	<input type="checkbox"/> Extension Ladder 	<input type="checkbox"/> Extension Ladder Fascia Ladder Clamp 	<input type="checkbox"/> Extension Ladder Parapet Wall Ladder Clamp 
<input checked="" type="checkbox"/> Scissor –Lift /Boom Lift Devices 	<input checked="" type="checkbox"/> Tool Lanyard 	<input checked="" type="checkbox"/> Bags & Buckets 	<input checked="" type="checkbox"/> Gutter Cleaner with extended pole 

## 6. Comments:

Ensure all employees exposed to fall hazards have been properly trained in fall protection equipment.

Facility owner should use contracts requiring that contractors adhere to OSHA – required safety measures while construction or maintenance is being performed. Required contractors to have a formal safety and health program relating to construction or maintenance. Include a provision in your contracts for frequent and regular jobsite inspections by a competent person who has expertise in worker fall protection.

Keep inspections/recertification records of fall protection equipment used.



# Fall Hazard Assessment for: City of San Carlos, CA

Location: Corporation Yard Equipment, 1000 Bransten Road, San Carlos, CA

Assessed By: Jose M Mora – Du-All Safety

Date Assessed: 4-9-2015

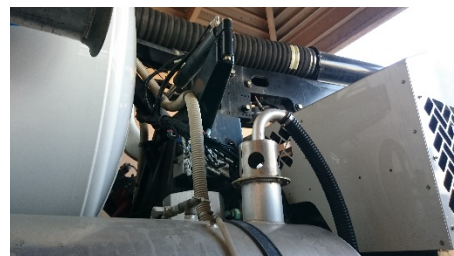
**1. Physical Description:** ex: Ladder (vertical, extension, A-frame, 3-leg, steep stair, steeple), Roof (flat, steep slope, low slope, composite on felt), Catwalk, Tank, Vault (above ground, below ground, elevated), etc.



**Figure 1.** Elevating work platform (scissor lift) Genie GS-2646, 26' max.



**Figure 2.** Vacuum truck.



**Figure 3.** Vacuum truck elevated equipment.

**2. Work to Be Performed:** ex: Maintenance, repair, painting, cleaning, adjusting, replacement, etc.

Inspection, maintenance and/or repairs of HVAC/Chillers units, roof gutters, lighting fixtures, traffic control signs, confined space entry to lower levels, solar heating plumbing systems, park public bathroom roofs tops, roof top antennas and heavy equipment i.e. vac truck.

**3. Hazards:** ex: Fall to lower level, struck by object, environmental hazard, etc.

1. When ascending/descending on equipment ladder.
2. When using and working from portable ladders.
3. When working on top of heavy equipment (i.e. Vac Truck) elevated parts/components.
4. When climbing onto and working from elevated work platforms (Scissor lift), bucket trucks and articulating boom lifts.

**4. Actions To Be Taken:** ex: Training, administrative control, etc.

1. Using Equipment Fix Ladder – Figure 1.

- Inspect ladder before use to identify any damage, sharps, or missing fasteners.
- Face the ladder when ascending/descending.
- Maintain a 3-point contact when ascending/descending from the ladder.

## 2. Using Portable Extension and Step Ladders

- Inspect ladder before use to identify any damage or deficiencies. Verify the ladder is either type 1 or 2 for the right load and working conditions.
- Do not place ladders where they can be accidentally struck or displaced.
- For extension ladders set-up ladder with a 4:1 angle ratio, for every four feet in the height of the structure, the foot of the ladder must be located one foot away from the leading edge where the ladder contacts the roof or surface (Note: it is very important that the roof overhang is taken into account when positioning the ladder.), extend ladder side rails to at least 3 feet above the landing unless handholds are provided.
- Face the ladder when ascending/descending.
- Have another person hold the ladder while the ladder is being secured to the building structure.
- Tie, block, or otherwise secure the extension portable ladder in use. Do not splice ladders together.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Do not use metal ladders for electrical work or near live electrical parts.
- For stepladder do not step on the top cap or the step below the top cap.
- For stepladder do not use the X-bracing on the rear section of the stepladder for climbing unless the ladder is so designed and provided with steps for climbing on both front and rear sections.
- For stepladder ensure that it is properly set-up with the spreader in the locked position before use.
- Do not use a step ladder as a lean-to-ladder.

### Regulatory Reference

CCR Title 8, Section 1675-1678 Ladders

CCR Title 8, Section 3270-3280 Access, Work Space and Work Areas

## 3. When Working Over Heavy Equipment at Elevated Heights – Figure 2 and Figure 3.

- Use a personal man lift such as the JLG lift pod that can be used as an independent work platform away from the fall hazard.
- <http://www.jlg.com/en/equipment/vertical-lifts-stock-pickers/personal-portable>



## 4. Working from Elevated Work Platforms – Figure 1.

### The Hierarchy Methods to Control Fall Hazards:

**Hazard Elimination** – Eliminate the need to access the fall hazard. Example - Work from an Aerial and Elevating work platform devices. **Aerial devices** such as articulating boom lifts may be vehicle – mounted or self-propelled and used to position employees. Employee must wear a fall protection system and attached to the boom or basket designated anchor. Safety belts/body belts used as part of a positioning device system shall be rigged such that an employee cannot free fall more than 2 feet. **Elevating work platform** equipment, such as vertical tower, scissor lift, and mast-climbing work platform may be used to position employees and materials.



### Operating/Working from Aerial Devices and Elevating Work Platforms



The general safety requirements are as follows:







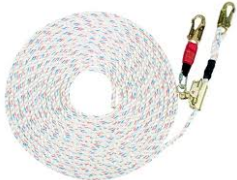
- Only authorized and trained employee may operate aerial devices.
- Aerial devices must not rest on any structure.
- Test controls before use.
- Employee must stand only on the floor of the basket. Do not use planks, ladders, or other means to gain additional height.
- Employee must wear a fall protection system and attached to the boom or basket designated anchor.
- Set breaks when employee is elevated.
- An aerial lift truck must not be moved when an employee is on the elevated boom.
- For scissor lifts, the platform deck shall be equipped with a guardrail or other structure around its upper edge. Where the guardrail is less than 39 inches high, a personal fall protection system is required.
- For scissor lift the platform shall have toe boards at sides and ends.
- No employees shall ride, nor tools, materials, or equipment be allowed on a traveling elevated platform.
- Do not load unit in excess of the designed working load.


**Other:** Information such as manufacturer's name, model, serial number, rated capacity at maximum platform height/maximum platform travel height, operating instructions and warning decals must be displayed on the device.

#### Regulatory Reference



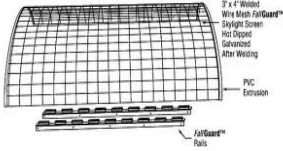

**100 % tie off required** – Aerial Lifts and Elevating Work Platforms – 8 CCR 3636-3648

### 5. Personal Protective Equipment Required/Recommended: Active Systems





<input checked="" type="checkbox"/> Full Body Harness 	<input checked="" type="checkbox"/> Lanyard 	<input type="checkbox"/> Fall Position/Restraint 	<input type="checkbox"/> Self-Retracting Lifeline 
<input type="checkbox"/> Fall Arrest System (Rope Grab System) 	<input checked="" type="checkbox"/> Carabineer (5000lb) 	<input type="checkbox"/> Approved anchor – see recommended units 	<input type="checkbox"/> Life – lines 

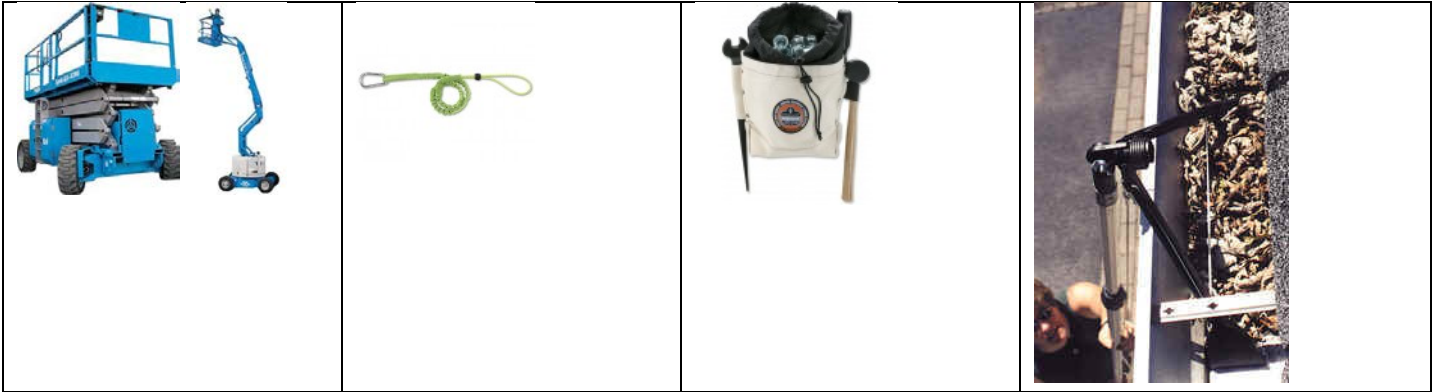
			
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### 5. Personal Protective Equipment Required/Recommended: Passive Systems

<input type="checkbox"/> Guardrails	<input type="checkbox"/> Guardrails/Roof Hatch	<input type="checkbox"/> Skylight Fall Guard	<input type="checkbox"/> Warning Line Systems/Control Access Zone
			

### 5. Personal Protective Equipment Required/Recommended: Other

<input checked="" type="checkbox"/> Gloves	<input checked="" type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Safety Boot/Shoe
<input checked="" type="checkbox"/> Stepladder	<input checked="" type="checkbox"/> Extension Ladder	<input type="checkbox"/> Extension Ladder Fascia Ladder Clamp	<input type="checkbox"/> Extension Ladder Parapet Wall Ladder Clamp
			
<input checked="" type="checkbox"/> Scissor -Lift /Boom Lift Devices	<input checked="" type="checkbox"/> Tool Lanyard	<input checked="" type="checkbox"/> Bags & Buckets	<input type="checkbox"/> Gutter Cleaner with extended pole



## 6. Comments:

Ensure all employees exposed to fall hazards have been properly trained in fall protection equipment.

Facility owner should use contracts requiring that contractors adhere to OSHA – required safety measures while construction or maintenance is being performed. Required contractors to have a formal safety and health program relating to construction or maintenance. Include a provision in your contracts for frequent and regular jobsite inspections by a competent person who has expertise in worker fall protection.

Keep inspections/recertification records of fall protection equipment used.

**Fall Hazard Assessment for: City of San Carlos, CA**

Location: Corporation Yard Facility, 1000 Bransten Road, San Carlos, CA

Assessed By: Jose M Mora – Du-All Safety

Date Assessed: 4-9-2015

**1. Physical Description: ex: Ladder (vertical, extension, A-frame, 3-leg, steep stair, steeple), Roof (flat, steep slope, low slope, composite on felt), Catwalk, Tank, Vault (above ground, below ground, elevated), etc.**



**Figure 1.** Fixed ladder 12.5'.



**Figure 2.** Fixed ladder 16'.



**Figure 3.** Roof hatch access to HVAC/Chiller Systems.



**Figure 4.** HVAC/Chiller System.



**Figure 5.** Solar Panel System.

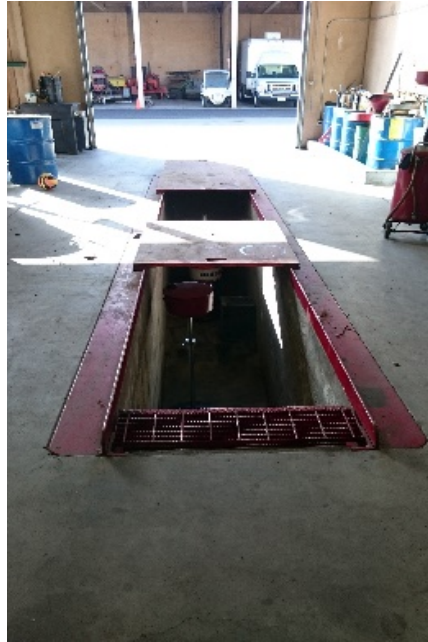


**Figure 6.** Standing seam roof panel system.





**Figure 7.** Vehicle port.



**Figure 8.** Vehicle service pit.



**Figure 9.** Other building structure.

**2. Work to Be Performed: ex: Maintenance, repair, painting, cleaning, adjusting, replacement, etc.**

Inspection, maintenance and/or repairs of HVAC/Chillers units, roof gutters, lighting fixtures, traffic control signs, confined space entry to lower levels, solar heating plumbing systems, park public bathroom roofs tops, roof top antennas and heavy equipment i.e. vac truck.

**3. Hazards: ex: Fall to lower level, slip and fall, struck by object, environmental hazard, etc.**

1. When ascending/descending on facility fix ladders and roof hatch.
2. When using and working from portable ladders.
3. When working on the roof near the roof edge or near the skylight.
4. When walking or working near the vehicle service pit top opening.
5. When working near open holes such as confined space man holes and vaults.
6. When working on top of heavy equipment (i.e. Vac Truck) elevated parts/components.
7. When climbing onto and working from elevated work platforms (Scissor lift), bucket trucks and articulating boom lifts.

**4. Recommended Actions to Be Taken: ex: Training, administrative control, etc.**

**1. Using Fix Ladders/Roof Hatch – Figure 1, Figure 2, and Figure 3.**

- Inspect ladder before use to identify any damage, sharps, or missing fasteners.
- Face the ladder when ascending/descending.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Opening Roof Hatch (Hatch is heavy, requires some effort to open), there is potential for slip and fall from the ship ladder when pushing on the roof hatch with both hands.
- Close the hatch after transitioning to the roof to eliminate the roof opening hazard. If you need to bring tools or materials through the hatch, then an install a roof hatch guardrail as shown below on section 5 of this report.
- For buildings. Guardrails shall be provided on all open sides of unenclosed elevated work locations, such as: roof openings, open and glazed sides of landings, balconies or porches, platforms, runways, ramps, or working

levels more than 30 inches above the floor, ground, or other working areas of a building as defined in Section 3207 of the General Industry Safety Orders. Where overhead clearance prohibits installation of a 42-inch guardrail, a lower rail or rails shall be installed. The railing shall be provided with a toeboard where the platform, runway, or ramp is 6 feet or more above places where employees normally work or pass and the lack of a toeboard could create a hazard from falling tools, material, or equipment.



**Recommendation:** Install roof hatch guardrail system or similar to the one listed below. The Hatch Safety Guard Rail system is a bolt-on non-penetrating hatch safety guard rail with self-closing safety gate and hand grips to assist in access or egress through the hatch. It is available in either a galvanized steel or painted steel finish. The Hatch Guard hatch rail meets and exceeds the applicable roof hatch guard rail codes. Now available with a roof hoist attachment to safely lift materials through the Hatch Safety Guardrail.



The Hatch Safety Guard Rail with roof hoist. Source: <http://wssafety.com/products/roof-hatch-protection/hatchguard-bolt-on-railing/>

### Regulatory Reference

CCR, Title 8, Section 3278. Use of Fixed Ladders.

CCR Title 8, Section 3210. Guardrails at Elevated Locations.

## 2. Using Portable Extension and Step Ladders

- Inspect ladder before use to identify any damage or deficiencies. Verify the ladder is either type 1 or 2 for the right load and working conditions.
- Do not place ladders where they can be accidentally struck or displaced.
- For extension ladders set-up ladder with a 4:1 angle ratio, for every four feet in the height of the structure, the foot of the ladder must be located one foot away from the leading edge where the ladder contacts the roof or surface (Note: it is very important that the roof overhang is taken into account when positioning the ladder.), extend ladder side rails to at least 3 feet above the landing unless handholds are provided.
- Face the ladder when ascending/descending.
- Have another person hold the ladder while the ladder is being secured to the building structure.
- Tie, block, or otherwise secure the extension portable ladder in use. Do not splice ladders together.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Do not use metal ladders for electrical work or near live electrical parts.
- For stepladder do not step on the top cap or the step below the top cap.
- For stepladder do not use the X-bracing on the rear section of the stepladder for climbing unless the ladder is so designed and provided with steps for climbing on both front and rear sections.
- For stepladder ensure that it is properly set-up with the spreader in the locked position before use.
- Do not use a step ladder as a lean-to-ladder.

### Regulatory Reference

CCR Title 8, Section 1675-1678 Ladders

CCR Title 8, Section 3270-3280 Access, Work Space and Work Areas

**3. Working on the Roof near the Roof Edge or Near the Skylight – Figure 5, Figure 6, and Figure 9.**

When working at elevated heights it is recommended to use the Hierarchy Methods to Control Fall Hazards listed in order of preference:

**For maintenance work above 7 ½ feet - 8 CCR 1670 Personal Fall Arrest Systems, Personal Fall Restraint Systems and Positioning Devices:** Approved personal fall arrest, personal fall restraint or positioning systems shall be worn by those employees whose work exposes them to fall in excess of 7 ½ feet from the perimeter of a structure, unprotected sides and edges, leading edges, through shaft-ways and openings, sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected under the provisions of these orders.

**For roofing operations single – unit roofs with slopes of 0:12 through 4:12 and more than 20 feet in height:** Options include Warning lines and headers, Personal Fall Protection Systems, Catch Platforms, Scaffold Platforms, Eave Barriers, Standard Railing and Toe Boards.

**For working near floor, roof, and wall openings / skylights / roof parapet walls:** This section shall apply to temporary or emergency conditions where there is danger of employees or materials falling through floor, roof, or wall openings, or from stairways or runways. Floor, roof and skylight openings shall be guarded by both temporary railings and toe boards or by covers. The railing shall be provided on all exposed sides, except at entrances to stairways.

Covers shall be capable of safely supporting the greater of 400 pounds or twice the weight of the employees, equipment and materials that may be imposed on any one square foot area of the cover at any time. Covers shall be secured in place to prevent accidental removal or displacement, and shall bear a pressure sensitized, painted, or stenciled sign with legible letters not less than one inch high, stating: “Opening--Do Not Remove.” Markings of chalk or keel shall not be used.

Ladder way floor openings or platforms shall be guarded by standard railings with standard toe boards on all exposed sides, except at entrance to opening, with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening.

Floor holes, into which persons can accidentally walk, shall be guarded by either a standard railing with standard toe board on all exposed sides, or a floor hole cover of standard strength and construction that is secured against accidental displacement. While the cover is not in place, the floor hole shall be protected by administrative control method.

(e) Any employee approaching within 6 feet of any skylight shall be protected from falling through the skylight or skylight opening by any one of the following methods:

(1) Skylight screens. The design, construction, and installation of skylight screens shall meet the strength requirements equivalent to that of covers specified in subsection (b) above. They shall also be of such design, construction and mounting that under design loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork, with openings not more than 4 inches by 4 inches or of slat work with openings not more than 2 inches wide with length unrestricted, or of other material of equal strength and similar configuration, or

(2) Guardrails meeting the requirements of Section 3209, or

(3) The use of a personal fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders, or

(4) Covers meeting the requirements of subsection (b) installed over the skylights, or

(5) A fall protection plan as prescribed in Section 1671.1 of the Construction Safety Orders when it can be demonstrated that the use of fall protection methods as contained in subsections (e) (1-4) of this Section is impractical or creates a greater hazard.

**Exception for this section:** When the work is of short duration and limited exposure such as measuring, roof inspection, electrical/mechanical equipment inspection, etc., and the time involved in rigging and installing the safety devices required in subsections (e)(1) through (e)(4) equal or exceed the performance of the designated tasks of measuring, roof inspection, electrical/mechanical equipment inspection, etc.; these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained.



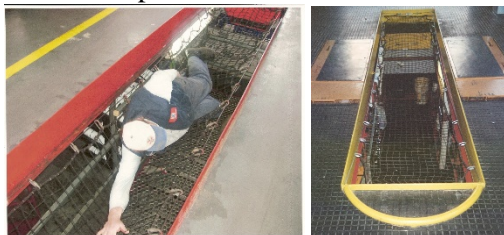
(f) Access shall not be permitted on glazed surfaces such as roofs, vaults, canopies, or skylights glazed with transparent or translucent materials unless an engineer currently registered in the State of California and experienced in the design of such glazed structures has certified that the surface will support all anticipated loads. Employees working on such surfaces shall be protected by a fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders.

(g) When glazed surfaces cannot be safely accessed for maintenance in accordance with subsection (f), scaffolds, catwalks, rolling ladders, platforms or other methods of safe access shall be provided.

Floor, Roof and Wall Openings to Be Guarded – 8 CCR 1632 & 3212

#### 4. Walking Or Working Near The Vehicle Service Pit Top Opening – Figure 8

- Install additional wood cover and cover entire pit when there are no vehicles over the pit.
- Another option is to install a “Pit Net Safety Cover” much easier and lighter to work with.



- <http://www.devonlube.com/pit-net-safety-cover>

#### 5. Working Over Open Confined Space Vault Covers or Man Holes.

- Use tripod system with personal fall arrest harness, hoisting equipment and self-retracting lanyard.
- A guardrail is needed for the attendant when the attendant is exposed to a fall hazard below.
- Use re-usable or temporary concrete anchors that can be installed on 3000 psi rated concrete structure for additional tie-off anchors when using a guardrail is not feasible.
- Example - Miller Grip Model #496 is designed to be used for fall protection applications, work positioning and restraint. It is not to be used in any other anchoring situation. Only trained and competent personnel should install and use this equipment.
- Concrete must have a compressive strength of at least 3,000 PSI (20.7MPa).
- <https://www.millerfallprotection.com/fall-protection-products/temporary-anchorage-connectors/miller-grip-portable-reusable-anchorage-connectors>



#### 6. When Working Over Heavy Equipment at Elevated Heights – Figure.

- Use a personal man lift such as the JLG lift pod that can be used as an independent work platform away from the fall hazard.
- <http://www.jlg.com/en/equipment/vertical-lifts-stock-pickers/personal-portable>



## 7. Working from Elevated Work Platforms – see below.

### The Hierarchy Methods to Control Fall Hazards:

**Hazard Elimination** – Eliminate the need to access the fall hazard. Example - Work from an Aerial and Elevating work platform devices. **Aerial devices** such as articulating boom lifts may be vehicle – mounted or self-propelled and used to position employees. Employee must wear a fall protection system and attached to the boom or basket designated anchor. Safety belts/body belts used as part of a positioning device system shall be rigged such that an employee cannot free fall more than 2 feet. **Elevating work platform** equipment, such as vertical tower, scissor lift, and mast-climbing work platform may be used to position employees and materials.

### **Operating/Working from Aerial Devices and Elevating Work Platforms**

The general safety requirements are as follows:

- Only authorized and trained employee may operate aerial devices.
- Aerial devices must not rest on any structure.
- Test controls before use.
- Employee must stand only on the floor of the basket. Do not use planks, ladders, or other means to gain additional height.
- Employee must wear a fall protection system and attached to the boom or basket designated anchor.
- Set breaks when employee is elevated.
- An aerial lift truck must not be moved when an employee is on the elevated boom.
- For scissor lifts, the platform deck shall be equipped with a guardrail or other structure around its upper edge. Where the guardrail is less than 39 inches high, a personal fall protection system is required.
- For scissor lift the platform shall have toe boards at sides and ends.
- No employees shall ride, nor tools, materials, or equipment be allowed on a traveling elevated platform.
- Do not load unit in excess of the designed working load.



**Other:** Information such as manufacturer's name, model, serial number, rated capacity at maximum platform height/maximum platform travel height, operating instructions and warning decals must be displayed on the device.

### **Regulatory Reference**

**100 % tie off required** – Aerial Lifts and Elevating Work Platforms – 8 CCR 3636-3648

- **Fall Prevention** – A physical barrier between a worker and the leading edge fall hazard. Example – Guardrail system. The system can be a fixed guardrail system or a temporary system that can be set-up prior the work taking place. The fixed guardrail has to meet at a minimum the design and construction of railing standards lay out by 8 CCR 1620. Other option is to use portable guardrail system which does not require rooftop surface attachments. The system requires being hoisted up to the roof top for set-up and hoisted down from the rooftop after takedown. Skylights safety netting can be use over skylights to eliminate the fall hazards when working near skylights.
- **Fall Restraint** – Restrains a worker from reaching an edge. Example – Use Harness, Lanyard or Self Retracting Lanyard and Anchor. The system requires designating one or more non-certified or certified



anchors on the roof structure. For additional information on non-certified vs certified anchors design load see additional attached Occupational Health & Safety “Certified vs Non-Certified Anchorages” 2007 Article reference. Installing anchors requires modification of the roof surfaces may cost more to install. A horizontal life-line system can be considered as well. Other option is to use non-penetrating anchor systems such as freestanding counterweight anchor. The non-penetrating roof anchor can be moved around near designated work areas. They can also be left on the roof top for future use. More than one unit may be required on a roof top depending on work load and personnel.

(Feasible option – non-penetrating anchor system)

- **Fall Arrest** – Arrests a fall after it has started. Example – Use Harness, Lifeline with Shock pack and Anchor. The system requires designating one or more anchors on the roof structure. Requires having a rescue plan. Additional risk includes free fall distance. If employee does not control lifeline slag, the employee may strike the ground upon a fall. Other option is to use a mobile fall protection anchor system that does not require roof penetration.
- **Administrative Controls** – Warns of a fall hazard nearby but will not actively stop a fall. Example – Use of a Fall Protection Plan, Control Access Zone and/or Safety Monitor.

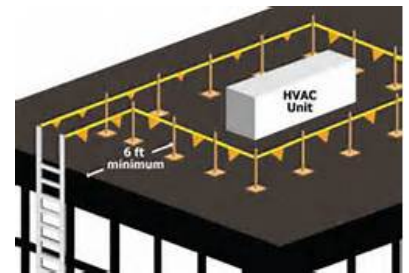
**Fall Protection Plan:** For construction operations when it can be shown that the use of conventional fall protection is impractical or creates a greater hazard and must in detail identify and document why the use of conventional fall protection systems (guardrails, personal fall arrest or safety nets) are infeasible or why their use would create a greater hazard and must include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection provided by conventional fall protection systems. The Fall Protection Plan (FPP) form can be found in the City of San Carlos written Fall Protection Plan policy appendix F.



1. Be prepared by a qualified person (QP) who is identified in the plan.
2. Be developed for a specific site or developed for essentially identical operations.
3. Be updated by the QP.
4. Document why a conventional fall protection (FP) system cannot be used.
5. Identify the competent person to implement and supervise the FPP.
6. Identify the controlled access zone for each location where a conventional FP system cannot be used.
7. Identify employees allowed in the Controlled Access Zone (CAZ).
8. Be implemented and supervised by the competent person.

Note: An up-to-date copy of the fall protection plan must be at the job site.

**Controlled Access Zones & Safety Monitoring System:** When used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall be defined by a control line or by any other means that restricts access. Signs shall be posted to warn unauthorized employees to stay out of the controlled access zone.



When control lines are used, they shall be erected not less than **6 feet nor more than 25 feet** from the unprotected or leading edge, except when erecting precast concrete members.

The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge. The control line shall be connected on each side to a standard railing or wall, or securely anchored on each end. Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

- a. Each line shall be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.

b. Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the working level/working area and its highest point is not more than 45 inches.

c. Each line shall have a minimum breaking strength of 200 pounds.

**Safety Monitoring Systems:** The employer shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements:

The safety monitor shall be competent to recognize fall hazards; The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner; The safety monitor shall be within visual sighting distance of the employee and shall always be in communication with the employee being monitored; and, The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function.

No employee, other than an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors.

### Other

**Roof work/inspections:** When the work is of short duration and limited exposure, such as minor patching, measuring, inspection, etc., and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in actual construction, these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained as determined by the competent person. Article 30 Roofing Operations and Equipment 8 CCR 1723 (c).

**General:** When the work is of short duration (i.e., non-repetitive) and limited exposure and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in the actual construction, these provisions may be temporarily suspended, provided adequate risk control is recognized and maintained under immediate, competent supervision. Article 24 Fall Protection 8 CCR 1669 (c).

### 5. Personal Protective Equipment Required/Recommended: Active Systems

☒ Full Body Harness







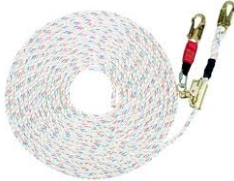
☒ Lanyard





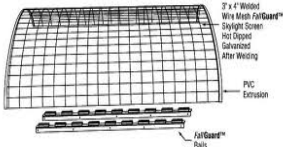

☐ Fall Position/Restraint



☒ Self-Retracting Lifeline









			
<input type="checkbox"/> Fall Arrest System (Rope Grab System) 	<input checked="" type="checkbox"/> Carabineer (5000lb) 	<input checked="" type="checkbox"/> Approved anchor – see recommended units 	<input type="checkbox"/> Life – lines 

#### 5. Personal Protective Equipment Required/Recommended: Passive Systems

<input type="checkbox"/> Guardrails 	<input checked="" type="checkbox"/> Guardrails/Roof Hatch 	<input checked="" type="checkbox"/> Skylight Fall Guard 	<input checked="" type="checkbox"/> Warning Line Systems/Control Access Zone 
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#### 5. Personal Protective Equipment Required/Recommended: Other

<input checked="" type="checkbox"/> Gloves	<input checked="" type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Safety Boot/Shoe
<input checked="" type="checkbox"/> Stepladder	<input checked="" type="checkbox"/> Extension Ladder	<input type="checkbox"/> Extension Ladder Fascia Ladder Clamp	<input checked="" type="checkbox"/> Extension Ladder Parapet Wall Ladder Clamp

			
<input checked="" type="checkbox"/> Scissor –Lift /Boom Lift Devices 	<input checked="" type="checkbox"/> Tool Lanyard 	<input checked="" type="checkbox"/> Bags & Buckets 	<input checked="" type="checkbox"/> Gutter Cleaner with extended pole 

#### 6. Comments:

Ensure all employees exposed to fall hazards have been properly trained in fall protection equipment.

Facility owner should use contracts requiring that contractors adhere to OSHA – required safety measures while construction or maintenance is being performed. Required contractors to have a formal safety and health program relating to construction or maintenance. Include a provision in your contracts for frequent and regular jobsite inspections by a competent person who has expertise in worker fall protection.

Keep inspections/recertification records of fall protection equipment used.



# Fall Hazard Assessment for: City of San Carlos, CA

Location: City Hall, 600 Elm Street, San Carlos, CA 94070

Assessed By: Jose M Mora – Du-All Safety

Date Assessed: 4-9-2015

**1. Physical Description:** ex: Ladder (vertical, extension, A-frame, 3-leg, steep stair, steeple), Roof (flat, steep slope, low slope, composite on felt), Catwalk, Tank, Vault (above ground, below ground, elevated), etc.



**Figure 1.** Roof height 25-30 feet.



**Figure 2.** Slope and flat roof system with roof hatch access.

**2. Work to Be Performed:** ex: Maintenance, repair, painting, cleaning, adjusting, replacement, etc.

Inspection, maintenance and/or repairs of roof, roof gutters, lighting fixtures, traffic control signs, and roof top antennas.

**3. Hazards:** ex: Fall to lower level, struck by object, environmental hazard, etc.

1. When ascending/descending on facility fix ladders and roof hatch.
2. When using and working from portable ladders.
3. When working on the roof near the roof edge or near the skylight.
4. When climbing onto and working from elevated work platforms (Scissor lift), bucket trucks and articulating boom lifts.

**4. Actions To Be Taken:** ex: Training, administrative control, etc.

1. Using Fix Ladders/Roof Hatch – Figure 2.

- Inspect ladder before use to identify any damage, sharps, or missing fasteners.
- Face the ladder when ascending/descending.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Opening Roof Hatch (Hatch is heavy, requires some effort to open), there is potential for slip and fall from the ship ladder when pushing on the roof hatch with both hands.
- Close the hatch after transitioning to the roof to eliminate the roof opening hazard. If you need to bring tools or materials through the hatch, then an install a roof hatch guardrail as shown below on section 5 of this report.
- For buildings. Guardrails shall be provided on all open sides of unenclosed elevated work locations, such as: roof openings, open and glazed sides of landings, balconies or porches, platforms, runways, ramps, or working levels more than 30 inches above the floor, ground, or other working areas of a building as defined in Section 3207 of the General Industry Safety Orders. Where overhead clearance prohibits installation of a 42-inch guardrail, a lower rail or rails shall be installed. The railing shall be provided with a toeboard where the platform, runway, or ramp is 6 feet or more above places where employees normally work or pass and the lack of a toeboard could create a hazard from falling tools, material, or equipment.

**Recommendation:** Install roof hatch guardrail system.

#### **Regulatory Reference**

CCR, Title 8, Section 3278. Use of Fixed Ladders.

CCR Title 8, Section 3210. Guardrails at Elevated Locations.

## **2. Using Portable Extension and Step Ladders**

- Inspect ladder before use to identify any damage or deficiencies. Verify the ladder is either type 1 or 2 for the right load and working conditions.
- Do not place ladders where they can be accidentally struck or displaced.
- For extension ladders set-up ladder with a 4:1 angle ratio, for every four feet in the height of the structure, the foot of the ladder must be located one foot away from the leading edge where the ladder contacts the roof or surface (Note: it is very important that the roof overhang is taken into account when positioning the ladder.), extend ladder side rails to at least 3 feet above the landing unless handholds are provided.
- Face the ladder when ascending/descending.
- Have another person hold the ladder while the ladder is being secured to the building structure.
- Tie, block, or otherwise secure the extension portable ladder in use. Do not splice ladders together.
- Maintain a 3-point contact when ascending/descending from the ladder.
- Use a bag or utility belt to carry tools/materials when ascending/descending on the ladder.
- Do not use metal ladders for electrical work or near live electrical parts.
- For stepladder do not step on the top cap or the step below the top cap.
- For stepladder do not use the X-bracing on the rear section of the stepladder for climbing unless the ladder is so designed and provided with steps for climbing on both front and rear sections.
- For stepladder ensure that it is properly set-up with the spreader in the locked position before use.
- Do not use a step ladder as a lean-to-ladder.

#### **Regulatory Reference**

CCR Title 8, Section 1675-1678 Ladders

CCR Title 8, Section 3270-3280 Access, Work Space and Work Areas

## **3. Working on the Roof near the Roof Edge or Near the Skylight – Figure 2 and Figure 3.**

When working at elevated heights it is recommended to use the Hierarchy Methods to Control Fall Hazards listed in order of preference:

**For maintenance work above 7 ½ feet - 8 CCR 1670 Personal Fall Arrest Systems, Personal Fall Restraint Systems and Positioning Devices:** Approved personal fall arrest, personal fall restraint or positioning systems shall be worn by those employees whose work exposes them to fall in excess of 7 ½ feet from the perimeter of a structure, unprotected sides and edges, leading edges, through shaft-ways and openings, sloped roof surfaces steeper than 7:12, or other sloped surfaces steeper than 40 degrees not otherwise adequately protected under the provisions of these orders.

**For roofing operations single – unit roofs with slopes of 0:12 through 4:12 and more than 20 feet in height:** Options include Warning lines and headers, Personal Fall Protection Systems, Catch Platforms, Scaffold Platforms, Eave Barriers, Standard Railing and Toe Boards.

**For working near floor, roof, and wall openings / skylights / roof parapet walls:** This section shall apply to temporary or emergency conditions where there is danger of employees or materials falling through floor, roof, or wall openings, or from stairways or runways. Floor, roof and skylight openings shall be guarded by both temporary railings and toe boards or by covers. The railing shall be provided on all exposed sides, except at entrances to stairways.

Covers shall be capable of safely supporting the greater of 400 pounds or twice the weight of the employees, equipment and materials that may be imposed on any one square foot area of the cover at any time. Covers shall be secured in place to prevent accidental removal or displacement, and shall bear a pressure sensitized, painted, or stenciled sign with legible letters not less than one inch high, stating: “Opening--Do Not Remove.” Markings of chalk or keel shall not be used.

Ladder way floor openings or platforms shall be guarded by standard railings with standard toe boards on all exposed sides, except at entrance to opening, with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening.

Floor holes, into which persons can accidentally walk, shall be guarded by either a standard railing with standard toe board on all exposed sides, or a floor hole cover of standard strength and construction that is secured against accidental displacement. While the cover is not in place, the floor hole shall be protected by administrative control method.

( e) Any employee approaching within 6 feet of any skylight shall be protected from falling through the skylight or skylight opening by any one of the following methods:

(1) Skylight screens. The design, construction, and installation of skylight screens shall meet the strength requirements equivalent to that of covers specified in subsection (b) above. They shall also be of such design, construction and mounting that under design loads or impacts, they will not deflect downward sufficiently to break the glass below them. The construction shall be of grillwork, with openings not more than 4 inches by 4 inches or of slat work with openings not more than 2 inches wide with length unrestricted, or of other material of equal strength and similar configuration, or

(2) Guardrails meeting the requirements of Section 3209, or

(3) The use of a personal fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders, or

(4) Covers meeting the requirements of subsection (b) installed over the skylights, or

(5) A fall protection plan as prescribed in Section 1671.1 of the Construction Safety Orders when it can be demonstrated that the use of fall protection methods as contained in subsections (e) (1-4) of this Section is impractical or creates a greater hazard.

**Exception for this section:** When the work is of short duration and limited exposure such as measuring, roof inspection, electrical/mechanical equipment inspection, etc., and the time involved in rigging and installing the



safety devices required in subsections (e)(1) through (e)(4) equal or exceed the performance of the designated tasks of measuring, roof inspection, electrical/mechanical equipment inspection, etc.; these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained.

(f) Access shall not be permitted on glazed surfaces such as roofs, vaults, canopies, or skylights glazed with transparent or translucent materials unless an engineer currently registered in the State of California and experienced in the design of such glazed structures has certified that the surface will support all anticipated loads. Employees working on such surfaces shall be protected by a fall protection system meeting the requirements of Section 1670 of the Construction Safety Orders.

(g) When glazed surfaces cannot be safely accessed for maintenance in accordance with subsection (f), scaffolds, catwalks, rolling ladders, platforms or other methods of safe access shall be provided.

Floor, Roof and Wall Openings to Be Guarded – 8 CCR 1632 & 3212

#### **4. Working from Elevated Work Platforms – see below.**

##### **The Hierarchy Methods to Control Fall Hazards:**

1. **Hazard Elimination** – Eliminate the need to access the fall hazard. Example - Work from an Aerial and Elevating work platform devices. **Aerial devices** such as articulating boom lifts may be vehicle – mounted or self-propelled and used to position employees. Employee must wear a fall protection system and attached to the boom or basket designated anchor. Safety belts/body belts used as part of a positioning device system shall be rigged such that an employee cannot free fall more than 2 feet. **Elevating work platform** equipment, such as vertical tower, scissor lift, and mast-climbing work platform may be used to position employees and materials.

##### **Operating/Working from Aerial Devices and Elevating Work Platforms**

The general safety requirements are as follows:




- Only authorized and trained employee may operate aerial devices.
- Aerial devices must not rest on any structure.
- Test controls before use.
- Employee must stand only on the floor of the basket. Do not use planks, ladders, or other means to gain additional height.
- Employee must wear a fall protection system and attached to the boom or basket designated anchor.
- Set breaks when employee is elevated.
- An aerial lift truck must not be moved when an employee is on the elevated boom.
- For scissor lifts, the platform deck shall be equipped with a guardrail or other structure around its upper edge. Where the guardrail is less than 39 inches high, a personal fall protection system is required.
- For scissor lift the platform shall have toe boards at sides and ends.
- No employees shall ride, nor tools, materials, or equipment be allowed on a traveling elevated platform.
- Do not load unit in excess of the designed working load.



**Other:** Information such as manufacturer's name, model, serial number, rated capacity at maximum platform height/maximum platform travel height, operating instructions and warning decals must be displayed on the device.

## Regulatory Reference

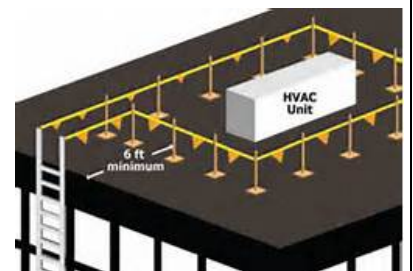
**100 % tie off required** – Aerial Lifts and Elevating Work Platforms – 8 CCR 3636-3648

2. **Fall Prevention** – A physical barrier between a worker and the leading edge fall hazard. Example – Guardrail system. The system can be a fixed guardrail system or a temporary system that can be set-up prior the work taking place. The fixed guardrail has to meet at a minimum the design and construction of railing standards lay out by 8 CCR 1620. Other option is to use portable guardrail system which does not require rooftop surface attachments. The system requires being hoisted up to the roof top for set-up and hoisted down from the rooftop after takedown. Skylights safety netting can be use over skylights to eliminate the fall hazards when working near skylights.
3. **Fall Restraint** – Restrains a worker from reaching an edge. Example – Use Harness, Lanyard or Self Retracting Lanyard and Anchor. The system requires designating one or more non-certified or certified anchors on the roof structure. For additional information on non-certified vs certified anchors design load see additional attached Occupational Health & Safety “Certified vs Non-Certified Anchorages” 2007 Article reference. Installing anchors requires modification of the roof surfaces may cost more to install. A horizontal life-line system can be considered as well. Other option is to use non-systems such as freestanding counterweight anchor. The non-penetrating roof anchor can be moved around near designated work areas. They can also be left on the roof top for future use. More than one unit may be required on a roof top depending on work load and personnel.

(Feasible option – non-penetrating anchor system)
4. **Fall Arrest** – Arrests a fall after it has started. Example – Use Harness, Lifeline with Shock pack and Anchor. The system requires designating one or more anchors on the roof structure. Requires having a rescue plan. Additional risk includes free fall distance. If employee does not control lifeline slag, the employee may strike the ground upon a fall. Other option is to use a mobile fall protection anchor system that does not require roof penetration.
5. **Administrative Controls** – Warns of a fall hazard nearby but will not actively stop a fall. Example – Use of a Fall Protection Plan, Control Access Zone and/or Safety Monitor.

**Fall Protection Plan:** For construction operations when it can be shown that the use of conventional fall protection is impractical or creates a greater hazard and must in detail identify and document why the use of conventional fall protection systems (guardrails, personal fall arrest or safety nets) are infeasible or why their use would create a greater hazard and must include a written discussion of other measures that will be taken to reduce or eliminate the fall hazard for workers who cannot be provided with protection provided by conventional fall protection systems. The Fall Protection Plan (FPP) form can be found in the City of San Carlos written Fall Protection Plan policy appendix F.

1. Be prepared by a qualified person (QP) who is identified in the plan.
2. Be developed for a specific site or developed for essentially identical operations.
3. Be updated by the QP.
4. Document why a conventional fall protection (FP) system cannot be used.
5. Identify the competent person to implement and supervise the FPP.
6. Identify the controlled access zone for each location where a conventional FP system cannot be used.



7. Identify employees allowed in the Controlled Access Zone (CAZ).

8. Be implemented and supervised by the competent person.

Note: An up-to-date copy of the fall protection plan must be at the job site.

**Controlled Access Zones & Safety Monitoring System:** When used to control access to areas where leading edge and other operations are taking place, the controlled access zone shall be defined by a control line or by any other means that restricts access. Signs shall be posted to warn unauthorized employees to stay out of the controlled access zone.

When control lines are used, they shall be erected not less than **6 feet nor more than 25 feet** from the unprotected or leading edge, except when erecting precast concrete members.

The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge. The control line shall be connected on each side to a standard railing or wall, or securely anchored on each end. Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:

- a. Each line shall be flagged or otherwise clearly marked at not more than 6-foot intervals with high-visibility material.
- b. Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches from the working level/working area and its highest point is not more than 45 inches.
- c. Each line shall have a minimum breaking strength of 200 pounds.

**Safety Monitoring Systems:** The employer shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements:

The safety monitor shall be competent to recognize fall hazards; The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner; The safety monitor shall be within visual sighting distance of the employee and shall always be in communication with the employee being monitored; and, The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function.

No employee, other than an employee covered by a fall protection plan, shall be allowed in an area where an employee is being protected by a safety monitoring system.

Each employee working in a controlled access zone shall be directed to comply promptly with fall hazard warnings from safety monitors.

## **Other**

**Roof work/inspections:** When the work is of short duration and limited exposure, such as minor patching, measuring, inspection, etc., and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in actual construction, these provisions may be temporarily suspended provided that adequate risk control is recognized and maintained as determined by the competent person. Article 30 Roofing Operations and Equipment 8 CCR 1723 (c).

**General:** When the work is of short duration (i.e., non-repetitive) and limited exposure and the hazards involved in rigging and installing the safety devices required by this Article equals or exceeds the hazards involved in the actual construction, these provisions may be temporarily suspended, provided adequate risk control is recognized and maintained under immediate, competent supervision. Article 24 Fall Protection 8 CCR 1669 (c).

## 5. Personal Protective Equipment Required/Recommended: Active Systems

☒ Full Body Harness



☐ Lanyard



☐ Fall Position/Restraint



☒ Self-Retracting Lifeline



☐ Fall Arrest System (Rope Grab System)



☒ Carabineer (5000lb)



☒ Approved anchor – see recommended units



☒ Life – lines



## 5. Personal Protective Equipment Required/Recommended: Passive Systems

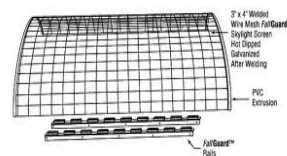
☐ Guardrails



☒ Guardrails/Roof Hatch











☐ Skylight Fall Guard



☐ Warning Line Systems/Control Access Zone






## 5. Personal Protective Equipment Required/Recommended: Other






<input checked="" type="checkbox"/> Gloves	<input checked="" type="checkbox"/> Hard Hat	<input checked="" type="checkbox"/> Safety Glasses	<input checked="" type="checkbox"/> Safety Boot/Shoe
<input checked="" type="checkbox"/> Stepladder 	<input type="checkbox"/> Extension Ladder 	<input type="checkbox"/> Extension Ladder Fascia Ladder Clamp 	<input type="checkbox"/> Extension Ladder Parapet Wall Ladder Clamp 
<input checked="" type="checkbox"/> Scissor –Lift /Boom Lift Devices 	<input checked="" type="checkbox"/> Tool Lanyard 	<input checked="" type="checkbox"/> Bags & Buckets 	<input checked="" type="checkbox"/> Gutter Cleaner with extended pole 
<b>6. Comments:</b> <p>Ensure all employees exposed to fall hazards have been properly trained in fall protection equipment.</p> <p>Facility owner should use contracts requiring that contractors adhere to OSHA – required safety measures while construction or maintenance is being performed. Required contractors to have a formal safety and health program relating to construction or maintenance. Include a provision in your contracts for frequent and regular jobsite inspections by a competent person who has expertise in worker fall protection.</p> <p>Keep inspections/recertification records of fall protection equipment used.</p>			


## Appendix D

### Fall Protection Equipment Inventory

Quantity	Type/Description	Manufacturer/Model
2	Self-Retracting Lanyard	 <p>Miller Scorpion/4 feet – 9 feet</p>
2	Confined Space Rescue	 <p>DBI/L3796</p>
2	Anchor/Strap – D Ring	 <p>DBI/1201390</p>



Quantity	Type/Description	Manufacturer/Model
1	Lanyard	 DBI/1240006/ 6 feet
1	Lanyard	 Miller/216M/ 6 feet
1	Lanyard	 Fall Tech/2256/ 6 feet
4	Harness	 DBI/1101252/ XL
2	Harness	DBI/XL
3	Harness	DBI/Universal Fit
1	Lanyard	 Miller/201RL5-8/4 feet

Quantity	Type/Description	Manufacturer/Model
1	Winch	 <p>DBI/L1850/Serial 9498/ 50 feet – Winch for suspended work only.</p>



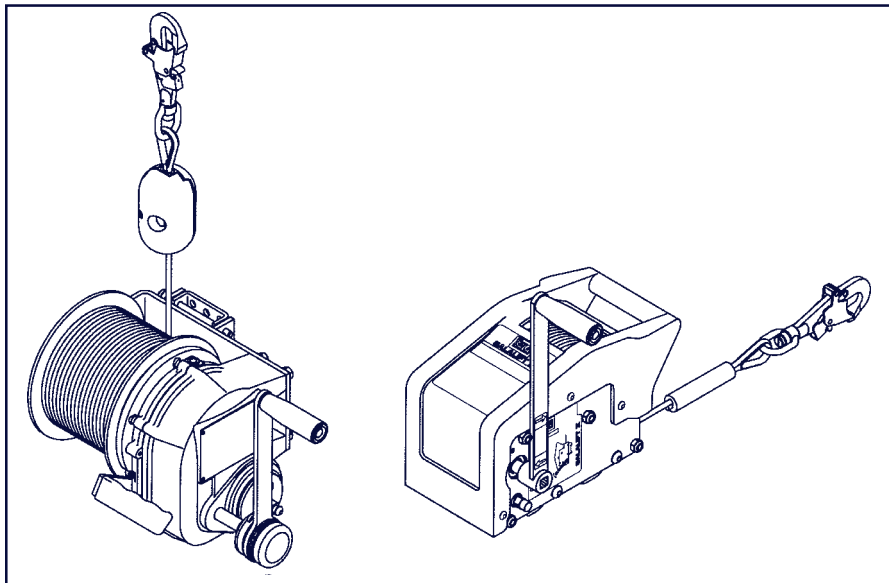
## **Appendix D**

### **Fall Protection Equipment Manuals**



## User Instruction Manual Salalift® and Salalift® II Winches L1850, L7400, L7401 Series

*This manual is intended to meet industry standards, including OSHA 1910.146 and ANSI Z117.1-1989, and should be used as part of an employee training program as required by OSHA.*



The L1850-60, L1850-60S, L1850-120, and L1850-120S Salalift Series Manually Operated Winches are classified by Underwriters Laboratories, Inc. as to the 350 lbs. load capacity only.

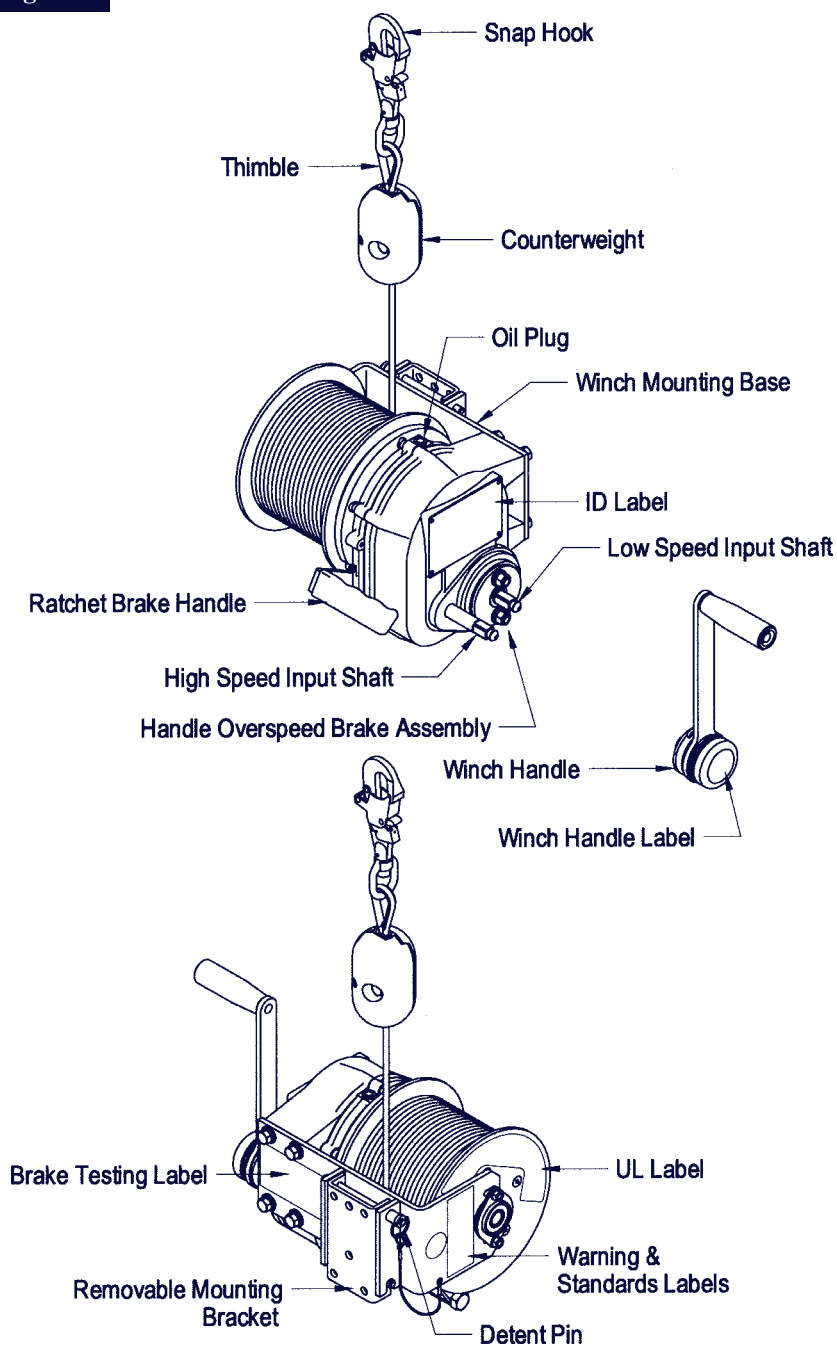
**WARNING:** *This product is to be used as part of a complete system. The user must follow the manufacturer's instructions for each component of the complete system. These instructions must be provided to the user of this equipment. Manufacturer's instructions must be followed for proper use and maintenance of this product. Alterations or misuse of this product, or failure to follow instructions may result in serious injury or death.*

**IMPORTANT:** *If you have questions on the use, care, application, or suitability for use of this safety equipment, contact DBI/SALA.*

**IMPORTANT:** *Before using this equipment record the product identification information from the ID label on the winch in the inspection and maintenance log in section 9.0 of this manual.*

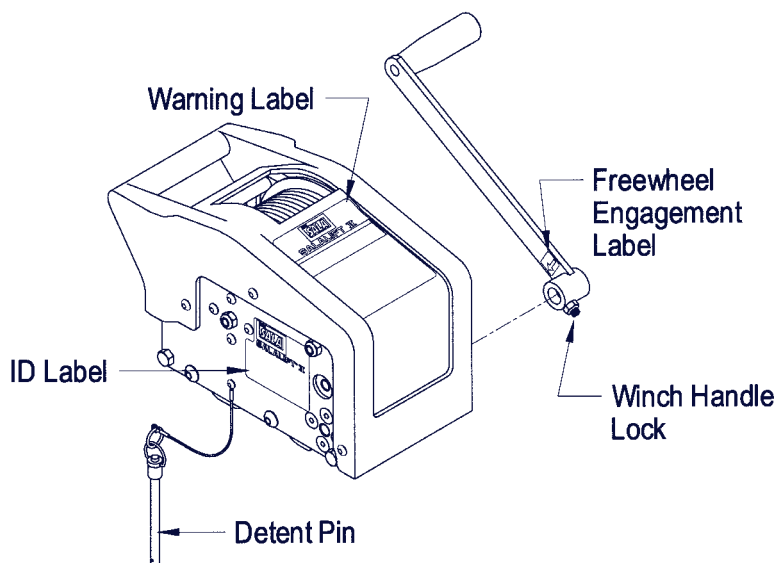
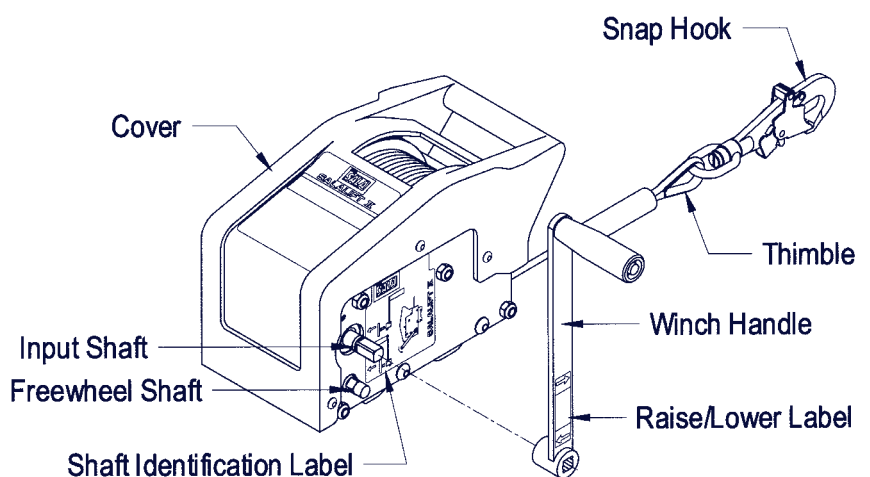


**Figure 1**



**L1850 Parts Identification**

**Figure 2**



**L7400 Parts identification**

## DESCRIPTIONS

### **SALALIFT® Winches:**

**L1850-60:** 60 feet of 1/4 inch galvanized wire rope, carrying bag.

**L1850-60S:** 60 feet of 1/4 inch stainless steel wire rope, carrying bag.

**L1850-120:** 120 feet of 1/4 inch galvanized wire rope, carrying bag.

**L1850-120S:** 120 feet of 1/4 inch stainless steel wire rope, carrying bag.

**L1850-140:** 140 feet of 1/4 inch galvanized wire rope, carrying bag.

**L1850-140S:** 140 feet of 1/4 inch stainless steel wire rope, carrying bag.

### **SALALIFT® II Winches:**

**L7400-60:** 60 feet of 1/4 inch galvanized wire rope, carrying bag.

**L7400-60S:** 60 feet of 1/4 inch stainless steel wire rope, carrying bag.

**L7401-90:** 90 feet of 3/16 inch galvanized wire rope, carrying bag.

**L7401-90S:** 90 ft. of 3/16 inch stainless steel wire rope, carrying bag.

**L7401-120:** 120 feet of 3/16 inch galvanized wire rope, carrying bag.

**L7401-120S:** 120 feet of 3/16 inch stainless steel wire rope, carrying bag.

**IMPORTANT:** *For special (custom) versions of this product, follow the instructions herein. See supplemental instructions, if included, for additional instructions on custom equipment.*

## 1.0 APPLICATIONS

**1.1 PURPOSE:** DBI/SALA Salalift winches are to be used for work positioning (L1850 series only), personnel riding, material handling, climbing protection, or rescue and evacuation. These winch models are to be used with a DBI/SALA tripod, davit arm, or other support structure, and may be used in situations where personnel or materials need to be raised or lowered 60-140 feet.

### **1.2 WINCH APPLICATION TYPES:**

- A. WORK POSITIONING:** The Salalift winch (L1850 series only) is used to suspend the worker in a work position, acting as the primary means of support. Applications include suspending a worker in a work seat or harness. A back-up personal fall arrest system must be attached to the suspended employee.

**NOTE:** *OSHA requires that manual or powered winches be independently evaluated and classified for use as a single point suspension system. See OSHA regulation 29 CFR 1926.451, and 29 CFR 1910.28.*

- B. PERSONNEL RIDING:** The Salalift or Salalift II winch is used to raise or lower a worker to a work level. At the work level the worker is no longer supported by the winch. It is recommended that the worker be connected to a back-up fall arrest system while being raised or lowered.
- C. RESCUE AND EVACUATION:** The Salalift or Salalift II winch is used to raise or lower an endangered or injured worker, or rescue personnel. Applications include permit and non-permit confined space entry work.
- D. CLIMBING PROTECTION:** The Salalift or Salalift II winch is used to protect a worker ascending or descending a fixed ladder or similar structure. It is recom-

mended that this use of the winch be restricted to structures where other means of climbing protection; such as permanently installed ladder safety systems or personal fall arrest systems are infeasible. For this application, the following conditions must be met:

1. Ladder or steps are in good condition and allows for a straight, continuous climb.
2. The worker climbing the ladder is wearing a full body harness and the winch line is connected to the dorsal (back) D-ring of the harness.
3. The winch operator is trained and competent in the operation of the winch.
4. No slack line is allowed to develop when the worker moves up or down the ladder.
5. DBI/SALA recommends, for the L1850 series winches only, that an energy absorbing lanyard be connected between the harness dorsal D-ring and the winch line.

**1.4 LIMITATIONS:** The following application limitations must be considered before using this product. Failure to observe product limitations could result in serious injury or death.

- A. INSTALLATION:** The winch must be installed in accordance with the requirements stated in section 3.0 of this manual.
- B. CAPACITY:** The maximum working load for this product is 350 lbs. (160 kg).
- C. PERSONAL FALL ARREST SYSTEMS:** Personal fall arrest systems used with the Salalift or Salalift II winch must meet applicable state and federal regulations and the requirements stated in section 3.3.
- D. PHYSICAL AND ENVIRONMENTAL HAZARDS:** Use of this equipment in areas with physical or environmental hazards may require that additional precautions be taken to reduce the possibility of damage to this equipment or injury to the user. Hazards may include, but are not limited to; high heat (welding or metal cutting), acid or caustic chemicals, corrosive environments such as exposure to seawater, high voltage power lines, explosive or toxic gases, moving machinery or sharp edges. Contact DBI/SALA if you have questions about the application of this equipment in areas where physical or environmental hazards are present.
- E. TRAINING:** This equipment is to be installed and used by persons who have been trained in its correct application and use.

**1.5** Refer to national standards, including; ANSI Z117.1-1989, local, state, and OSHA requirements (26 CFR 1910.146), for more information on the application of this and associated equipment.

## 2.0 SYSTEM REQUIREMENTS

### 2.1 COMPATIBILITY OF COMPONENTS AND SUBSYSTEMS: DBI/SALA

winches are for use with DBI/SALA approved components. Substitutions or replacements made with non-approved components may be incompatible, and may affect the reliability and safety of the complete system. Contact DBI/SALA with questions about compatibility of components.

**2.2 COMPATIBILITY OF CONNECTORS:** Connectors (hooks, carabiners, D-rings) must support 5,000 lbs. (22kN) minimum. Use caution when selecting connectors to ensure compatibility between connecting hooks and the mating connector. Noncompatible connections may disengage (roll-out). Connectors must be compatible in size, shape, and strength. Self locking snap hooks are required by ANSI Z359.1-1992 and are recommended by DBI/SALA.

**2.3 SUPPORT STRUCTURE STRENGTH:** The support structure to which the winch is installed must meet minimum strength requirements stated in section 3.4

### 3.0 OPERATION AND USE

**WARNING:** *Do not alter or intentionally misuse this equipment, your safety may depend on it. Consult DBI/SALA when using this equipment with components or sub-systems other than those described in this manual. Some subsystem and component combinations may interfere with the operation of this equipment. Use caution when using this equipment around moving machinery or electrical hazards. Use caution when using this equipment around sharp edges or chemical hazards.*

**WARNING:** *Consult your doctor if there is any reason to doubt your fitness to use this equipment. Pregnant women or minors must not use a DBI/SALA winch, unless for unavoidable emergency use situations.*

**3.1 BEFORE EACH USE:** Before each use of this equipment carefully inspect it to ensure it is in good working condition. Check for worn or damaged parts. Ensure all parts are present and secure. Check operation of winch; ensure that it will lift, lower, and hold the load under normal operation. Check winch and entire system for damage and corrosion. See section 5.0 for further inspection details. Do not use if inspection reveals an unsafe condition.

**3.2 PLANNING:** Plan your system and how it will function before starting your work. Consider all factors that affect your safety during use. Some important points to consider when planning your system are:

- A. HAZARD EVALUATION:** Evaluate job site hazards prior to starting work. Consult applicable OSHA and industry standards for guidelines and regulatory requirements on issues such as confined space entry, personal fall arrest systems (PFAS), and single point adjustable suspended scaffolds.
- B. WORK SITE GEOMETRY:** The installation and use of the support structure (tripod, davit arm and base) must be consistent with the geometric requirements stated in the associated manufacturer's instruction manuals. When suspending working lines from the support structure, check for obstructions or sharp edges in the work path. Avoid working where the user may swing and hit an object, or where lines may cross or tangle with that of another worker.
- C. SECONDARY OR BACK-UP FALL ARREST SYSTEM:** When using the



Salalift winch (L1850 series) as a support for work positioning, a secondary or back-up fall arrest system is required. See OSHA 29 CFR 1910.28 and 1926.451. The DBI/SALA tripod and davit arm has provisions for connection of a secondary or back-up PFAS. See sections 3.3 and 3.5(A).

- D. RESCUE:** A means of dealing with an accident or emergency must be planned in advance. Response time can play an important role in the survival of an injured worker. Users of this equipment must be trained in emergency procedures.

### 3.3 REQUIREMENTS FOR PERSONAL FALL ARREST SYSTEMS: PFAS used with the Salalift or Salalift II winch and support structure must meet applicable OSHA requirements.

- The PFAS should be rigged to minimize any potential free fall and never allow a free fall greater than 6 feet. It is recommended that the PFAS used with this equipment include a full body harness as the body support component. PFAS's that incorporate full body harnesses must maintain fall arrest forces below 1,800 lbs. and arrest the fall within 42 inches. Body belts, unless incorporated into a full body harness, are not recommended for use with this equipment. A typical PFAS includes a full body harness, connecting subsystem or component (self retracting lifeline or lifeline and rope grab), and the necessary connectors to couple the system together.
- Anchorages selected for PFAS must sustain static loads, applied in the directions permitted by the PFAS, of at least; (A) 3,600 lbs. (16kN) when certification exists (see ANSI Z359.1-1992 for certification definition), or (B) 5,000 lbs. (22kN) in the absence of certification. When more than one PFAS is attached to an anchorage, the anchorage strengths set forth in (A) and (B) must be multiplied by the number of PFAS attached to the anchorage. Per OSHA 1926.500 and 1910.66: Anchorages used for attachment of a PFAS shall be independent of any anchorage being used to support or suspend platforms, and must support at least 5,000 lbs. (22kN) per user attached, or be designed, installed, and used as part of a complete PFAS which maintains a safety factor of at least two, and is supervised by a qualified person.

**WARNING:** *Read and follow manufacturer's instructions for the personal fall arrest equipment selected for use with the winch and support structure.*

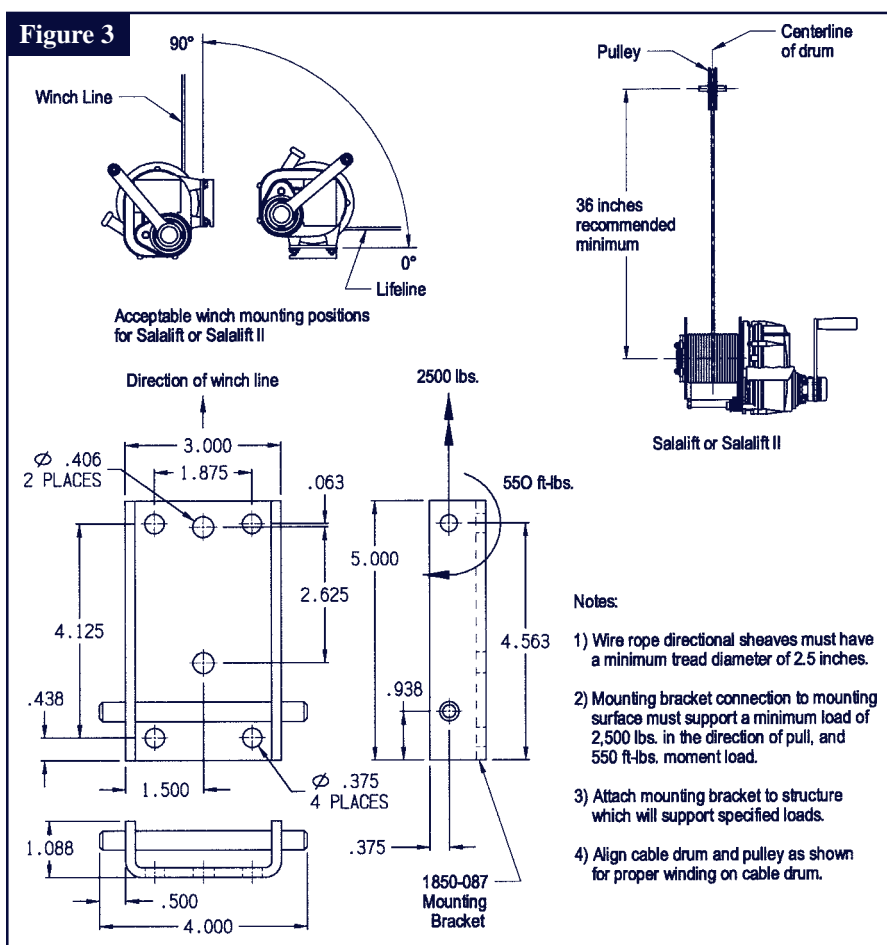
**IMPORTANT:** *For free fall and rescue applications body belts are not recommended for use. Body belts increase the risk of injury during fall arrest in comparison to a full body harness, and drastically reduces the tolerable suspension time. Limited suspension time, increased risk of injury, and the potential for improperly wearing a body belt may result in added danger to the user. DBI/SALA recommends using a full body harness for fall arrest and rescue applications.*

### 3.4 INSTALLATION OF WINCH TO SUPPORT STRUCTURE:

- A. MOUNTING BRACKET:** These winches incorporate a "quick-mount" style bracket for attachment to the support structure. DBI/SALA tripods, davit arms, and other support structures supplied by DBI/SALA, include a bracket that mates with the winch quick-mount bracket. All DBI/SALA winches include the quick-mount bracket. When using the L7400 series winch with the 4176 Wall Mount Bracket, a mounting adapter kit is required. Contact DBI/SALA for more information.

- B. LOAD REQUIREMENTS:** Figure 3 illustrates mounting the winch to the support structure and the load requirements. The mounting bracket must support the loads shown in Figure 3.
- C. GEOMETRIC REQUIREMENTS:** Refer to the support structure manufacturer's instructions for geometric requirements. Installations of the winch to support structures other than those provided by DBI/SALA must meet the geometric requirements shown in Figure 3. Position the support structure so the load and the lifeline of the winch can be directed over the work area when installed. For personnel use, do not position the support structure where the worker will have to swing under the support structure to reach the work area. Avoid positioning the support structure where the working line may abrade against sharp edges.

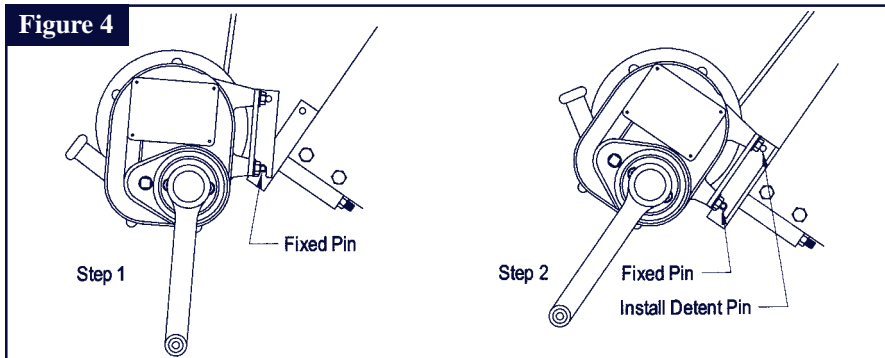
**IMPORTANT:** *Position the winch and support structure in a location which allows the operator to safely use the winch.*



- D. QUICK-MOUNT INSTALLATION:** See Figure 4. Mount the winch using the quick-mount bracket as follows:

- Step 1.** Pull out locking detent pin by depressing button on end of pin. Lift winch into place and position slot in bracket over fixed pin on support structure bracket.
- Step 2.** Push top of winch in toward the support structure while bottom rotates on fixed pin. Align holes and push detent pin through until it stops. Ensure pin locks in place.
- Step 3.** Slowly pull out winch line. Route line over support structure pulley system. See support structure manufacturer's instructions for details.

**Figure 4**

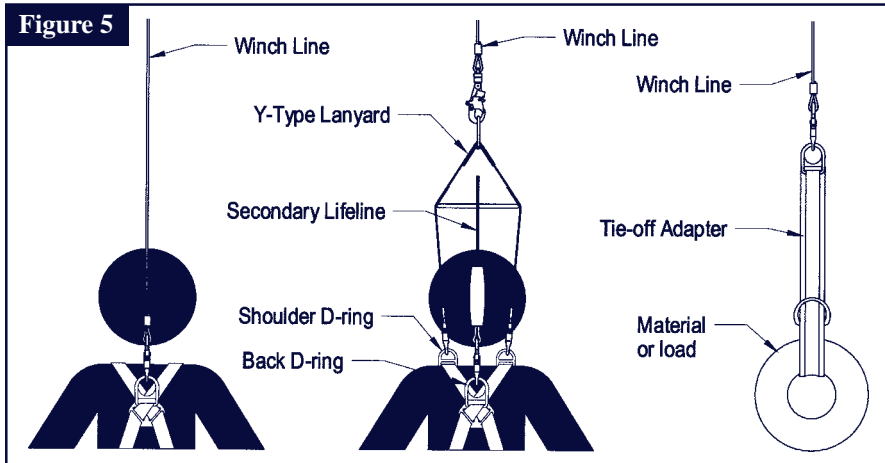


- E. WELDED INSTALLATIONS:** If welding the mounting bracket to a support structure it is recommended that the welding be done by a certified welder. Portions of the mounting bracket that have been exposed due to welding should be painted or otherwise protected from corrosion.

### 3.5 OPERATION OF WINCH:

- A. CONNECTING WINCH LINE TO LOAD:** See Figure 5. For applications that do not require a secondary PFAS, the winch line should be connected to the worker's harness back D-ring. For applications requiring a secondary PFAS, the winch line should be connected to a Y-type lanyard and this lanyard should be at-

**Figure 5**



tached to the worker's harness shoulder D-rings. The secondary lifeline should be connected to the worker's harness back D-ring. For material handling applications, connect the winch line to the load using a tie-off adapter or other anchoring device.

- B. SALALIFT WINCH (L1850 Series):** Attach winch to support structure as described in section 3.4(D). Install winch crank handle onto the high or low speed shaft by aligning the handle with the shaft and pushing firmly inward until handle snaps in place. To release handle from shaft, depress handle release and pull handle off shaft. Pull ratchet lever downward and feed line off the drum by rotating the crank handle in the direction "down". Route line over support structure pulley system.

**TO RAISE LOAD:** Rotate winch crank handle clockwise when using low speed shaft and counter-clockwise when using high speed shaft. For worker safety, the crank handle incorporates an overload clutch which limits the winch lifting force on the high speed shaft to approximately 250 lbs. and 500 lbs. on the low speed shaft, thus reducing the possibility of injury should a worker become entangled during retrieval. Do not exceed the rated capacity of 350 lbs.

**TO LOWER LOAD:** Rotate winch crank handle in "up" direction until ratchet brake lever can be pulled down, then rotate the crank handle in down direction. When load is suspended from winch, use caution when ratchet brake lever is pulled down since the load will be transferred to the winch crank handle. To prevent loss of control of the load, do not block or restrict the ratchet lever from engaging the teeth on the drum, except by normal manual operation. If the operator fatigues, or for any reason desires to "hold" the load, allow the ratchet brake to engage and support the load.

- C. SALALIFT II WINCH (L7400 Series):** Attach winch to support structure as described in section 3.4(D). Install winch crank handle onto the input shaft by aligning the hub of the crank handle with the square drive marked "winch shaft" and pushing firmly inward until handle snaps in place (grip on handle should face outward). To release crank handle from shaft, pull handle off shaft. Feed line off winch drum by rotating crank handle in the lowering direction (counter-clockwise). Apply slight tension to line while feeding it off drum. Free-wheel mode may also be used, see section 3.5(C)(3). Route line over support structure pulley system.

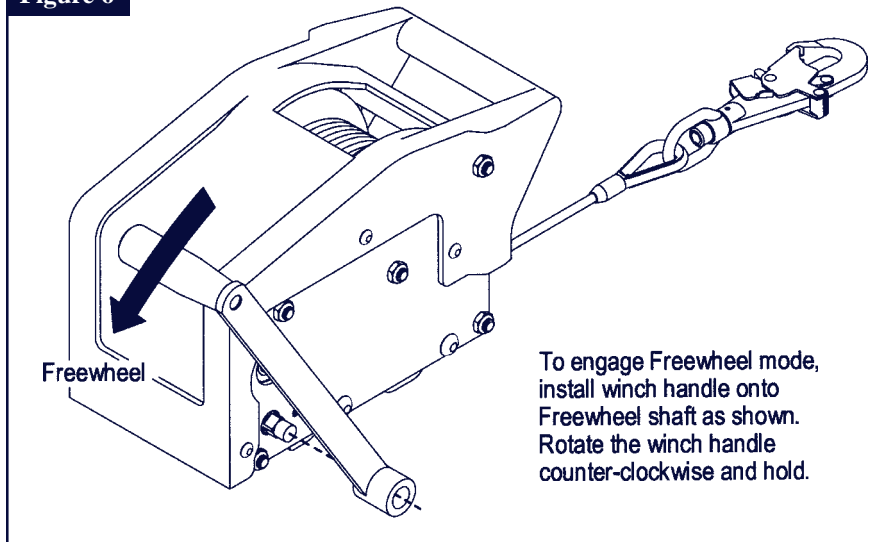
**TO RAISE LOAD:** Rotate winch crank handle in the raise direction (clockwise). To hold or momentarily suspend the load, stop cranking. The automatic clutch/brake will hold the load if handle is released. The winch incorporates an overload clutch limiting the lifting force to approximately 700 lbs., reducing the chance of injury if a worker becomes entangled during retrieval. Do not exceed the rated capacity of 350 lbs.

**TO LOWER LOAD:** Rotate winch crank handle in the lower direction (counter-clockwise). When lowering line without a load, maintain slight tension on the line to aid payout.

**FREE-WHEEL MODE:** Remove crank handle from raise/lower input shaft. Reverse the crank handle and install it onto the square drive marked "freewheel

shaft" by aligning the handle hub with the shaft. See Figure 6. To engage free-wheel mode, rotate crank handle counter-clockwise until it stops and hold. The line can now be freely pulled off of the winch drum. To avoid build-up of slack line on the drum, pull line off drum smoothly, remove slack on the drum by releasing crank handle and pulling on the line. If the line pays out too rapidly, an overspeed brake will activate and lock, stopping the line. If this happens, you will need to return to winch mode and rotate the crank handle clockwise two turns to unlock the overspeed brake. Do not engage free-wheel mode with load on the lifting line, remove load on the line before engaging free-wheel mode. When using the Salalift II for climbing protection applications, free-wheel mode is not recommended. The operator must be attentive to slack line; paying out and reeling in line as needed.

**Figure 6**



- D. IMPACT INDICATOR AND CABLE RESERVE:** The Salalift II winch is supplied with a connecting swiveling hook that incorporates a load indicator. This indicator functions if the winch is severely impact loaded or if the lifting capacity is exceeded by a preset amount. See section 5.0 for inspection of load indicator. The Salalift II incorporates a reserve cable retention feature on the cable drum. With the drum near empty (single layer of cable remaining), the reserve pin is visible. See Figure 2. The reserve cable ensures that the shock absorbing feature is available throughout the working range of the winch. If the winch is shock loaded at the reserve point of cable payout, the reserve pin will shear, allowing the shock absorber to function normally. If the reserve pin has been sheared, the unit must be returned for inspection and repair. See section 5.0 for inspection details.

**IMPORTANT:** *Do not use winch for lifting or lowering of more than one person, except for emergency situations. In this case, if using the LI850 series, the low speed shaft must be used to prevent handle slippage. Maximum lifting force is approximately 500 lbs.*

**WARNING:** *If cranking tension eases during lowering, the person or material being lowered has reached a work level or obstruction. Do not continue cranking without communicating with the person or checking the material being lowered. Always keep cable tension firm. Slack cable could cause a free fall.*

**WARNING:** *A minimum of four wraps of line must remain on the drum at all times on the L1850 series. One complete layer of line must remain on the L7400 series. Do not attempt to reverse wind line onto drum. Line must wind onto the drum by turning the crank handle in the "up" or "raise" direction only. Check periodically to see that the line is winding evenly on the drum. Use gloves when handling line.*

## 4.0 TRAINING

- 4.1** It is the responsibility of the user and the purchaser of this equipment to assure that they are familiar with these instructions, trained in the correct care and use of and are aware of the operating characteristics, application limits, and the consequences of improper use of this equipment.

**IMPORTANT:** *Training must be conducted without exposing the trainee to a fall hazard. Training should be repeated on a periodic basis.*

## 5.0 INSPECTION

### 5.1 FREQUENCY:

- **Before Each Use:** Visually inspect per steps listed in sections 5.2 and 5.3.
- **Monthly:** A formal inspection of the winch should be done by a competent person other than the user. See sections 5.2 and 5.3 for guidelines. Record results in the inspection and maintenance log in section 9.0.
- **Annual:** It is recommended that the winch be serviced by a factory authorized service center or the manufacturer. Extreme working conditions may require increasing the frequency of inspections. Annual servicing shall include, but not be limited to, an intensive inspection and cleaning of all internal and external components. Failure to provide proper service may shorten product life and could endanger performance.
- **After An Impact:** Inspect entire winch according to section 5.2.

**WARNING:** *If the winch has been subjected to impact forces, it must be immediately removed from service and inspected. If the winch fails to pass the inspection, do not use. The equipment must be sent to an authorized service center for repair.*

**IMPORTANT:** *Extreme working conditions (harsh environment, prolonged use, etc.) may require increasing the frequency of inspections.*

### 5.2 GENERAL INSPECTION STEPS FOR ALL WINCH MODELS:

- Step 1.** Inspect all screws, bolts and nuts. Ensure they are securely attached and tight. Check to see if any bolts, nuts or other parts are missing, or have been substituted or altered in any way. Inspect covers, housings, guards, etc. Ensure they are free of cracks, dents, or other damage.

- Step 2.** Crank handle must lock positively onto the shaft and be free of cracks, bends, or other damage.
- Step 3.** Connecting hook must not be damaged, broken, distorted, or have any sharp edges, burrs, cracks, worn parts, or corrosion. Ensure the connecting hook works properly. Hook gate must move freely and lock upon closing. Hook must swivel freely.
- Step 4. Wire Rope:** Inspect entire length of wire rope assembly starting at the hook. Always wear protective gloves when inspecting wire rope.
- A.** Inspect for broken wires by passing the cable through gloved hands, flexing it every few inches to expose breaks. Broken wires can be removed by bending the wire back and forth parallel to the rope length. Do not attempt to pull wires out of rope. Inspect for kinks, cuts, crushed burned areas, or other damage. Wire rope with serious damage must be removed from service.
  - B.** The wire rope assembly must be replaced by an authorized service center 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. Note: A "lay" of wire rope is the length of wire rope that it takes for a strand (the larger groups of wires) to complete one revolution or twist along the rope.
  - C.** The wire rope assembly must be replaced by an authorized service center if there are any broken wires within one inch of the metal compression sleeves at either end of the assembly. Note: To inspect wire rope area near compression sleeves on hook end, remove counterweight (L1850 series) or slide rubber hook bumper up on wire rope (L7400 series)
  - D.** Inspect entire length of wire rope for signs of corrosion. Severely corroded wire rope must be replaced.

**Synthetic Rope:** Inspect for the following if winch uses synthetic rope:

- A.** Inspect for concentrated wear, frayed strands, broken yarns, cuts, and abrasions. The line must be free of knots, excessive soiling, heavy paint buildup, and rust staining throughout its length.
- B.** The line must be free of chemical or heat damage, indicated by brown, discolored, or brittle areas.
- C.** The line must be free of ultraviolet damage, indicated by discoloration and the presence of splinters and slivers on the rope surface.
- D.** All of the above factors are known to reduce rope strength. As a rule of thumb, rope strength is reduced proportional to the cross sectional area of the rope damaged. Damaged or questionable rope should be replaced by an authorized service center.

- Step 5.** Inspect all identification and warning labels, ensuring that they are legible and securely attached. See Figure 1 (L1850 series), Figure 2 (L7400 series) and section 8.0.
- Step 6.** Inspect each system component (support structure, back-up fall arrest system, body support, connectors, etc.) according to manufacturer's instructions.
- Step 7.** See additional inspection steps for the winch in sections 5.3, 5.4, and 5.5.

**5.3 INSPECTION OF SALALIFT WINCH (L1850 SERIES):** The following steps are additional inspection procedures to those in section 5.2 that must be performed on the L1850 series winch. See Figure 1.

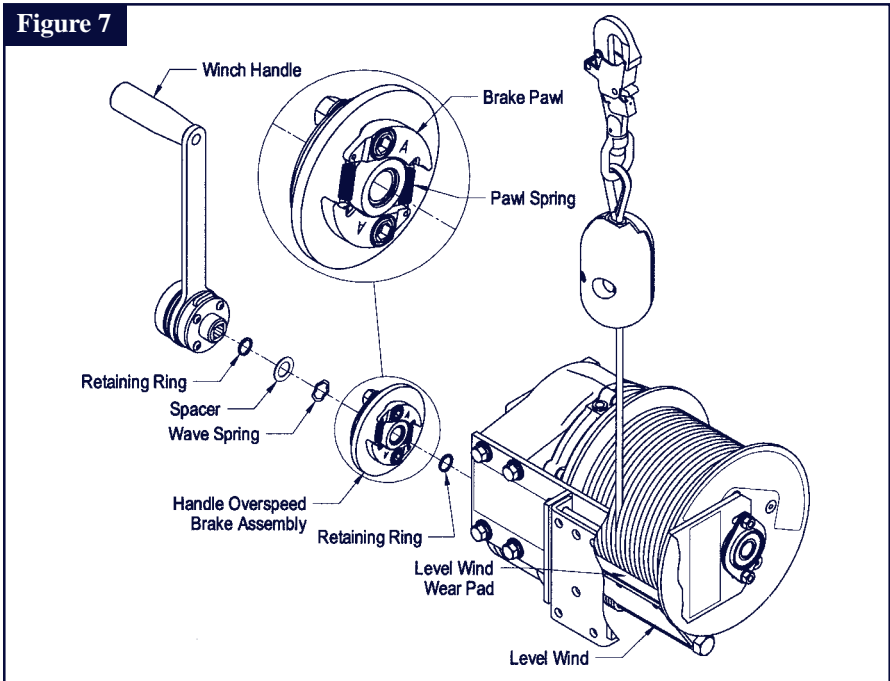
- Step 1.** Check operation of winch in high and low speed positions; it must crank up and down freely. Stiff or rough operation may indicate a worn gear or bearing.
- Step 2.** Inspect ratchet brake. With brake engaged, drum should be prevented from paying off cable. Spring must be in place and undamaged. The ratchet brake lever must fully engage the teeth on the drum, the drum teeth must be in good condition.
- Step 3.** Inspect for oil in the gearbox by removing plug on top and tilting unit so oil can be seen through hole. Inspect for oil leaks.
- Step 4.** Check operation of handle overspeed brake as follows:
  - A.** Over level ground set up support structure and winch as it will be used.
  - B.** By raising or lowering the winch cable, position the lifting hook to approximately chest height.
  - C.** Remove the winch crank handle and have someone hold the ratchet brake lever in its disengaged position, such as when lowering a load.
  - D.** Pull down sharply on the lifting hook to engage the overspeed brake.
  - E.** If the brake fails to engage or noticeable brake slippage occurs, remove winch from service and return to an authorized service center for repair.
- Step 5.** Check operation of drum overspeed brake as follows, see Figure 7:
  - A.** To test the drum overspeed brake, remove the handle overspeed brake assembly. Using a snap ring pliers, remove the ring that retains the handle overspeed brake assembly on the low speed shaft. Remove the brake assembly, taking care not to damage the pawl springs on the back side of the brake. Note: If damage exists on the shaft such as a nick or corrosion, repair the damaged area using a file or emery cloth before removing the brake assembly.
  - B.** With the handle overspeed brake removed, on level ground, set up the support structure and winch as it will be used. To test the drum overspeed brake, remove the crank handle and disengage the ratchet brake,



then pull down sharply on the winch cable to engage brake.

- C. If the brake fails to engage or slippage of more than one inch occurs (a small amount of brake slippage is normal), remove the winch from service immediately and return to an authorized service center for repair.
- D. If brake functions properly, reassemble handle overspeed brake. Ensure the pawls are in place and the "A" side is showing on each pawl. Re-install the retaining ring onto the shaft. Test the handle overspeed brake for proper operation using method given in step 4.

**Figure 7**



**Step 6.** See Figure 7. Inspect level wind assuring that it moves freely and applies pressure against the line. If the plastic wear pad needs to be replaced, return the winch to an authorized service center.

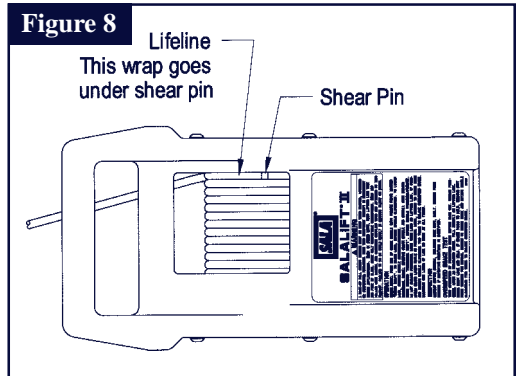
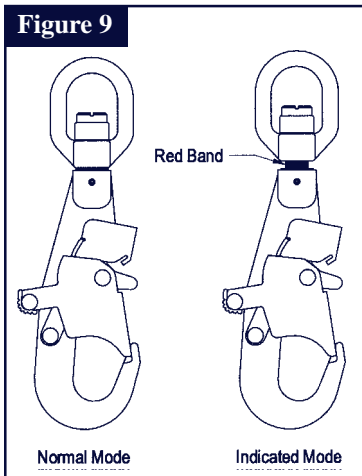
**5.4 INSPECTION OF SALALIFT II WINCH (L7400 SERIES):** The following steps are additional inspection procedures to those in section 5.2 that must be performed on the L7400 series winch. See Figure 2.

**Step 1.** Check operation of free-wheel mode and drum overspeed brake as follows:

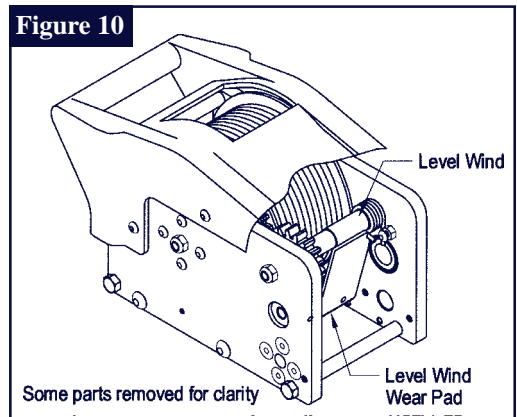
- A. Engage free-wheel mode by connecting crank handle to free-wheel shaft and rotating handle counter-clockwise. The winch line should pay out freely. Pull down sharply on the winch line with the winch in the free-wheel mode to engage the brake.
- B. Brake must lock and hold. If the brake fails to engage or slippage of more than one inch occurs (a small amount of brake slippage is nor-

mal), remove the winch from service immediately and return to an authorized service center for repair.

- Step 2.** See Figure 8. Inspect shear pin. The shear pin should retain one complete wrap of line on the drum. If the shear pin is broken or missing the unit must be returned to an authorized service center for repair.



- Step 3.** See Figure 9. Inspect impact indicator on snap hook. If hook is in the indicated mode, return winch to an authorized service center for repair.



- Step 4.** See Figure 10. Inspect level wind assuring that it moves freely and applies pressure against the line. If the plastic wear pad needs to be replaced return the winch to an authorized service center.

- 5.5** If inspection or operation reveals a defective condition, remove the winch from service immediately and contact an authorized service center for repair.

**NOTE:** Only DBI/SALA or parties authorized in writing may make repairs to this equipment.

## 6.0 MAINTENANCE, SERVICING, STORAGE

- 6.1** Periodically clean the exterior of the winch using water and a mild detergent solution. Clean labels as required. At least twice a year, clean and lubricate the wire rope. Do not use solvents to clean the wire rope as they will remove internal lubrication. Lubricate wire rope using a cloth (wearing gloves) and a light machine oil.

## 6.2 LUBRICATION OF SALALIFT WINCH;

- For the L1850 series Salalift winch, the gear box contains eight ounces of high quality gear oil, SAE 80 or 90. The oil does not require changing unless there is evidence of contaminants in the oil. See section 5.3, step 3. If oil is contaminated or leaking contact DBI/SALA for repair.
- For the L7400 series Salalift winch, lubrication should be applied periodically to the winch drum gear. Maintain a light film of grease on the drum gear teeth at all times. Apply grease to the drum gear teeth as required. Do not over lubricate.

**6.3** Replacement parts, as well as additional maintenance and servicing procedures, must be completed by a factory authorized service center. An authorization and a return number must be issued by DBI/SALA.

**6.4** Store this equipment in cool, dry, clean environment out of direct sunlight. Avoid areas where chemical vapors exist. Inspect after any period of extended storage.

**6.5** Clean and store body support, support structure, and associated system components according to separate instructions provided with that equipment.

## 7.0 SPECIFICATIONS

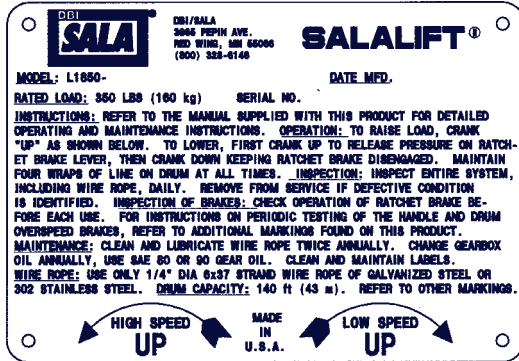
Rated Working Load	350 lbs.
Wire Rope Type	1/4 inch diameter, 6x37 galvanized or stainless steel, 3/16 inch diameter, 7x19 galvanized or stainless steel
Synthetic Rope Type	3/8 inch diameter synthetic rope braid on braid polyester
Drum Capacity	L1850 Series: 1/4 inch cable: 140 feet L7400 Series: 1/4 inch cable: 85 feet 3/16 inch cable: 150 feet
Weight	L1850-60: 62 lbs. L1850-120: 71 lbs. L7400-60: 36 lbs. L7401-90: 35 lbs. L7401-120: 37 lbs.
*Lifting or Lowering Speed / Gear Ratio	L1850 Series Low Speed: 13.2 ft/min. average / 6.6:1 ratio L1850 Series High Speed: 26.8 ft/min. average / 3.3:1 ratio L7400 Series: 12.5 ft/min. average / 6:1 ratio
Material	Predominantly aluminum, and zinc plated steel, Polyethylene (L7400 Series only)

\* Note: Speeds given assume 60 rpm cranking rate. Actual rates may vary depending on cranking speed and the amount of rope on the drum.

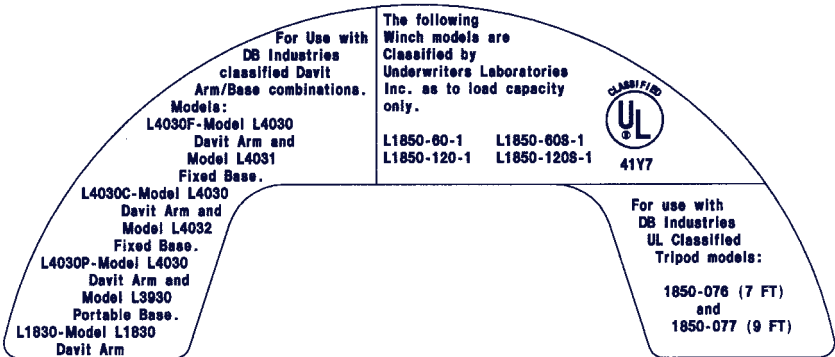
- The L1850-60, L1850-60S, L1850-120, and L1850-120S manually operated winches are classified by Underwriters Laboratories, Inc. as to the 350 lbs. load capacity only.

## 8.0 LABELING

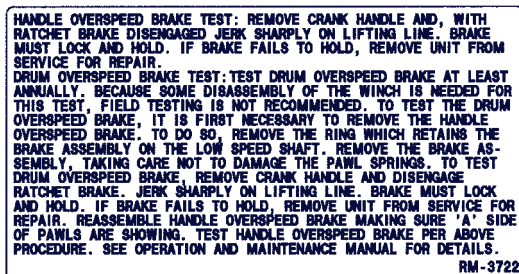
8.1 The following labels must be present and fully legible:



L1850 Series ID Label

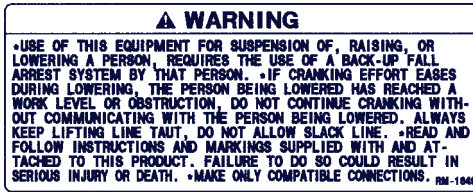


L1850 Series UL Label



L1850 Series Brake Testing Label

## 8.1 Labeling, continued:



### L1850 Series Warning Label



### L1850 Series Standards Label

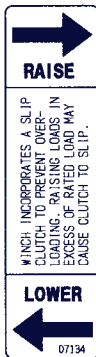


### L1850 Series Winch Handle Label

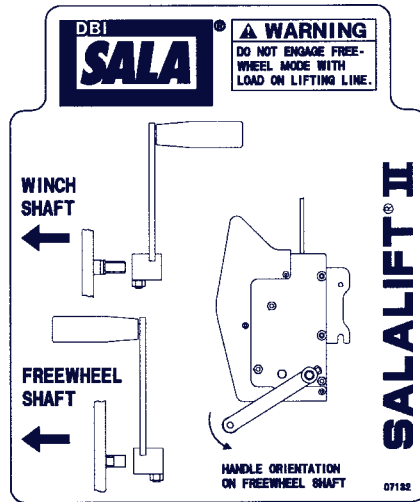


### L7400 Series Warning Label

8.1 Labeling, continued:



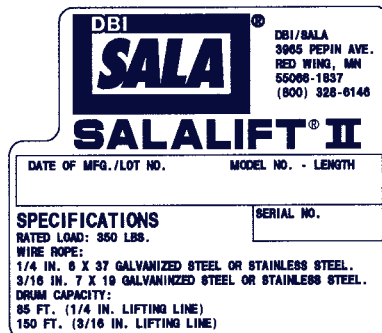
L7400 Series  
Raise/Lower Label



L7400 Series Shaft Identification Label



L7400 Series  
Freewheel  
Engagement Label



L7400 Series ID Label

9.0 INSPECTION AND MAINTENANCE LOG

SERIAL NUMBER: \_\_\_\_\_

MODEL NUMBER: \_\_\_\_\_

DATE PURCHASED: \_\_\_\_\_

INSPECTION DATE	INSPECTION ITEMS NOTED	CORRECTIVE ACTION TAKEN	MAINTENANCE PERFORMED
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			





## WARRANTY

Equipment offered by DBI/SALA is warranted against factory defects in workmanship and materials for a period of one year from the date of installation or use by the owner, provided that this period shall not exceed two years from the date of shipment. Upon notice in writing, DBI/SALA will promptly repair or replace all defective items. DBI/SALA reserves the right to elect to have any defective item returned to its plant for inspection before making a repair or replacement. Warranty does not cover equipment damages resulting from abuse, damage in transit or other damage beyond the control of DBI/SALA. This warranty applies only to original purchaser and is the only one applicable to our products and is in lieu of all other warranties expressed or implied.



### USA

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Red Wing, MN 55066  
Toll Free: 800-328-6146  
Phone: (651) 388-8282  
Fax: (651) 388-5065  
[www.dbisala.com](http://www.dbisala.com)

### Canada

260 Export Boulevard  
Mississauga, Ontario L5S 1Y9  
Toll Free: 800-387-7484  
Phone: (905) 795-9333  
Fax: (905) 795-8777



Certificate No. FM 39709

Form: 02139  
Rev: B

# MILLER<sup>®</sup>

by Honeywell



## Self-Retracting Lifelines & Fall Limiters

User Instruction Manual

Manuel D'utilisation / Manual de Instrucciones para El Usuario

I267 Rev. C / MFP9720138

31 December 2013

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## Thank You

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Thank you for your purchase of Miller fall protection equipment manufactured by Honeywell Safety Products. Miller brand products are produced to meet the highest standards of quality at our ISO 9001 certified facility. Miller equipment will provide you with years of use when cared for properly.

### WARNING

All persons using this equipment must read, understand and follow all instructions. Failure to do so may result in serious injury or death. Do not use this equipment unless you are properly trained.

## Questions?

CALL  
1.800.873.5242

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It is crucial that the authorized person/user of this equipment read and understand these instructions. In addition, federal law requires employers to ensure that all users are trained in the proper installation, use, inspection, and maintenance of fall protection equipment. Fall protection training should be an integral part of a comprehensive safety program.

Proper use of fall arrest systems can save lives and reduce the potential of serious injuries from a fall. The user must be aware that forces experienced during the arrest of a fall or prolonged suspension may cause bodily injury. Consult a physician if there is any question about the user's ability to use this product. Pregnant women and minor children must not use this product.

---

## 1.0 Purpose

Miller Self-Retracting Lifelines, including Fall Limiters and Retractable Web Lanyards, are self-contained retractable devices designed to be used by personnel in applications where fall protection in combination with unrestricted worker mobility is needed.

## 2.0 General Requirements, Warnings and Limitations

### 2.1 General Requirements

---

All warnings and instructions shall be provided to authorized persons/users.

**All authorized persons/users must reference the regulations governing occupational safety, as well as applicable ANSI or CSA standards. Please refer to product labeling for information on specific OSHA regulations, and ANSI and CSA standards met by product.**

Proper precautions should always be taken to remove any obstructions, debris, material, or other recognized hazards from the work area that could cause injuries or interfere with the operation of the system.

All equipment must be inspected before each use according to the manufacturer's instructions.

All equipment should be inspected by a qualified person on a regular basis.

To minimize the potential for accidental disengagement, a competent person must ensure system compatibility.

Equipment must not be altered in any way. Repairs must be performed only by the manufacturer, or persons or entities authorized in writing by the manufacturer.

Any product exhibiting deformities, unusual wear, or deterioration must be immediately discarded.

Any equipment subject to a fall must be removed from service.

The authorized person/user shall have a rescue plan and the means at hand to implement it when using this equipment.

Never use fall protection equipment for purposes other than those for which it was designed. Fall protection equipment should never be used for towing or hoisting.

All synthetic material must be protected from slag, hot sparks, open flames, or other heat sources. The use of heat resistant materials is recommended in these applications.

Environmental hazards should be considered when selecting fall protection equipment.

Equipment must not be exposed to environmental hazards and chemicals which may produce a harmful effect. Polyester

should be used in certain chemical or acidic environments. Use in a corrosive or caustic environment dictates a more frequent inspection and servicing program to ensure the integrity of the device is maintained.

Do not allow equipment to come in contact with anything that will damage it including, but not limited to, sharp, abrasive, rough or high-temperature surfaces, welding, heat sources, electrical hazards, or moving machinery.

Do not expose the equipment to any hazard which it is not designed to withstand. Consult the manufacturer in cases of doubt.

Always check for obstructions below the work area to make sure potential fall path is clear.

Allow adequate fall clearance below the work surface.

Never remove product labels, which include important warnings and information for the authorized person/user.

## 2.2 Warnings and Limitations

---

### CAPACITY

**For use by ONE person only. Maximum capacity for most Miller self-retracting lifelines is 310 lbs. (140.6 kg), including body weight, clothing and tools. Select self-retracting lifelines are available with or offer a \*400 lb. (181.4kg) maximum capacity. Refer to the product labels on the self-retracting lifeline and the performance specifications provided in the Product Identification, Specifications and Labels section of this manual.**

**When used with a Miller 928LS shock absorber, Miller brand self-retracting lifelines are rated to \*400 lbs. (181.4kg) maximum capacity in overhead installation applications. The shock absorber must be attached between the user's harness back D-ring and the self-retracting lifeline. Additional fall clearance is needed for this configuration. Refer to the label on the shock absorber to determine its maximum elongation/deceleration distance and add this factor to your self-retracting lifeline fall clearance calculation.**

*\*If the system is used by an employee having a combined tool and body weight between 310 lbs. (140.6 kg) and 400 lbs. (181.4 kg), then the employer must appropriately modify the criteria and protocols to provide proper protection for such heavier weights, or the system will not be deemed to be in compliance with the requirements of OSHA 1926.502(d)(16). [ANSI capacity range is 130 lbs.- 310 lbs. (59kg- 140,6kg).]*

### LIFELINE RETRACTION & LOCKING

**Do not use the device if it does not retract. Always maintain tension on the lifeline while retracting.**

**Device must be tested for locking before each use. Do not use the device if the brakes do not engage.**

### USE

**Anchor device vertically overhead whenever possible. For the purposes of this instruction manual, an overhead application implies that there is no slack in the lifeline when the unit is mounted above the user and connected to the user's back D-ring. For suitability in other installation applications, refer to 5.0 Installation/Use.**

**Never work above the device, unless instructions allow for such installation applications for your specific self-retracting lifeline model.**

**Select self-retracting lifelines/fall limiters may be used with Honeywell-approved horizontal lifeline systems. Always refer to the instructions provided with the horizontal lifeline system to determine if your self-retracting lifeline model can be used with the system.**

**The device should be installed and used in such a manner as to minimize the potential for a swing fall.**

**Do not allow lifeline to become slack.**

**Never use the device as a restraint or positioning device.**

#### MAINTENANCE

**Do not lubricate this device.**

**The device must be kept clean and free of contaminants.**

**Self-retracting lifelines must be removed from service if any part of the system appears to be damaged or does not**

**pass inspection, or if the unit has been subjected to the forces of arresting a fall.**

**Do not attempt to service this device. If a self-retracting lifeline does not operate properly or requires repairs, return the device to the equipment manufacturer, or service center authorized in writing by the manufacturer, for repairs. [Units that do not pass inspection and are not repairable must be disposed of properly.]**

## 3.0 System Compatibility

Miller self-retracting lifelines are designed for use with Honeywell-approved components only. Substitution or replacement with non-approved component combinations or subsystems or both may affect or interfere with the safe function of each other and endanger the compatibility within the system. This incompatibility may affect the reliability and safety of the total system.

## 3.1 Personal Fall Arrest System Components

Three key components of the Personal Fall Arrest System (PFAS) need to be in place and properly used to provide maximum worker protection.

### ANCHORAGE/ANCHORAGE CONNECTOR

The first component is the anchorage/anchorage connector. The anchorage, also referred to as the anchor point or tie-off point, is a secure point of attachment for connecting devices and must be capable of supporting 5,000 lbs. (22.2kN) per worker or meet OSHA requirements for a safety factor of two, such as an I-beam or other support structure. An anchorage connector, such as the cross-arm strap, D-bolt or rebar hook anchor, is sometimes necessary to make a compatible connection between the connecting device and the anchorage.

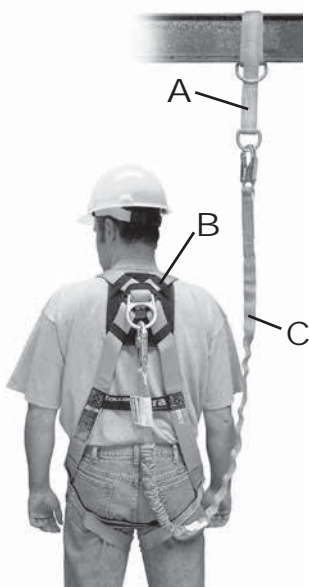
### BODY WEAR

The second system component is the personal protective gear worn by the worker while performing the job. The only form of body wear acceptable for fall arrest is the full-body harness. Full-body harnesses are engineered to aid in the arrest of a free fall and must be worn in all situations where workers are exposed to a potential free fall.

### CONNECTING DEVICE

The third component of the system is the connecting device, the critical link which joins the body wear to the anchorage/anchorage connector. The most important feature of the connecting device is the shock absorber. Whether the connecting device is a shock-absorbing lanyard or self-retracting lifeline, they are designed to dramatically reduce fall arrest forces. Rope, web or wire rope lanyards being used for fall arrest **MUST** be used in conjunction with a shock absorber (i.e., Miller SofStop pack).

***Individually, none of these components will provide protection from a fall. However, when used properly and in conjunction with each other, they form a Personal Fall Arrest System that becomes vitally important to safety on the job site.***





## 3.2 Component Warnings and Limitations

---

### ANCHORAGES/ANCHORAGE CONNECTORS

- Anchorages must be capable of supporting 5,000 lbs. (22.2kN) per worker or meet OSHA 1926.502 requirements for a safety factor of two.
- Anchorage requirements based on ANSI are as follows:
  - For fall arrest systems, anchorages must withstand a static load of 5,000 lbs. (22.2kN) for non-certified anchorages or two times the maximum arresting force for certified anchorages.
  - When more than one personal fall arrest system is attached to an anchorage, the above anchorage strengths must be multiplied by the number of personal fall arrest systems attached to the anchorage.
- Always work directly under the anchor point to avoid a swing-fall injury.
- When selecting an anchorage point, always refer to the fall clearance calculation information provided with the connecting device to ensure that the anchorage point is at a height that will not allow a user to strike a lower level should a fall occur. Remember that shock absorbers will elongate when subjected to fall arrest forces (refer to the labels/instructions provided with the shock absorber for additional details).
- Anchorage connector must be compatible with snap hook or carabiner of connecting device and must not be capable of causing a load to be applied to the gate (keeper).

### BODY WEAR

- The only form of body wear acceptable for fall arrest is the full-body harness.
- It is imperative that the harness be worn properly. Visually check all buckles to assure proper and secure connections before each use. All straps must be connected and adjusted to provide a snug fit.
- Fall protection connecting devices should be attached to the back D-ring of the full-body harness. A front D-ring attachment element may be used for fall arrest only in rescue, work positioning, rope access, and other ANSI Z359.1 recognized applications where the personal fall arrest system limits the maximum free fall distance to 2 ft. (0.6m) and limits the maximum arrest force to 900 lbs. (4.0kN).
- Side and front D-rings should be used for positioning only. (Note front D-ring exception above.); shoulder D-rings should be used for retrieval, raising or lowering only.
- Never attach rebar (pelican) hooks to a harness D-ring.
- Body belts should be used for positioning only.

### CONNECTING DEVICES

- Make only compatible connections.
- Use only connecting devices containing locking snap hooks or auto-locking carabiners.
- Connect in a manner that limits free fall to the shortest possible distance. [6 ft. (1.8m) maximum]
- Always visually check that each snap hook and carabiner freely engages the harness D-ring or anchor point/anchorage connector, and that its gate (keeper) is completely closed and locked. Never disable or restrict locking keeper or alter connecting device in any way.
- Make sure snap hook/carabiner is positioned so that its gate is never load bearing.
- The use of shock absorbers is required to reduce fall arrest forces. All Miller shock absorbers, shock-absorbing lanyards, and self-retracting lifelines limit maximum fall arrest forces to 1800 lbf. (8kN) or less.
- Never allow a lanyard/lifeline to pass under or entwine around the user's arms, legs, neck or any other obstacle.
- Do not tie knots in lanyards or lifelines, or wrap around sharp, rough edges, or small diameter structural members.
- Do not attach multiple lanyards together, or attach a lanyard back onto itself unless it is specifically designed for that purpose.

## 4.0 Making System Connections

### Connecting to the Body Support and Anchorage/Anchorage Connector

For general fall protection, connect the lifeline/lanyard end connector (i.e., snap hook or carabiner) to the back D-ring on the full-body harness (see Fig. 1a).

Connect the body of the retractable unit to the anchorage or anchorage connector (see Fig. 1b). Make sure connections are compatible in regards to size, strength, and shape. Make sure that connectors are completely closed and locked.



Fig. 1a



Fig. 1b

### Reverse Configuration

[Applies to Turbo T-BAK Tie-Back Personal Fall Limiters (MFLT), TurboLite Personal Fall Limiters (MFL Models), Scorpion Personal Fall Limiters (PFL Models), Black Rhino Self-Retracting Lifelines (CFL Models), MiniLite Fall Limiter (FL11), Titan Fall Limiter (TFL), Miller Retractable Web Lanyard (8327 Models), and Titan Retractable Web Lanyards (Models TRW/8FT and TRWS)]

Select self-retracting lifelines/fall limiters may also be used in a reverse configuration where the lifeline/lanyard end connector (i.e., snap hook) is connected to a compatible anchorage or anchorage connector and the body of the retractable unit is attached to the back D-ring on the full-body harness (see Fig. 2a & 2b).

*Note: The weight of the retractable unit should be considered when choosing this reverse configuration for connecting to the body support and anchorage.*



Fig. 2a



Fig. 2b



## 5.0 Installation/Use

**WARNING:** All Miller self-retracting lifelines must be inspected and tested before each use (see 7.0 Inspection and Maintenance).

### 5.1 Typical Overhead Installation

Miller self-retracting lifelines are typically mounted to an overhead anchorage by the anchorage attachment using a locking carabiner or other Honeywell-approved mounting device (see Fig. 3 & 4).

The anchorage must be capable of supporting a 5,000 pound (22.2kN) tensile load, or it must be designed, installed, and used under the supervision of a qualified person as part of a complete fall arrest system which maintains a safety factor of two. Review all warnings and instructions when selecting a mounting location. The device should be installed and used in such a manner as to minimize the potential for a swing fall.

***[Please Note: For the purposes of this instruction manual, an overhead application implies that there is no slack in the lifeline when the unit is mounted above the user and connected to the user's back D-ring. For non-overhead applications, please contact Honeywell Technical Service before proceeding.]***

Fig. 3



Fig. 4



### 5.2 Tie-Back Installation

**[Applies to Turbo T-BAK Tie-Back Personal Fall Limiters (MFLT) ONLY]**

Miller Turbo T-BAK Tie-Back Personal Fall Limiters are self-retracting lifelines that are uniquely engineered to allow the user to tie-off safely to an anchorage. Miller Turbo T-BAK Personal Fall Limiters are designed with heavy-duty, abrasion-resistant webbing and the 5K snap hook, which is capable of withstanding 5,000 lbs. of force on the snap hook gate from any angle, to allow connection back to the web lifeline in a choking fashion. DO NOT attempt this type of connection with standard TurboLite Personal Fall Limiters or other self-retracting lifelines which are not specifically designed for such a connection. Refer to the I296 Turbo T-BAK Instruction Supplement for complete information regarding this installation application.

Fig. 5



## 5.3 Installation in a Lift Application

**[Applies to TurboLite Personal Fall Limiters (MFL Models), Scorpion Personal Fall Limiters (PFL Models), Black Rhino Self-Retracting Lifelines (CFL Models), MiniLite Fall Limiter (FL11), Titan Fall Limiter (TFL), Miller Retractable Web Lanyard (8327 Models), and Titan Retractable Web Lanyards (Models TRW/8FT and TRWS)]**

Honeywell Safety Products recommends mounting all Miller self-retracting lifelines to a suitable overhead anchorage whenever possible. However, fall protection in lift applications without an overhead anchorage requires special provisions. The support structure of the lift must meet the following criteria:

- Both the floor-level anchorage and the guardrails must be capable of supporting at least 5,000 lbs. (22.2kN) per employee attached or be part of a complete personal fall arrest system which maintains a safety factor of at least two, under the supervision of a qualified person.
- The guardrails are at a height that eliminates the possibility of a free fall in the system (see standards for construction: OSHA 1926.502(b)(1) and general industry: OSHA 1910.23(e)(1)).
- The diameter of the guardrail must be a minimum of 1 inch (25.4mm).
- All edges that may come into contact with the lifeline during use must be smooth or rounded or chamfered (free of burrs and sharp edges) to prohibit damage to the lifeline and enable the unit to arrest a fall effectively.
- The support structure must surround the user in the direction of all possible falls.
- The lift itself must be designed properly to prevent toppling in the event of a fall (consult the lift manufacturer).

Honeywell recommends the above listed self-retracting lifelines can be attached at or below the back D-ring of the user's harness in lift applications under the direction of a qualified person. Since these units are not mounted overhead in this application, the maximum fall arrest forces may exceed the maximum arresting force listed on the label; however, the forces will not exceed 1800 lbf (8kN).

The following should be considered when assessing your application:

- The proper amount of fall clearance is calculated from the top of the guardrail using self-retracting lifeline guidelines provided in this instruction manual.
- Ensure no swing-fall hazard exists.
- Lifeline contact with sharp edges must be avoided.
- Preventative measures must be taken to ensure the self-retracting lifeline does not become pinched between two surfaces as this may cause excessive lifeline wear and weakness.

**Please contact Honeywell Technical Service at 1-800-873-5242 (press 4) for additional assistance when evaluating this installation application.**



Fig. 6

## 5.4 Installation for Horizontal Use

In the absence of an overhead anchorage, mounting a self-retracting lifeline for horizontal use may be necessary. For horizontal applications where the lifeline of the retractable has the potential to travel over the edge of a flat surface, Honeywell Safety Products recommends the use of Miller SofStop Shock Absorber Model 928LS connected between the worker's harness back D-ring and the self-retracting lifeline snap hook. This will help protect the lifeline and reduce the impact forces in the event of a fall.

**CAUTION: When installing a self-retracting lifeline for horizontal use, special considerations and warnings apply. Please contact Honeywell Technical Service to obtain the relative technical letter before proceeding.**

## 5.5 Installation in a Leading Edge Application

Select Miller self-retracting lifelines have been specially-engineered with the SofStop LE shock absorber for leading edge applications, whereby the user is attached to an anchor point which may be at foot level and whereby the lifeline has the potential to go over an edge if the user falls. Refer to the I322 Leading Edge Self-Retracting Lifelines Instruction Supplement for complete information regarding this installation application.



## 6.0 Calculating Fall Clearance Distance

**It is essential to understand how to calculate the fall clearance distance for each work application to avoid contact with a lower level. Use the following calculation to determine Required Fall Clearance.**

### Self-Retracting Lifeline Fall Clearance Calculation

#### **[Calculation taken from work level]**

**Maximum Arrest Distance**  
**+ (Non-Standing Work Position Factor)**  
**+ (Swing Fall Factor)**  
**+ 3 ft. (0.9m) Safety Factor**  
**= Required Fall Clearance**

**CAUTION:** Read all notes and refer to all self-retracting lifeline fall clearance diagrams and labels to determine exact required fall clearance for your application.

Maximum Arrest Distance of SRL/Fall Limiter	Minimum Required Fall Clearance from Work Level to Lower Level*			
	When Working Directly Below Anchor Point			When NOT Working Directly Below Anchor Point
	In Standing Position	In Kneeling/ Crouched Position	In Lying Down Position	In Potential Swing Fall Position
24 in (0.6m)	5 ft (1.5m)	8 ft (2.4m)	10 ft (3.1m)	Varies - Additional Fall Clearance Required
39 in (1m)	6 ft-3 in (1.9m)	9 ft-3 in (2.8m)	11 ft-3 in (3.4m)	
54 in (1.4m)	7 ft-6 in (2.3m)	10 ft-6 in (3.2m)	12 ft-6 in (3.8m)	

\*This chart shows general minimum fall clearances required. An exact calculation, based on the SRL/Fall Limiter to be used and an assessment of the work site and conditions that may affect the worker's fall clearance, must be performed.

(See Fig. 8a, 8b, 8c & 8d)

#### IMPORTANT NOTES:

Self-retracting lifelines must be anchored overhead to ensure the accuracy of the fall clearance calculation and related information.

It is important to understand that other factors, such as whether the user is performing work in a standing, crouched or lying down position and/or whether the user is working directly below the anchor point or at an angle, can affect fall distance when using a retractable device.

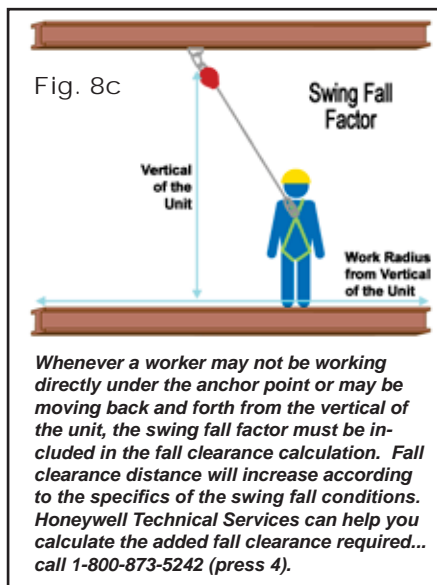
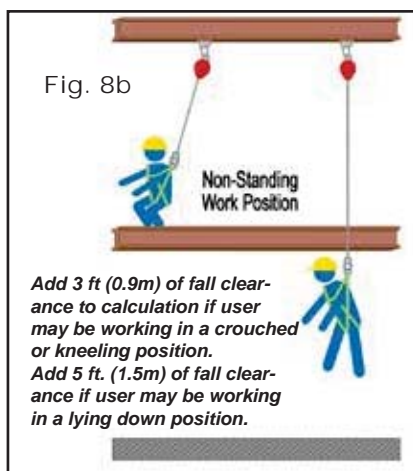
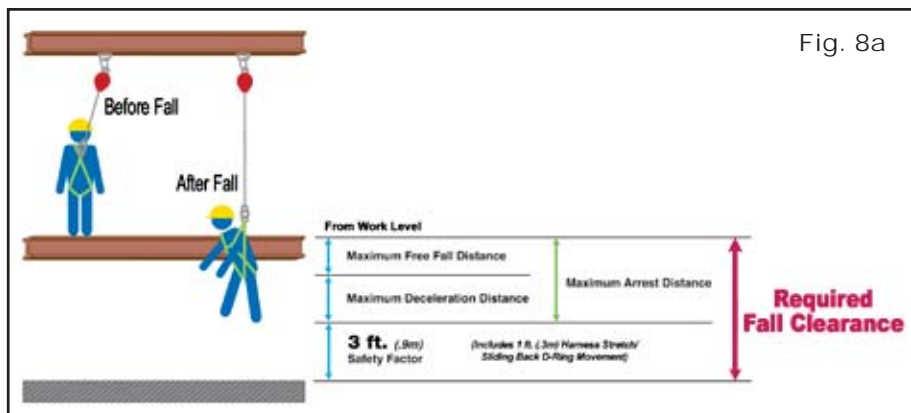
The self-retracting lifeline fall clearance calculation assumes the user is standing. If the user will be performing work in a crouched or kneeling position, an additional 3 ft. (0.9m) of fall clearance is required. If the user will be performing work in a lying down position, an additional 5 ft. (1.5m) of fall clearance is required.

The self-retracting lifeline fall clearance calculation also assumes the user is working directly below the anchor point, minimizing any possibility for a swing fall. In a swing fall situation, the total fall distance will be greater than if the user were working directly below the anchor point. In some applications, it may not be possible to work directly below the anchor point. In such a case, the worker must increase the fall clearance distance to account for the swing fall factor. In any case, the worker must not be exposed to a potential swing fall where contact with another object may occur.

The maximum arrest distance (free fall + deceleration) varies by retractable. Always refer to the labels on the specific unit to determine the maximum arrest distance.

If a self-retracting lifeline with a maximum arrest distance of less than 54 in. (1.4m) has been approved for (by Honeywell) and is being used in a non-overhead application, the maximum arrest distance allowed per standards—54 in. (1.4m)—must be used when calculating fall clearance distance.

If a self-retracting lifeline with a maximum arrest distance of less than 54 in. (1.4m) has been approved for (by Honeywell) and is being used by a worker weighing between 310 lbs. (140.6kg) and 400 lbs. (181.4kg), the maximum arrest distance allowed per standards—54 in. (1.4m)—must be used when calculating fall clearance distance.



If there is any question about calculating fall clearance distance, please contact Honeywell Technical Services:

**1-800-873-5242 (press 4)**

# 7.0 Inspection and Maintenance

## 7.1 Operation and Inspection

**WARNING:** The user must perform the following operation checkpoints and inspections prior to each use. In addition, a competent person must inspect equipment at regular intervals, at least annually.\*

\*ANSI Z359.14 provides additional inspection requirements based on type of use and conditions of use. Refer to 7.1.2 ANSI Z359.14 Appendix A: Inspection Requirements for compliance with this standard.

**CAUTION:** Always wear gloves when inspecting wire rope/cable units; broken strands can cause injury!

1. **Device Housing and Parts (see Fig. 9a):** Inspect the unit for loose fasteners and bent, cracked, distorted, worn, malfunctioning or damaged parts.



Fig. 9a

2. **Lanyard/Lifeline (see Fig. 9b):**

**CAUTION:** Do not let go of a lanyard/lifeline and let it retract on its own; always maintain tension while it retracts!

- a. With the device in the mounted position, test the lanyard or lifeline retraction and tension by pulling out several feet of the webbing or cable and allow to retract back into the unit. Always maintain a light tension on the webbing or cable as it retracts. The webbing or cable should pull out freely and retract all the way back into the unit.

If the webbing or cable does not pull out smoothly or sticks when retracting, pull all the webbing or cable out of the housing and allow it to retract slowly under tension. Do not use the unit if the lifeline does not retract properly.

- b. The entire length of the webbing or cable should be checked regularly for signs of damage. Inspect for cuts, burns, corrosion, kinks, frays, or worn areas. Inspect any sewing for loose, broken, or damaged stitches. Inspect cable for broken strands or chemical damage.

3. **Braking Mechanism (see Fig. 9c):** The braking mechanism can be tested by grasping the webbing or cable ABOVE the load indicator and applying a sharp steady pull downward which will engage the brakes. There should be no slippage of the webbing or cable while the brakes are engaged. Once tension is released, the brakes will disengage and the unit will return to the retractable mode.



Fig. 9b



Fig. 9c

4. **Hardware: Snap Hook/Carabiner/Rebar Hooks/Anchorage Swivels, etc. (see Fig. 9d & 9e):** Inspect closely for damage, distortion, cracks, corrosion, or pitted surfaces. The snap hook/carabiner gate (keeper) should seat into the nose without binding and should not be distorted or obstructed. The gate spring should exert sufficient force to firmly close the gate. The gate locking mechanism must prevent the gate from opening when closed. The snap hook and anchorage swivels should operate smoothly.



Fig. 9d



Fig. 9e

**5. Load Impact Indicator (see 7.1.1):** Inspect the load impact indicator for signs of activation, bent, cracked or distorted components before each use.

**6. Labels/Markings:** Make sure that all labels and markings are present and legible.

## 7.1.1 Load Impact Indicators

Your Miller self-retracting lifeline will be equipped with one of the following load impact indicators.

**Webbing Load Indicator (see Fig. 10a)**

A fold sewn into the webbing lifeline above the snap hook serves as the impact indicator. A warning flag is included and will be exposed should the lifeline be subjected to fall arresting forces.

**Snap Hook Load Indicator (see Fig. 10b)**

This load indicator is built in to the snap hook and is located at the swivel part of the snap. The swivel eye will elongate and expose a red area at the location illustrated when subjected to fall arresting forces.

**Karlstop Load Indicator (see Fig. 10c)**

If the unit has a rebar hook, it may be equipped with the Karlstop fall indicator. When subjected to fall arresting forces, a break will occur in the load indicator as shown.

UNITS THAT DO NOT PASS INSPECTION  
OR HAVE BEEN SUBJECTED TO FALL  
ARRESTING FORCES MUST BE  
REMOVED FROM SERVICE.

Fig. 10a

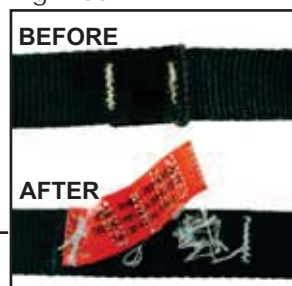


Fig. 10b



Fig. 10c



## 7.1.2 ANSI Z359.14 - Appendix A: Inspection Requirements

Equipment must always be inspected by the authorized person/user before each use. Additionally, ANSI Z359.14 requires that inspections be conducted by a competent person (other than the user) AND by a factory authorized entity according to the following schedule. (\*See note in 7.2 Maintenance.)



## ANSI Z359.14 - Appendix A: Inspection Requirements

Type of Use	Application Examples	Conditions of Use	Inspection Frequency Competent Person	Factory Authorized Inspection
Infrequent to Light	Rescue & confined space, Factory maintenance	Good storage conditions, indoor or infrequent outdoor use, room temperature, clean environments	Annually	At least every 2-5 years but not longer than intervals required by the manufacturer
Moderate to Heavy	Transportation, Residential construction, Utilities, Warehouse	Fair storage conditions, indoor and extended outdoor use, all temperatures, clean or dusty environments	Semi-annually to annually	At least every 1-2 years but not longer than intervals required by the manufacturer
Severe to Continuous	Commercial construction, Oil & Gas, Mining	Harsh storage conditions, prolonged or continuous outdoor use, all temperatures, dirty environment	Quarterly to semi-annually	At least annually but not longer than intervals required by the manufacturer

## 7.2 Maintenance

Basic care of all fall protection equipment will prolong the durable life of the unit and will contribute toward the performance of its vital safety function.

### Servicing

Servicing of Miller self-retracting lifelines must only be carried out by Honeywell Safety Products or persons or entities authorized in writing by Honeywell. A record log of all servicing and inspection dates for this device must be maintained. Only original Miller replacement parts are approved for use in this device. Repairable devices must be returned to our facilities or an approved service center whenever subjected to fall arresting forces for physical inspection and recertification. Non-repairable devices that do not pass inspection must be disposed of in a manner to prevent inadvertent further use. Contact your Honeywell distributor or call Honeywell Technical Service at 1-800-873-5242 for a return authorization number.

Miller self-retracting lifelines (included in this manual) require no annual factory recertification.\*

\*Honeywell Safety Products, as the manufacturer, does not require annual factory recertification for Miller self-retracting lifelines. ANSI Z359.14 and CSA Z259.2.2 standards are voluntary; and ultimately, the end-user/company must elect to follow the inspection and recertification requirements if it is to be compliant with the standard.

\*[Note for CSA Approved Products: CSA Z259.2.2 requires Type 2 and Type 3 devices to be returned to the manufacturer or an approved service agent no more than 2 years after the date of manufacturer for inspection and maintenance and annually thereafter.]

\*[Note for ANSI Approved Products: ANSI Z359.14 requires factory authorized inspection of devices. Frequency is based on the type of use and conditions of use. Refer to 7.1.2 ANSI Z359.14 - Appendix A: Inspection Requirements.]

### Cleaning and Storage

Periodically clean the exterior of the device and wipe the lanyard or lifeline using a damp cloth and mild detergent. Towel dry. When not in use, store in a clean, dry location, free of exposure to heat, light, excessive moisture, oil, chemicals, vapors, or other degrading elements. **The lanyard or lifeline should be fully retracted into the device when not in use.**



# Merci

Nous vous remercions d'avoir acheté les équipements antichute Miller fabriqués par Honeywell Safety Products. Les produits de marque Miller sont fabriqués selon des normes de qualité des plus rigoureuses, dans notre usine certifiée ISO 9001. Bien entretenu, un équipement Miller s'utilise des années durant.

## AVERTISSEMENT

Toutes les personnes qui utilisent cet équipement doivent lire, comprendre et suivre toutes les instructions. Tout manquement à cette règle peut avoir pour conséquence des blessures graves ou la mort. Ne pas utiliser cet équipement à moins d'avoir reçu une formation adéquate.

## Des Questions? **APPELEZ** 1.800.873.5242

Il est essentiel que la personne autorisée à utiliser cet équipement de protection contre les chutes lise et comprenne ces instructions. De plus, la loi fédérale oblige les employeurs à s'assurer que tous les utilisateurs ont reçu une formation sur la manière appropriée d'installer, d'utiliser, d'inspecter et d'entretenir les équipements antichute. La formation sur la protection contre les chutes devrait faire partie intégrante d'un programme global de sécurité.

L'utilisation adéquate de systèmes d'arrêt de chute peut épargner des vies et réduire le risque de blessures graves consécutives à une chute. L'utilisateur doit être sensibilisé au fait que les forces subies lors d'un arrêt de chute ou d'une suspension prolongée peuvent causer des blessures corporelles. Dans l'incertitude sur la capacité de la personne à utiliser ce produit, consulter un médecin. Les femmes enceintes et les mineurs ne doivent pas utiliser ce produit.

## 1.0 Objet

Les câbles de sécurité autorétractables de Miller, y compris les limiteurs de chute et les sangles rétractables, sont des dispositifs rétractables indépendants conçus pour être utilisés par le personnel dans des situations qui exigent une protection contre les chutes ainsi qu'une mobilité totale de l'ouvrier.

## 2.0 Exigences, Mises en Garde et Restrictions Générales

### 2.1 Exigences Générales

Les avertissements et instructions devront être mis à la disposition des personnes/utilisateurs autorisés.

**Les personnes/utilisateurs autorisés doivent se reporter à la réglementation applicable en matière de sécurité en milieu de travail, ainsi qu'aux normes ANSI ou CSA pertinentes. Veuillez vous reporter aux étiquettes apposées sur les produits pour des informations plus détaillées sur les règlements OSHA, ainsi que les normes ANSI et CSA auxquelles ces produits sont conformes.**

Toutes les personnes qui utilisent cet équipement doivent être formées au mode d'emploi adéquat dans les espaces clos.

Des précautions doivent être prises afin d'éliminer de la zone de travail les obstacles, débris, matériaux ou autres éléments présentant un danger et qui pourraient causer des blessures ou nuire au bon fonctionnement du système.

L'équipement doit être inspecté avant chaque utilisation selon les directives du fabricant.

L'équipement doit être régulièrement inspecté par une personne qualifiée.

Pour minimiser le risque de décrochage accidentel, une personne compétente doit s'assurer de la compatibilité du système.

Il est interdit de modifier l'équipement, de quelque façon que ce soit. Les réparations doivent être effectuées uniquement par le fabricant de l'équipement, ou par des personnes ou entités autorisées par écrit par le fabricant.

Tout produit déformé, anormalement usé ou détérioré doit être immédiatement mis au rebut.

Tout équipement soumis à une chute doit être mis hors service.

L'utilisateur doit posséder un plan de sauvetage et avoir les moyens de le mettre en œuvre lorsqu'il utilise cet équipement.

Ne jamais utiliser un équipement de protection contre les chutes dans un but autre que celui pour lequel il a été prévu. Ne jamais utiliser un tel équipement pour remorquer ou lever une charge.

Les matériaux synthétiques doivent être protégés contre le laitier (de soudure), les étincelles chaudes, les flammes nues ou autres sources de chaleur. Dans de tels cas, on recommande d'utiliser des matériaux résistant à la chaleur.

Dans la sélection d'équipement de protection contre les chutes, on doit tenir compte des risques environnementaux. Les équipements ne doivent pas être exposés aux dangers environnementaux ni aux produits chimiques qui peuvent produire un effet nocif. Pour utiliser l'équipement dans des environnements hautement corrosifs ou caustiques, il faut mettre en place un programme d'inspection et d'entretien à intervalles rapprochés pour maintenir l'intégrité du dispositif.

Éviter tout contact entre un équipement et un objet susceptible de l'endommager, incluant notamment, sans que la liste soit exhaustive : des arêtes vives, une surface abrasive, rugueuse ou à haute température, du matériel de soudage, une source de chaleur, un appareil électrique présentant un danger ou une machine mobile.

Ne pas exposer les équipements aux dangers pour lesquels ils n'ont pas été conçus. En cas de doute, consulter le fabricant.

Toujours vérifier qu'il n'y a pas d'obstacles en dessous de la zone de travail et que le trajet en cas de chute est dégagé.

Prévoir une distance de dégagement suffisante en dessous de la surface de travail.

Ne jamais ôter une étiquette apposée sur un produit; des informations et avertissements importants y sont en effet inscrits à l'intention de la personne/de l'utilisateur autorisé.

## 2.2 Avertissements et Limitations

### CAPACITÉ

**Pour utilisation par UNE seule personne.** La capacité maximale pour la plupart des lignes de vie rétractables Miller est de 310 lb (140,6 kg), y compris le poids corporel, les vêtements et les outils. Certaines lignes de vie autorétractables sont disponibles avec une capacité maximale de \*400 lb (181,4 kg) ou offrent une telle capacité. Prière de se reporter aux étiquettes de produit sur la ligne de vie autorétractable et aux spécifications de performance fournies dans la section Identification du produit, spécifications et étiquettes du présent manuel.

Lorsqu'elles sont utilisées avec un absorbeur d'énergie Miller 928LS, les lignes de vie autorétractables de marque Miller ont une capacité maximale nominale de \*400 lb (181,4 kg) dans des applications d'installation aérienne. L'absorbeur d'énergie doit être fixé entre l'amarrage métallique dorsal du harnais de l'utilisateur et la ligne de vie autorétractable. Une zone de dégagement supplémentaire en cas de chute est nécessaire pour cette configuration. Prière de se reporter à l'étiquette de l'absorbeur d'énergie afin de déterminer sa distance maximale d'allongement/de décélération et ajouter ce facteur au calcul de la zone de dégagement en cas de chute de votre ligne de vie autorétractable.

*\*Si le système est utilisé par un employé ayant un poids total, avec ses outils, se situant entre 310 lb (140,6 kg) et 400 lb (181,4 kg), l'employeur doit alors*

*modifier les critères et protocoles afin d'assurer une protection adéquate pour de telles charges plus lourdes, sinon le système ne sera pas considéré comme conforme aux exigences de l'OSHA 1926.502(d)(16). [La plage de capacité ANSI est de 130 à 310 lb (59 à 140,6 kg).]*

### RÉTRACTION ET BLOCAGE DE LA LIGNE DE VIE

**Ne pas utiliser le dispositif s'il ne se rétracte pas.** Toujours maintenir la tension sur le câble de sécurité pendant la rétraction.

**Le dispositif doit être soumis à des tests de verrouillage avant chaque usage. Ne pas utiliser le dispositif si les freins ne s'enclenchent pas.**

### UTILISATION

**Ancrer le dispositif verticalement en position surélevée chaque fois que possible.** Dans le cadre de ce manuel d'instructions, une application avec ancrage en hauteur implique que le cordage de sécurité ne comporte aucun jeu lorsque l'unité est montée au-dessus de l'utilisateur et connectée à l'amarrage métallique dorsal de l'utilisateur. Pour connaître la compatibilité avec d'autres applications d'installation, prière de se reporter à la section 5.0 Installation/utilisation.

**Ne jamais travailler au-dessus du dispositif à moins que les instructions ne permettent ces applications d'installation pour votre modèle particulier de ligne de vie autorétractable.**

Certaines lignes de vie autorétractables et certains limiteurs de chute peuvent être utilisés avec des systèmes de ligne de vie horizontale approuvés par Honeywell. Il convient de toujours se reporter aux instructions fournies avec le système de ligne de vie horizontale afin de déterminer si le modèle de votre ligne de vie autorétractable peut être utilisé avec le système.

Le dispositif doit être installé et utilisé de manière à réduire au minimum le risque d'une chute par balancement.

Faire en sorte que le câble de sécurité ne devienne pas lâche.

Ne jamais utiliser le dispositif comme un dispositif de contrainte ou de positionnement.

## ENTRETIEN

Ne pas lubrifier ce dispositif.

Le dispositif doit être tenu propre et exempt de contaminants.

Les câbles de sécurité autorétractables doivent être retirés du service si une partie quelconque du système semble endommagée ou ne passe pas l'inspection, ou si le dispositif a subi des contraintes d'arrêt de chute.

Ne pas tenter de réparer ce dispositif. Si un câble de sécurité autorétractable ne fonctionne pas comme il faut ou nécessite des réparations, retourner le dispositif au fabricant de l'équipement ou au centre d'entretien autorisé par écrit par le fabricant, pour les réparations voulues. [ Les dispositifs qui ne passent pas l'inspection et qui ne sont pas réparables doivent être éliminés comme il se doit. ]

## 3.0 Compatibilité du Système

Les lignes de vie autorétractables Miller sont conçues pour usage avec les composants approuvés par Honeywell seulement. Les substitutions ou les remplacements par des combinaisons de composants ou de sous-systèmes non approuvés peuvent nuire à leur sécurité de fonctionnement réciproque et ainsi remettre en cause la compatibilité des éléments du système. Cette incompatibilité peut nuire à la sécurité et à la fiabilité de l'ensemble du système.

## 3.1 Composants du système antichute personnel

Une protection maximale du travailleur passe par la mise en place et l'utilisation adéquate de trois composants clés du système antichute personnel.

### A. ANCRAGE/CONNECTEUR D'ANCRAGE

Le premier composant est l'ancrage/le connecteur d'ancrage. L'ancrage, également appelé point d'ancrage ou point de raccordement, est un point solide d'attache pour le raccordement des équipements et il doit pouvoir supporter 5 000 lb (22,2 kN) par travailleur ou satisfaire les exigences OSHA pour un facteur de sécurité de deux tel qu'une poutre en I ou autre structure de support. Un connecteur d'ancrage, tel que la sangle transversale, le boucle en D ou l'ancrage de crochet de tige d'armature, est parfois nécessaire pour un raccordement compatible entre le dispositif de raccord et l'ancrage.

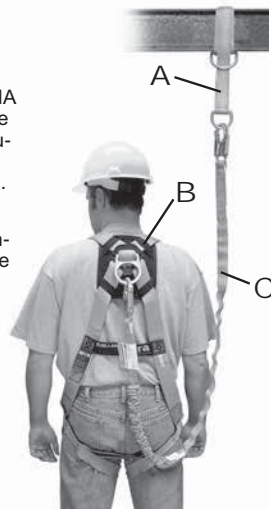
### B. ÉQUIPEMENT DE PROTECTION INDIVIDUELLE

Le deuxième composant du système est l'équipement de protection personnelle que porte le travailleur durant l'exécution du travail. La seule forme de survêtement acceptable pour la protection contre les chutes est le harnais complet. Les harnais complets sont conçus de manière à faciliter l'arrêt d'une chute libre et ils doivent être portés chaque fois que les travailleurs sont exposés à un risque de chute libre.

### C. DISPOSITIF DE CONNEXION

Le troisième composant du système est le dispositif de connexion, le lien critique qui joint le survêtement à l'ancrage/au connecteur d'ancrage. La caractéristique la plus importante du dispositif de connexion est l'absorbeur d'énergie incorporé. Que le dispositif soit une corde d'amarrage à absorbeur d'énergie ou un cordage de sécurité à rétraction automatique, il a été conçu pour réduire substantiellement les forces mises en jeu lors de l'arrêt d'une chute. Une corde d'amarrage constituée par une corde, une sangle ou un câble et servant de dispositif antichute DOIT ÊTRE utilisé en même temps qu'un absorbeur d'énergie (par exemple : enveloppe compacte SofStop de Miller).

**Aucun de ces composants ne peut assurer à lui seul une protection contre les chutes. Cependant, lorsqu'il est utilisé correctement et en conjonction avec l'autre, ils forment un système antichute personnel qui devient une importance vitale pour la sécurité sur le chantier.**



## 3.2 Instructions et Avertissements se Rapportant aux Composants

### ANCRAGES/CONNECTEURS D'ANCRAGE

- Les ancrages doivent pouvoir supporter une charge de 5 000 livres (22.2 kN) ou satisfaire aux exigences 1926.502 de l'OSHA, avec une marge de sécurité de 2.
- Les exigences ANSI qui s'appliquent aux ancrages sont les suivantes :
  - L'ancrage non certifié d'un dispositif anti-chute doit supporter une charge statique de 5 000 lb (22.2 kN), tandis qu'un ancrage certifié doit supporter deux fois la force maximale mise en jeu lors de l'arrêt d'une chute.
  - Lorsque plus d'un système est fixé à un ancrage, les résistances d'ancrage ci-dessus doivent être multipliées par le nombre de systèmes rattachés à l'ancrage.
- Toujours travailler directement sous le point d'ancrage, pour éviter toute blessure par chute avec déplacement latéral.
- Lors de la sélection d'un point d'ancrage, il faut toujours se reporter aux informations de calcul de la zone de dégagement de chute fournies avec le dispositif de connexion pour s'assurer que le point d'ancrage est à une hauteur qui ne permet pas à un utilisateur de frapper un point plus bas en cas de chute. Il ne faut pas oublier que les absorbeurs d'énergie s'allongent lorsqu'ils sont soumis aux forces d'arrêt de chute (pour de plus amples renseignements, prière de se reporter aux étiquettes/instructions fournies avec l'absorbeur d'énergie).
- Un connecteur d'ancrage doit être compatible avec le crochet mousqueton ou le mousqueton et ne doit en aucun cas faire supporter une charge au système d'ouverture.

### ÉQUIPEMENT DE PROTECTION INDIVIDUELLE

- La seule forme de survêtement acceptable pour la protection contre les chutes est le harnais complet.
- Il est essentiel que le harnais soit porté adéquatement. Vérifier les boucles visuellement afin d'assurer des connexions adéquates et sûres avant chaque utilisation. Les sangles doivent être connectées et réglées pour un ajustement serré.
- Les dispositifs de connexion antichute doivent être fixés à l'anneau en D situé à l'arrière d'un harnais de sécurité complet. Un élément de fixation avant à anneau en D s'utilise comme dispositif anti-chute uniquement en cas de sauvetage, de maintien au travail, d'accès sur corde et pour toute application reconnue selon ANSI Z359.1 et dans laquelle le dispositif anti-chute individuel limite la distance de chute libre à 2 pi (0.6 m) et la force d'arrêt à 900 lb (4.0 kN).
- Les anneaux en D situés sur le côté et à l'avant doivent servir uniquement au maintien en place. (Remarquer l'exception ci-dessus concernant l'anneau en D).
- Un anneau en D au niveau de l'épaule doit servir uniquement à la fonction de sauvetage.
- Ne jamais fixer un crochet pélican à un anneau en D de harnais.
- Une ceinture de travail doit servir uniquement à la fonction de positionnement.

### DISPOSITIFS DE CONNEXION

- Ne réaliser que des connexions compatibles.
- Utiliser uniquement des dispositifs de connexion de sécurité munis de crochets mousquetons à verrouillage ou de mousquetons à verrouillage automatique.
- Connecter les dispositifs de façon à limiter la chute libre à la distance la plus courte possible. [6 pi (1.8 m) au maximum]
- Toujours vérifier visuellement que chaque mousqueton engage librement l'amarrage métallique ou un point d'ancrage/connecteur d'ancrage du harnais et que son doigt d'ouverture est bien fermé et verrouillé. Ne jamais inactiver ou restreindre le doigt d'ouverture verrouillable ni modifier le dispositif de connexion de quelque manière que ce soit.
- S'assurer qu'un crochet mousqueton/mousqueton soit positionné de telle sorte que son système d'ouverture ne supporte jamais de charge.
- L'utilisation d'absorbeurs d'énergie est nécessaire pour réduire les forces d'arrêt de la chute. Tous les absorbeurs d'énergie, longues d'absorption d'énergie et lignes de vie autorétractables Miller limitent les forces d'arrêt de chute maximales à 1 800 lb (8 kN) ou moins.
- Ne jamais laisser une longe/ligne de vie passer sous les bras, les jambes ou le cou de l'utilisateur ou sous tout autre obstacle ni s'emmêler avec ceux-ci.
- Ne pas faire de nœud dans une corde d'amarrage ou un cordage de sécurité ou l'enrouler autour d'arêtes brutes ou coupantes ou encore d'éléments de structure de petit diamètre.
- Ne jamais fixer plusieurs cordes d'amarrage les unes aux autres ou fixer une corde d'amarrage sur elle-même, à moins qu'elle ait été spécialement conçue à cet effet.

## 4.0 Connexions du Système

### Raccordement du soutien du corps et de l'ancrage/connecteur d'ancrage

Pour une protection générale contre les chutes, raccorder le connecteur de câble de sécurité / de longe ( c'est-à-dire, boucle à pression ou mousqueton ) à l'anneau dorsal en D sur le harnais intégral (voir Fig. 1a).

Raccorder le corps du dispositif rétractable à l'ancrage ou au connecteur d'ancrage (voir Fig. 1b). S'assurer que les raccords sont compatibles quant aux dimensions, à la robustesse et à la forme. S'assurer que les connecteurs sont entièrement fermés et verrouillés.



Fig. 1a



Fig. 1b

### Configuration inverse

**[S'applique aux le limiteur de chute individuel Turbo T-BAK ( MFLT ), Le limiteur de chute individuel TurboLite ( MFL ), le limiteur de chute individuel Scorpion ( PFL ), le câble de sécurité autorétractable Black Rhino ( CFL ), le limiteur de chute MiniLite ( FL11 ), le limiteur de chute Titan ( TFL ), les câbles de sécurité autorétractables Web Falcon ( MP16P et MP20P ), la longe rétractable Miller ( 8327 ) et la longe rétractable Titan ( TRW/8FT et TRWS )]**



Fig. 2a



Fig. 2b

Certaines lignes de vie autorétractables et certains limiteurs de chute peuvent également être utilisés dans une configuration inverse dans laquelle le connecteur d'extrémité de ligne de vie/de la longe (à savoir le mousqueton) est raccorder à un ancrage ou à un connecteur d'ancrage compatible et le corps de l'unité rétractable est fixé à l'amarrage métallique dorsale du harnais complet (voir Fig. 2a et 2b).

*Nota : On doit tenir compte du poids du dispositif rétractable quand on choisit cette configuration inverse pour raccorder au soutien du corps et à l'ancrage.*

## 5.0 Installation/Utilisation

**AVERTISSEMENT:** Tous les câbles de sécurité autorétractables de Miller doivent être inspectés et mis à l'épreuve avant chaque utilisation ( voir 7.0 Inspection et maintenance ).

### 5.1 Installation aérienne typique

Les lignes de vie autorétractables Miller sont habituellement montées à un ancrage aérien par la fixation d'ancrage à l'aide d'un mousqueton verrouillable ou d'un autre dispositif de montage approuvé par Honeywell (voir Fig. 3 et 4). L'ancrage doit avoir une résistance à la traction de 5 000 lb ( 22.2 kN ), ou il doit être conçu, installé et utilisé sous la supervision d'une personne qualifiée dans le cadre d'un système complet d'arrêt de chute qui maintient un facteur de sécurité de deux. Lors du choix d'un emplacement de montage, passer en revue toutes les mises en garde et instructions. Le dispositif doit être installé et utilisé de manière à minimiser le risque de chute par balancement.

**[Remarque : dans le cadre de ce manuel d'instructions, une application avec ancrage en hauteur implique que le cordage de sécurité ne comporte aucun jeu lorsque l'unité est montée au-dessus de l'utilisateur et connectée à l'amarrage métallique dorsal de l'utilisateur. Pour les applications avec ancrage non vertical, veuillez communiquer avec le service technique d'Honeywell avant de continuer.]**



### 5.2 Installation par fixation sur la ligne

**[S'applique UNIQUEMENT aux limiteurs de chute personnels à fixation sur la ligne Turbo T-BAK (MFLT)]**

Les limiteurs de chute personnels Miller Turbo T-BAK Tie-Back sont des lignes de vie autorétractables conçues de manière particulière pour permettre à l'utilisateur de s'attacher en toute sécurité à un ancrage. Les limiteurs de chute personnels Miller Turbo T-BAK comportent une sangle très robuste résistant à l'abrasion et le mousqueton 5K qui peut résister à 5 000 lb de force sur la barrière du mousqueton depuis tout angle afin de permettre la fixation sur la ligne de vie à sangle comme par étranglement. **NE PAS TENTER** ce type de connexion avec les limiteurs de chute personnels standards TurboLite ou d'autres lignes de vie autorétractables qui ne sont pas conçues spécifiquement pour une telle connexion. Prière de se reporter au Supplément d'instructions I296 Turbo T-BAK pour des informations complètes sur cette application d'installation.





## 5.3 Installation pour une Application de Levage

**[S'applique aux les limiteurs de chute individuels TurboLite ( Modèles MFL ), les limiteurs de chute individuels Scorpion ( Modèles PFL ), les câbles de sécurité autorétractables Black Rhino ( Modèles CFL ), les limiteurs de chute MiniLite ( Modèles FL11 ), les limiteurs de chute Titan ( Modèles TFL ), les longues rétractables de Miller ( Modèles 8327 ) et les longues rétractables Titan ( Modèles TRW/8FT et TRWS )]**

Honeywell Safety Products recommande de monter toutes les lignes de vie autorétractables Miller à un ancrage aérien adéquat chaque fois que possible. Toutefois, à défaut d'ancrage surélevé, une protection anti-chute dans des applications de levage nécessite des dispositions particulières. La structure de soutien du levage doit répondre aux critères suivants :

- L'ancrage et les rampes de protection au niveau du sol doivent pouvoir supporter au moins 5 000 lb (22.2kN) par ouvrier retenu ou comme partie d'un système intégral personnel d'arrêt de chute qui maintient un facteur de sécurité d'au moins deux; le tout sous la surveillance d'une personne compétente.
- Les rampes de protection se posent à une hauteur qui élimine les risques de chute libre (voir normes de construction : 1926.502(b)(1) et d'industrie générale : 1910.23(e)(1)).
- La rampe de protection doit avoir au moins 1 pouce (25.4 mm) de diamètre.
- Toutes les surfaces pouvant entrer en contact avec le câble de sécurité doivent être lisses, arrondies ou chanfreinées (sans rugosités ni angles vifs) pour éviter d'endommager le câble de sécurité et permettre à l'appareil d'arrêter efficacement une chute.
- La structure de soutien doit encadrer l'utilisateur dans la direction de toute chute possible.
- L'appareil de levage doit être conçu de façon à ne pas basculer en cas de chute (consulter le fabricant de l'appareil).

Honeywell recommande de fixer les câbles de sécurité autorétractables ci-dessus à l'anneau dorsal en D du harnais de l'utilisateur, ou au-dessous, dans les applications de levage, sous la surveillance d'une personne compétente. Comme ces appareils ne sont pas installés au-dessus dans cette application, les forces maximales d'arrêt de chute peuvent excéder la force maximale d'arrêt indiquée sur l'étiquette, mais sans excéder 1 800 lb (8kN).

Tenir compte des points suivants dans l'évaluation d'une application :

- Calculer la distance de dégagement adéquate à partir du dessus de la rampe de protection, conformément aux directives d'emploi des câbles de sécurité autorétractables, prévues au présent manuel d'instructions.
- S'assurer qu'il n'y a aucun risque de chute par balancement.
- Éviter tout contact du câble de sécurité avec des angles vifs.
- Prendre les précautions voulues pour que le câble de sécurité autorétractable ne se coince pas entre deux surfaces, ce qui peut causer une usure excessive du câble et affaiblir celui-ci.

**Prière de communiquer avec les Services techniques Honeywell au 1-800-873-5242 (appuyer sur 4) pour une assistance supplémentaire lors de l'évaluation de cette application d'installation.**



## 5.4 Installation pour Utilisation Horizontale

En ce qui concerne les applications horizontales dans lesquelles la ligne de vie de l'unité rétractable peut se déplacer par-dessus le bord d'une surface plate, Honeywell Safety Products recommande d'utiliser l'absorbeur d'énergie Miller SofStop modèle 928LS raccordé entre l'amarrage métallique dorsal du harnais du travailleur et le mousqueton de la ligne de vie autorétractable. Cela aidera à protéger la ligne de vie et réduira les forces de choc dans l'hypothèse d'une chute.

**ATTENTION :** Lors de l'installation d'un câble de sécurité autorétractable pour utilisation horizontale, des considérations et des mises en garde spéciales s'appliquent. Veuillez communiquer avec le service technique d'Honeywell pour obtenir la lettre technique associée avant de continuer.

## 5.5 Installation dans une application de bord d'attaque

Certaines lignes de vie autorétractables Miller ont été fabriquées spécialement avec l'absorbeur d'énergie SofStop LE pour des applications de bord d'attaque dans lesquelles l'utilisateur est fixé à un point d'ancrage qui peut être au niveau des pieds et dans lesquelles la ligne de vie peut passer par-dessus un bord si l'utilisateur tombe. Prière de se reporter au Supplément d'instructions des lignes de vie autorétractables pour bord d'attaque I322 concernant cette application d'installation.



## 6.0 Calcul de la distance de la zone de dégagement en cas de chute

Il est essentiel de comprendre la manière de calculer la distance de la zone de dégagement en cas de chute pour éviter tout contact avec un niveau inférieur. Utiliser le calcul suivant pour déterminer la zone de dégagement requise en cas de chute.

Calcul de la zone de dégagement en cas de chute  
pour la ligne de vie autorétractable

**[Calcul effectué depuis la hauteur où est effectué le travail]**

Distance d'arrêt maximum

+ (Facteur de position de travail non debout)

+ (Facteur de chute en balancement)

+ Facteur de sécurité de 3 pi (0.9m)

= Zone de dégagement requise en cas de chute

**MISE EN GARDE :** Prière de lire toutes les remarques et de se reporter à tous les schémas de zone de dégagement en cas de chute pour ligne de vie autorétractable afin de déterminer la zone de dégagement requise en cas de chute pour votre application.



Distance d'arrêt maximum de la LVA et du limiteur de chutes	Zone de dégagement minimale requise en cas de chute entre la hauteur où est effectué le travail et le niveau inférieur*			
	Lorsque travaille directement sous le point d'ancrage			Lorsque ne travaille pas directement sous le point d'ancrage
	En position debout	En position accroupie ou agenouillée	En position couchée	En position d'éventuelle chute en balancement
24 po (0,6 m)	5 pi (1,5m)	8 pi (2,44m)	10 pi (3,05m)	Varie - zone de dégagement supplémentaire requise en cas de chute
39 po (1m)	6 pi-3 po (1,9m)	9 pi-3 po (2,82m)	11 pi-3 po (3,43m)	
54 po (1,4m)	7 pi-6 po (2,29m)	10 pi-6 po (3,2m)	12 pi-6 po (3,81m)	

\*Cette table indique les zones de dégagement minimales générales requises en cas de chute. Un calcul exact doit être effectué en tenant compte de la LVA et du limiteur de chutes qui seront utilisés et d'une évaluation du lieu de travail ainsi que des conditions qui peuvent affecter la zone de dégagement en cas de chute du travailleur.

(voir Fig. 8a, 8b, 8c & 8d.)

### REMARQUES IMPORTANTES :

La ligne de vie autorétractable doit être ancrée en haut pour assurer l'exactitude du calcul de la zone de dégagement en cas de chute et des informations connexes.

Il importe de comprendre que d'autres facteurs, notamment si l'utilisateur effectue le travail en position debout, accroupie ou couchée et/ou si l'utilisateur travaille directement sous le point d'ancrage ou à angle, peuvent affecter la distance de chute lors de l'utilisation d'un dispositif rétractable.

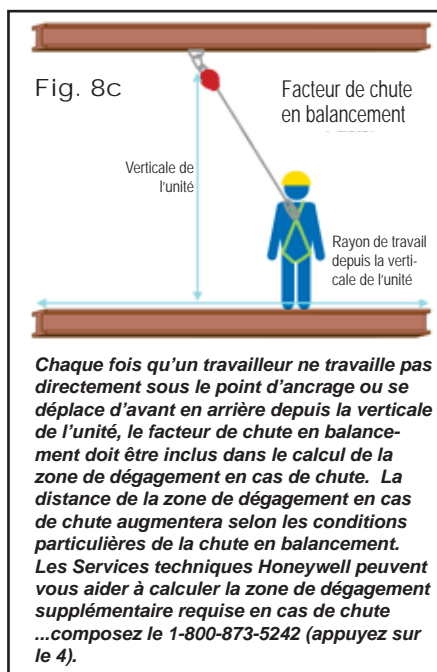
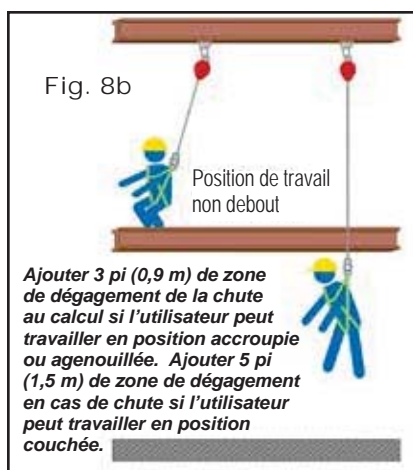
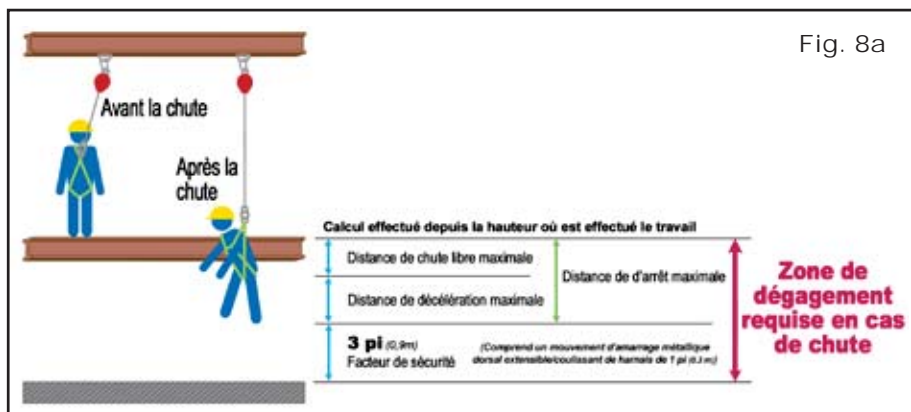
Le calcul de la zone de dégagement en cas de chute pour la ligne de vie autorétractable présume que l'utilisateur est en position debout. Si l'utilisateur effectue du travail en position accroupie ou agenouillée, il faut ajouter 3 pi (0,9 m) à la zone de dégagement en cas de chute. Si l'utilisateur effectue du travail en position couchée, il faut ajouter 5 pi (1,5 m) à la zone de dégagement en cas de chute.

Le calcul de la zone de dégagement en cas de chute pour la ligne de vie autorétractable présume également que l'utilisateur travaille directement sous le point d'ancrage, minimisant ainsi la possibilité d'une chute en balancement. Dans une situation de chute en balancement, la distance de chute totale sera plus grande que si l'utilisateur travaillait directement sous le point d'ancrage. Dans certaines applications, il peut ne pas être possible de travailler directement sous le point d'ancrage. Dans un tel cas, le travailleur doit augmenter la distance de la zone de dégagement en cas de chute afin de tenir compte du facteur de chute en balancement. De toute manière, le travailleur ne doit pas être exposé à une éventuelle chute en balancement où il peut y avoir contact avec un autre objet.

La distance d'arrêt maximale (chute libre + décélération) varie selon la ligne rétractable. Il convient de toujours se reporter aux étiquettes du produit particulier afin de déterminer la distance d'arrêt maximale.

Si un cordage de sécurité autorétractable disposant d'une distance d'arrêt maximale inférieure à 1,4 m (54 po) a été approuvé (par Honeywell) pour une application avec ancrage non vertical et est utilisée dans une telle application, la distance d'arrêt maximale de 1,4 m (54 po) conforme aux normes doit être utilisée lors du calcul de la distance de la zone de dégagement.

Si un cordage de sécurité autorétractable disposant d'une distance d'arrêt maximale inférieure à 1,4 m (54 po) a été approuvé (par Honeywell) pour une utilisation par un travailleur pesant entre 140,6 kg (310 lb) et 181,4 kg (400 lb), la distance d'arrêt maximale de 1,4 m (54 po) conforme aux normes doit être utilisée lors du calcul de la distance de la zone de dégagement.



Pour toute question sur le calcul de la distance de la zone de dégagement en cas de chute, veuillez communiquer avec les Services techniques Honeywell :

**1-800-873-5242 (appuyez sur le 4)**

# 7.0 Inspection et Entretien

## 7.1 Fonctionnement et Inspection

**AVERTISSEMENT : L'utilisateur doit effectuer les vérifications de fonctionnement et les inspections suivantes avant chaque usage.** De plus, une personne compétente doit inspecter les équipements à intervalles réguliers, au moins une fois par an.\*

*\*La norme Z359.14 de l'ANSI fournit des exigences d'inspection supplémentaires en fonction du type d'utilisation et des conditions d'utilisation. Reportez-vous à la section 7.1.2 ANSI Z359.14 Annexe A : Exigences d'inspection pour la conformité avec cette norme.*

**ATTENTION :** Toujours porter des gants lorsqu'on inspecte les cordes / câbles métalliques; des brins brisés peuvent causer des blessures !

**1. Boîtier et pièces du dispositif (voir Fig. 9a) :** Inspecter le dispositif pour s'assurer qu'il n'y a pas d'attaches libres ni de pièces pliées, craquelées, déformées, usées, endommagées ou qui fonctionnent mal.



Fig. 9a

**2. Longes / câbles de sécurité (voir Fig. 9b) :**

**ATTENTION :** Ne pas laisser se rétracter une longe ou un câble de sécurité; toujours maintenir une tension pendant la rétraction !

a. Avec le dispositif installé, vérifier la rétraction et la tension de la longe ou du câble de sécurité en tirant vers l'extérieur plusieurs pieds de sangle ou de câble et lui permettre de réintégrer le dispositif. Toujours maintenir une légère tension sur la sangle ou le câble pendant la rétraction. La sangle ou le câble devrait se tirer facilement et se rentrer complètement.

Si la sangle ou le câble ne se tire pas facilement ou résiste à la rétraction, dérouler toute la sangle ou tout le câble à l'extérieur du boîtier et lui permettre de se rétracter lentement sous tension. Ne pas utiliser le dispositif si les câbles de sécurité ne se rétractent pas comme il faut.

b. Vérifier régulièrement la sangle ou le câble sur toute la longueur pour voir s'il n'y a pas de signes de dommages. Vérifier la présence de coupures, de brûlures, de corrosion, d'enroulements, d'éraillures ou de parties usées. Inspecter toutes les coutures pour voir s'il y a des mailles lâches, brisées ou endommagées. Inspecter le câble pour voir s'il y a des brins brisés ou s'il a été endommagé par des produits chimiques.



Fig. 9b



Fig. 9c

**3. Mécanisme de freinage (voir Fig. 9c) :** On peut vérifier le mécanisme de freinage en saisissant la sangle ou le câble AU-DESSUS de l'indicateur de charge et en appliquant une bonne pression constante vers le bas, ce qui devrait enclencher les freins. Il ne doit pas y avoir de glissement de la sangle ou du câble lorsque les freins sont appliqués. Dès que la tension est supprimée, les freins se dégagent et le dispositif revient au mode rétractable.

**4. Matériel : Mousqueton/crochets de tige d'armature/émerillons d'ancrage, etc. (voir Fig. 9d et 9e) :** Inspecter attentivement pour tout dommage, distorsion, fissuration, corrosion ou surface piquée. Le doigt d'ouverture du mousqueton doit caler dans le nez sans gripper et il ne doit pas être déformé ni obstrué. Le



Fig. 9d



Fig. 9e

ressort du doigt doit exercer une force suffisante pour fermer solidement le doigt. Le mécanisme de verrouillage du doigt d'ouverture doit empêcher le doigt de s'ouvrir lorsqu'il est fermé. Le mousqueton et les émerillons d'ancrage doivent fonctionner régulièrement.

5. Indicateur d'impact de charge (**voir 7.1.1**): Avant chaque usage, inspecter l'indicateur d'impact de charge pour voir s'il présente des signes d'activation ou s'il y a des composants pliés, craquelés ou déformés.
6. **Étiquettes/marquages** : S'assurer que toutes les étiquettes et tous les marquages sont présents et lisibles.

### 7.1.1 Indicateurs D'impact de Charge

Votre câble de sécurité autorétractable Miller est muni de l'un des indicateurs d'impact de charge suivants :

Indicateur de charge de sangle (voir Fig. 10a)

Un pli cousu dans la sangle au-dessus de la boucle à pression sert d'indicateur d'impact. Un drapeau d'avertissement est inclus et sera exposé, si le câble de sécurité a subi des contraintes d'arrêt de chute.

Indicateur de charge de boucle à pression (voir Fig. 10b)

Cet indicateur de charge est intégré à la boucle à pression et est situé à l'articulation de la boucle. L'œil à émerillon s'allongera et exposera une zone rouge à l'emplacement illustré lorsqu'il sera assujéti aux forces d'arrêt de la chute.

Indicateur de charge Karlstop (voir Fig. 10c)

Si l'élément est muni d'un crochet à double verrou, il peut être doté de l'indicateur de chute Karlstop. S'il est soumis à des forces d'arrêt de chute, un bris se produit dans l'indicateur de charge, selon l'illustration.

LES DISPOSITIFS QUI N'ONT PAS PASSÉ  
L'INSPECTION OU QUI ONT SUBI DES  
CONSTRAINTES D'ARRÊT DE CHUTE  
DOIVENT ÊTRE RETIRÉS DU SERVICE.

Fig. 10a

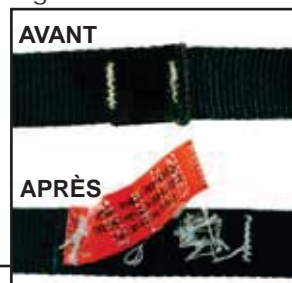


Fig. 10b



Fig. 10c



### 7.1.2 ANSI Z359.14 - Annexe A : Exigences d'inspection

L'équipement doit toujours être inspecté par la personne ou l'utilisateur autorisé avant chaque utilisation. De plus, la norme ANSI Z359.14 requiert que les inspections soient menées par une personne qualifiée (autre que l'utilisateur) ET par une entité autorisée par l'usine selon le programme suivant. (\*Consultez la remarque figurant dans la section 7.2 Entretien.)

## ANSI Z359.14 - Annexe A : Exigences d'inspection

Type d'usage	Exemples d'applications	Conditions d'utilisation	Fréquence d'inspection par une personne qualifiée	Inspection autorisée par l'usine
Peu fréquent à léger	Sauvetage ou espace confiné, entretien d'usine	Bonnes conditions de stockage, utilisation en intérieur ou peu fréquente en extérieur, température intérieure, environnements propres	Annuelle	Au moins tous les 2 à 5 ans, mais pas plus que les intervalles requis par le fabricant
Modéré à fort	Transport, construction résidentielle, services publics, entrepôt	Conditions de stockage correctes, utilisation intérieure ou fréquente en extérieur, n'importe quelle température, environnements propres ou poussiéreux	Semestrielle ou annuelle	Au moins tous les 1 à 2 ans, mais pas plus que les intervalles requis par le fabricant
Lourd à continu	Construction commerciale, pétrole et gaz, exploitation minière	Conditions de stockage difficiles, utilisation extérieure prolongée ou continue, n'importe quelle température, environnements sales	Trimestrielle à semestrielle	Au moins tous les ans, mais pas plus que les intervalles requis par le fabricant

## 7.2 Maintenance

Grâce à un entretien de base, on prolonge la durée de vie des équipements antichute et on leur permet de mieux remplir leur fonction de sécurité vitale.

### Entretien

L'entretien des câbles de sécurité autorétractables et des limiteurs de chute Miller ne doit être effectué que par Honeywell Safety Products ou par des personnes ou entités autorisées par écrit par Honeywell. On doit tenir un registre de toutes les dates d'entretien et d'inspection pour ce dispositif. Seules les pièces de rechange Miller d'origine sont approuvées pour être utilisées dans ce dispositif. Les dispositifs réparables doivent être retournés à nos établissements ou à un centre de service approuvé chaque fois qu'ils ont été soumis à des contraintes d'arrêt de chute, pour fins d'inspection et de recertification. Dans le cas des dispositifs non réparables qui ne sont pas acceptés à l'inspection, on doit s'en défaire de façon à éviter qu'on les utilise éventuellement par inadvertance. Communiquer avec votre distributeur Miller ou appeler les Services Techniques de Honeywell au 1 (800) 873-5242 pour obtenir un numéro d'autorisation de retour.

Les câbles de sécurité autorétractables de Miller (inclus dans ce manuel) n'exigent pas de recertification annuelle de l'usine.\*

\*Honeywell Safety Products, en tant que fabricant, n'exige aucune recertification annuelle en usine pour les cordages de sécurité autorétractables Miller. Le respect des normes ANSI Z359.14 et CSA Z259.2.2 se fait sur la base du volontariat, et l'utilisateur final ou l'entreprise choisissent en dernier lieu de suivre les exigences d'inspection et de recertification pour se conformer à la norme.

\*[Nota pour les produits approuvés par l'ACNOR : la norme Z259.2.2-98 de l'ACNOR stipule que les dispositifs de types 2 et 3 doivent être retournés au fabricant ou à un agent de service autorisé au plus tard deux ans suivant la date de fabrication en vue de leur inspection et de leur maintenance, et chaque année par la suite.]

\*[Remarque pour les produits approuvés par ANSI : La norme ANSI Z359.14 nécessite une inspection des appareils qui est autorisée par l'usine. La fréquence repose sur le type et les conditions d'usage.

Prière de se reporter à l'Annexe A : Exigences d'inspection selon la norme ANSI Z359.14.]

### Nettoyage et entreposage

d'un chiffon humide et d'un détersif doux. Éponger avec une serviette. Lorsque le produit n'est pas en usage, le ranger dans un endroit propre et sec, non exposé à la chaleur, à la lumière, à l'humidité excessive, à l'huile, aux produits chimiques, aux vapeurs ou à d'autres éléments causant une détérioration. **La longe ou le câble de sécurité doivent être rentrés complètement dans le dispositif lorsqu'ils ne sont pas en usage.**

## Gracias

Gracias por comprar el equipo de protección contra caídas Miller fabricado por Honeywell Safety Products. Los productos de la marca Miller son manufacturados para cumplir con las más altas normas de calidad en nuestra fábrica, la cual posee la certificación ISO 9001. Cuidados como es debido, los equipos anticaídas Miller le servirán muchos años.



### ADVERTENCIA

Toda persona que use este equipo debe leer, comprender y seguir cabalmente todas las instrucciones. No hacerlo podría tener como consecuencia lesiones graves o mortales. No use este equipo si no ha sido debidamente entrenado.

## ¿Consultas?

LLAMAR AL  
1.800.873.5242

Es fundamental que la persona o usuario autorizado de este equipo anticaídas lea y comprenda las presentes instrucciones. Además, la ley federal requiere que los empleadores se aseguren de que todos los usuarios reciban capacitación en instalación, uso, inspección y mantenimiento apropiados para el equipo de protección contra caídas. La capacitación anticaídas debe ser parte integral de un programa completo de seguridad.

La utilización correcta de los sistemas de detención de caídas puede salvar vidas y disminuir las posibilidades de lesiones graves en caso de una caída. Los usuarios deben estar conscientes de que las fuerzas ejercidas para detener una caída o durante una suspensión prolongada pueden causar lesiones. Consulte a un médico en caso de duda sobre la capacidad del usuario para emplear este producto. Las mujeres embarazadas y los niños no deben usar este producto.

## 1.0 Propósito

Las cuerdas salvavidas autorretráctiles Miller, los limitadores de caídas y las cuerdas de seguridad tejidas retráctiles son dispositivos completos retráctiles fabricados para ser usados en aplicaciones en las que el trabajador necesita protección contra caídas y movilidad irrestricta.

## 2.0 Requisitos Generales, Advertencias y Limitaciones

### 2.1 Requisitos Generales

Deben suministrarse a las personas y usuarios autorizados todas las advertencias e instrucciones.

**Todas las personas y usuarios autorizados deben consultar los reglamentos de seguridad laboral y las normas ANSI o CSA que correspondan. Las etiquetas del producto contienen información sobre los reglamentos OSHA y las normas ANSI y CSA que cumple el producto.**

Todas las personas o usuarios autorizados de este equipo deben ser entrenados en los debidos procedimientos en espacios confinados.

Siempre deben tomarse las debidas precauciones al retirar del área de trabajo obstrucciones, basura, material y otros peligros reconocidos que pudieran causar lesiones o interferir en el funcionamiento del sistema.

Todo el equipo debe ser inspeccionado visualmente antes de cada uso de conformidad con las instrucciones del fabricante.

Todo el equipo debe ser inspeccionado con regularidad por una persona calificada.

A fin de reducir al mínimo las posibilidades de un desenganche accidental, una persona competente debe garantizar la compatibilidad del sistema.

El equipo no debe ser alterado de ninguna forma. Las reparaciones deben ser efectuadas exclusivamente por el fabricante del equipo o bien por personas o entidades autorizadas por escrito por el fabricante.

Todo producto con deformidades, desgaste anormal o deterioro debe ser desechado de inmediato.

Todo equipo sometido a una caída debe ser  
29 puesto fuera de servicio.



El usuario debe contar con un plan y medios de rescate a mano para poder aplicarlos al usar este equipo.

Jamás lo utilice para fines distintos al proyectado. No use jamás el equipo para remolcar o izar objetos.

Debe protegerse todo el material sintético con el objeto de mantenerlo alejado de escorias, chispas calientes, llamas y otras fuentes de calor. Para tales usos se recomienda el uso de materiales resistentes al calor.

Al seleccionar equipo anticaídas deben tomarse en cuenta los riesgos medioambientales. El equipo no debe ser expuesto a los peligros ambientales y químicos que pueden producir un efecto dañino. El uso del equipo en entornos muy corrosivos o cáusticos exige un programa de inspecciones y servicio más frecuentes para garantizar la integridad continuada del dispositivo.

No permita que la cuerda o el tejido entren en contacto con cualquier cosa que pueda dañarlos, como superficies afiladas, abrasivas, ásperas o a alta temperatura, soldadura, fuentes de calor, peligros eléctricos o maquinaria en movimiento.

No exponga el equipo a ningún daño que el equipo no esté diseñado para soportar. Consulte al fabricante en caso de dudas.

Siempre revise para ver si hay obstrucciones abajo del área de trabajo con el fin de asegurarse de que esté despejada la trayectoria de una posible caída.

Deje una distancia segura de caída adecuada abajo de la superficie de trabajo.

Nunca desprenda etiquetas de los productos, las cuales pueden incluir importantes advertencias e información para la persona o usuario autorizado.

## 2.2 Advertencias y Limitaciones

### CAPACIDAD

**Para uso de UNA sola persona. La capacidad máxima para la mayoría de cuerdas de seguridad autorretráctiles Miller es de 310 lbs (140,6 kg), incluyendo el peso corporal, la ropa y las herramientas. Hay cuerdas de seguridad autorretráctiles selectas disponibles que ofrecen una capacidad máxima de \*400 lb. (181,4 kg). Consulte las etiquetas de los productos en las cuerdas de seguridad autorretráctiles y las especificaciones de desempeño brindadas en la Identificación del producto, sección de Especificaciones y Etiquetas de este manual.**

Cuando es usado con un amortiguador Miller 928LS, las cuerdas de seguridad autorretráctiles de marca Miller están clasificadas para una capacidad máxima de \*400 lbs (181,4 kg) para aplicaciones de instalación elevadas. El amortiguador debe ser adjuntado entre el anillo en forma de D posterior del arnés del usuario y la cuerda de seguridad autorretráctil. Se necesitan márgenes de caída adicionales para esta configuración. Consulte la etiqueta del amortiguador para determinar su distancia máxima de alargamiento/desaceleración y agregue este factor a su cálculo de margen de caída de la cuerda de seguridad autorretráctil.

*\*Nota: Si el sistema es utilizado por un trabajador con un peso total (cuerpo y herramientas) entre 310 lb (140,6 kg) y 400 lb (181,4 kg), entonces el empleador debe modificar como corresponda los criterios y protocolos a fin de proporcionar la debida protección para tales pesos más pesados, o el sistema no se considerará estar en cumplimiento de los requisitos de la norma OSHA 1926.502(d)(16). [El rango de capacidad de ANSI es de 130 lbs. a 310 lbs. (59 kg-140,6 kg).]*

### RETRACCIÓN Y BLOQUEO DE LA CUERDA DE SEGURIDAD

**No use el dispositivo si no se retrae. Siempre mantenga tensión en la cuerda salvavidas mientras se retrae.**

**El aseguramiento del dispositivo debe probarse antes de cada uso. No use el dispositivo si no se activa el freno.**

### USO

**El dispositivo de anclaje debe estar en lo alto en posición vertical siempre que sea posible. A efectos de este manual de instrucciones, una instalación en altura implica que no haya ningún componente flojo cuando la unidad sea montada sobre el usuario y conectada la anilla en "D" trasera del mismo. Para que sea apropiado para otras aplicaciones de instalación, consulte Instalación/Uso 5,0.**

**Nunca trabaje sobre el dispositivo, a menos que las instrucciones permitan dichas aplicaciones de instalación para su modelo específico de cuerdas de seguridad autorretráctiles.**

**Seleccione las cuerdas de seguridad autorretráctiles que pueden ser usadas con los sistemas de cuerdas de seguridad horizontales aprobados por Honeywell. Siempre consulte las instrucciones brindadas con el sistema horizontal de cuerdas de seguridad para determinar si su modelo de cuerda de seguridad autorretráctil puede ser usado con el sistema.**

**Este dispositivo debe instalarse y usarse de tal manera que se reduzca al mínimo la posibilidad de una caída columpiada.**

**No permita que se ponga holgada la cuerda salvavidas.**

**Ne jamais utiliser le dispositif comme un dispositif de contrainte ou de positionnement.**

#### MANTENIMIENTO

**No lubrique este dispositivo.**

**El dispositivo debe mantenerse limpio y libre de contaminantes.**

**Deben retirarse del servicio las cuerdas salvavidas si cualquier parte del sistema**

**de las mismas parece dañado o no pasa la inspección, o si la unidad ha sido sujeta a las fuerzas de detención de una caída.**

**No intente dar servicio a este dispositivo. Si una cuerda salvavidas autorretráctil no funciona debidamente o necesita repararse, envíela para su reparación al fabricante del equipo o a un centro de servicio autorizado por el fabricante. [Las unidades que no pasen la inspección y no puedan repararse deben ser desechadas de la forma debida.]**

## 3.0 Compatibilidad del Sistema

Las cuerdas salvavidas autorretráctiles Miller están diseñadas para usarse solo con componentes aprobados por Honeywell. La sustitución o reemplazo de dichos componentes con combinaciones no aprobadas de componentes o subsistemas, puede afectar o interferir en el funcionamiento seguro de cada componente y poner en peligro la compatibilidad dentro del sistema. Esta incompatibilidad puede afectar la fiabilidad y seguridad del sistema total.

## 3.1 Componentes del sistema personal de frenado de caídas

Tres componentes principales del sistema personal de frenado de caídas deben estar en su lugar y usarse debidamente para que puedan proporcionar la máxima protección al trabajador.

### A. ANCLAJE/CONECTORE DE ANCLAJE

El primer componente es el anclaje/conector de anclaje. El anclaje, también conocido como el punto de anclaje o punto de amarre, es un punto de ajuste seguro para dispositivos de conexión y debe ser capaz de aguantar 5000 lbs (22,2 kN) por trabajador o cumplir con los requisitos OSHA para uno o dos factores de seguridad, como vigas L u otra estructura de apoyo. A veces, un conector de anclaje, tal como la correa de sujeción, perno en forma de D o anclaje de gancho para barra de refuerzo, es necesario para realizar una conexión compatible entre el dispositivo de conexión y el anclaje.

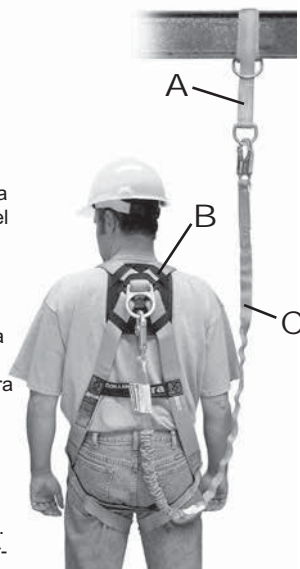
### B. APAREJO

El segundo sistema de componentes es el equipo de protección personal usado por el trabajador mientras realiza el trabajo. La única forma de prenda corporal aceptable para el frenado de caídas es el arnés de cuerpo completo. Los arneses de cuerpo completo están diseñados para ayudar a frenar caídas libres y debe usarse en situaciones donde los trabajadores estén expuestos a una posible caída libre.

### C. DISPOSITIVO DE CONEXIÓN

El tercer componente del sistema es el dispositivo de conexión, el enlace crítico que une la prenda corporal al anclaje/conector de anclaje. La característica más importante del dispositivo de conexión es el amortiguador incorporado. Independientemente de que dicho dispositivo sea una cuerda de seguridad con amortiguador de impacto o una cuerda salvavidas retráctil, ambas están diseñadas para reducir de manera impresionante las fuerzas ejercidas para detener la caída. Las cuerdas de seguridad de fibra, tejidas o de alambre usadas para la detención de caídas DEBEN usarse conjuntamente con un amortiguador de impacto (por ejemplo, el paquete Miller SofStop).

**De manera individual, ninguno de estos componentes ofrece protección contra una caída. Sin embargo, cuando se usa correctamente y en conjunción con otros, forman un sistema personal de frenado de caídas que se convierte en vital para la seguridad en el lugar de trabajo.**





## 3.2 Advertencias y Limitaciones con Respecto a los Componentes

### ANCLAJES/CONECTORES DE ANCLAJE

- Los anclajes deben ser capaces de soportar 5,000 libras (22.2 kN) o cumplir los requisitos de la norma OSHA 1926.502 con un factor de seguridad de dos.
- Los requisitos para el anclaje basados en las normas ANSI son como sigue:
  - Para los sistemas de detención de caídas, los anclajes deben poder soportar una carga estática de 5,000 lb (22.2 kN) en el caso anclajes no certificados o dos veces la fuerza de detención máxima en el caso de anclajes certificados.
  - Cuando se fija más de un sistema a un anclaje, se deben multiplicar las fuerzas de anclaje indicadas arriba por el número de sistemas fijados a dicho anclaje.
- Siempre trabaje directamente bajo el punto de anclaje para evitar una lesión por caída columpiada.
- Cuando seleccione un punto de anclaje, siempre consulte la información de cálculo del margen de caída brindada con el dispositivo de conexión para asegurarse de que el punto de anclaje esté a una altura que no permitirá que el usuario golpee un nivel inferior si ocurre una caída. Recuerde que los amortiguadores se alargarán cuando estén sujetos a fuerzas de frenado de caídas (consulte las etiquetas/instrucciones brindadas con el amortiguador para conocer detalles adicionales).
- El conector de anclaje debe ser compatible con el gancho de resorte o mosquetón, y no debe aplicar ninguna carga en el linguete.

### APAREJO

- La única forma de prenda corporal aceptable para el frenado de caídas es el arnés de cuerpo completo.
- Es imperativo que el arnés sea usado apropiadamente. Cada vez antes de usar el equipo revise visualmente todas las hebillas para asegurarse de que las conexiones sea hayan realizado correctamente y sean seguras. Todas las correas deben estar conectadas y ajustadas para que ofrezcan un ajuste apretado.
- Los dispositivos de conexión para protección anticaídas deben estar conectados al anillo "D" posterior del arnés de cuerpo entero. Un elemento de fijación de anillo "D" frontal puede usarse para detención de caídas sólo en rescates, posicionamiento de trabajo, acceso con cuerda y otros usos reconocidos en la norma ANSI Z359.1, en los cuales el sistema personal de detención de caídas limita la distancia máxima de caída libre a 2 pies (0.6 m) y limita la fuerza máxima de detención a 900 lb (4.0 kN).
- Los anillos "D" laterales y frontales sólo deben usarse para posicionamiento. (Lea la excepción con respecto al anillo "D" señalada arriba.)
- Los anillos "D" para los hombros deben usarse exclusivamente para rescate.
- Jamás conecte un gancho (pelicano) de barra a un anillo "D" de un arnés.
- Los cinturones deben usarse sólo para posicionamiento.

### DISPOSITIVOS DE CONEXIÓN

- Sólo conecte elementos compatibles.
- Use exclusivamente dispositivos de conexión con ganchos de resorte o mosquetones de autoaseguramiento.
- Conecte los componentes de manera tal que la caída libre se limite a la menor distancia posible [6 pies (1.8 m) máximo]
- Siempre revise visualmente que cada gancho de cierre instantáneo y mosquetón se enganche libremente con el anillo en forma de D o punto de anclaje/conector de anclaje y que su apertura (gancho pequeño) esté completamente cerrada y asegurada. Nunca inhabilite ni restrinja el gancho pequeño de seguridad ni altere el dispositivo de conexión de ninguna forma.
- Asegúrese de que el gancho de resorte o el mosquetón estén colocados de tal manera que no sometan a cargas el linguete.
- Se requiere el uso de amortiguadores para reducir las fuerzas de frenado de caídas. Todos los amortiguadores Miller, los cordones amortiguadores y las cuerdas de seguridad autorretráctiles limitan la fuerza de frenado de caídas máxima a 1800 lbs (8 kN) o menos.
- Nunca permita que el cordón/la cuerda de seguridad pase debajo o se enrede en los brazos, piernas o cuello del usuario o cualquier otro obstáculo.
- No haga nudos en las cuerdas de seguridad ni en las cuerdas salvavidas, ni las enrolle alrededor de bordes afilados o ásperos o de miembros estructurales delgados.
- No conecte varias cuerdas de seguridad entre sí, ni conecte una cuerda de seguridad a sí misma, salvo que esté específicamente diseñada para tal fin.

## 4.0 Cómo realizar las conexiones del sistema

### Realización de conexiones al soporte del cuerpo y al anclaje/conector de anclaje

Para protección anticaídas general, conecte el conector extremo (p. ej., gancho de resorte o mosquetón) de la cuerda salvavidas o de seguridad al anillo "D" posterior del arnés de cuerpo entero (ver Fig. 1a).

Conecte el cuerpo de la unidad retráctil al anclaje o conector de anclaje (ver Fig. 1b). Asegúrese de que las conexiones sean compatibles en tamaño, resistencia y forma. Asegúrese de que los conectores estén completamente cerrados y asegurados.



Fig. 1a



Fig. 1b

### Configuración inversa

[Se aplica el limitador de caídas personal Turbo T-BAK (MFLT), el limitador de caídas personal TurboLite (MFL), el limitador de caídas personal Scorpion (PFL), la cuerda salvavidas autorretráctil Black Rhino (CFL), el limitador de caídas MiniLite (FL11), el limitador de caídas Titan (TFL), las cuerdas salvavidas tejidas Falcon (MP16P y MP20P), la cuerda de seguridad tejida retráctil Miller (8327) y cuerda de seguridad tejida retráctil Titan (TRW/8FT y TRWS)]



Fig. 2a



Fig. 2b

Pueden incluirse también cuerdas de seguridad autorretráctiles/limitadores de caída en una configuración inversa donde el conector del extremo de la cuerda de seguridad/cordón (es decir, gancho de cierre instantáneo) esté conectado(a) un anclaje o conector de anclaje compatible y el cuerpo de la unidad retractable esté fija al anillo en forma de D posterior en el arnés de cuerpo completo (vea las figuras 2a y 2b).

**Nota:** Debe tenerse en cuenta el peso de la unidad retráctil cuando se escoja esta configuración inversa para efectuar la conexión al soporte del cuerpo y al anclaje.

## 5.0 Instalación/Uso

**ADVERTENCIA:** Todas las cuerdas salvavidas autorretráctiles deben inspeccionarse y probarse cada vez antes de usarse (ver el apartado 7.0, "Inspección y mantenimiento").

### 5.1 Instalación superior típica

Las cuerdas de seguridad autorretráctiles Miller normalmente están montadas a un anclaje superior mediante la fijación del anclaje con un mosquetón de seguridad u otro dispositivo de montaje aprobado por Honeywell (vea las figuras 3 y 4). El anclaje debe ser capaz de soportar por lo menos una carga de tracción de 22.2 kN (5,000 libras), o debe ser diseñado, instalado y utilizado bajo la supervisión de una persona calificada como parte de un sistema para detención de caídas completo, para mantener un factor de seguridad de dos. Estudie todas las advertencias e instrucciones al seleccionar un lugar de montaje. Este dispositivo debe instalarse y usarse de tal manera que se reduzca al mínimo la posibilidad de una caída columpiada.

**[Tenga en cuenta: A efectos de este manual de instrucciones, una instalación en altura implica que no haya ningún componente flojo cuando la unidad sea montada sobre el usuario y conectada a la anilla en "D" trasera del mismo. Para aplicaciones que no sean en altura, comuníquese con el Servicio Técnico de Honeywell antes de proceder.]**



Fig. 3



Fig. 4

### 5.2 Instalación de amarre posterior

**[Se aplica los limitadores de caída personales Turbo T-BAK de amarre posterior (MFLT) SOLAMENTE]**

Los limitadores de caída personal Turbo T-BAK de amarre posterior de Miller son cuerdas de seguridad autorretráctiles de diseño único que permiten al usuario amarrar a un anclaje de forma segura. Los limitadores de caída personal Turbo T-BAK de Miller están diseñados con un entramado de alto desempeño resistente a la abrasión y el gancho de cierre instantáneo de 5K, el cual es capaz de resistir 5.000 libras de fuerza en la abertura del gancho de cierre instantáneo desde cualquier ángulo, para permitir la conexión de vuelta a la cuerda de seguridad de la red de forma ahorcada. NO intente este tipo de conexión con los limitadores de caída personales estándares TurboLite u otras cuerdas de seguridad autorretráctiles que no están diseñadas específicamente para dicha conexión. Consulte el Suplemento de Instrucciones I296 Turbo T-BAK para obtener información completa con respecto a esta aplicación de instalación.



Fig. 5

## 5.3 Instalación en Dispositivos de Elevación

**[Se aplica los limitadores de caídas personales TurboLite (modelos MFL), los limitadores de caídas personales Scorpion (modelos PFL), las cuerdas salvavidas autorretráctiles Black Rhino (modelos CFL), los limitadores de caídas MiniLite (modelos FL11), los limitadores de caídas Titan (modelos TFL) las cuerdas de seguridad tejidas retráctiles Miller (modelos 8327) y las cuerdas de seguridad tejidas retráctiles Titan (modelos TRW/8FT y TRWS)]**

Honeywell Safety Products recomienda montar todas las cuerdas de seguridad autorretráctiles Miller a un anclaje superior apropiado siempre que sea posible. No obstante, proporcionar protección anticaídas en dispositivos de elevación sin anclaje arriba del nivel de la cabeza requiere consideraciones especiales. La estructura de soporte del dispositivo de elevación debe cumplir las siguientes condiciones:

- Tanto el anclaje a nivel del suelo como los barandales deben ser capaces de soportar por lo menos 22.2 kN (5,000 lb) por cada empleado conectado, o deben ser parte de un sistema personal completo para detención de caídas con un factor de seguridad de dos por lo menos, bajo la supervisión de una persona calificada.
- Los barandales deben estar a una altura tal que se elimine la posibilidad de una caída libre en el sistema (ver normas de construcción: 1926.502(b)(1) e industria en general: 1910.23(e)(1)).
- El diámetro de los barandales debe ser 25.4 mm (1 pulg) por lo menos.
- Los bordes que puedan tocar la cuerda salvavidas durante el uso deben ser lisos, redondeados o achaflanados (sin rebabas ni filos cortantes) para que no se dañe la cuerda salvavidas y el sistema personal para detención de caídas pueda detener cualquier caída de manera eficaz.
- La estructura de soporte debe rodear al usuario en todas las direcciones de caída posibles.
- El dispositivo de elevación debe estar diseñado de manera adecuada para que no se vuelque en una caída (consultar al fabricante del dispositivo).

Honeywell recomienda que las cuerdas autorretráctiles mencionadas arriba puedan unirse abajo o a la altura de la argolla "D" posterior del arnés del usuario cuando se usan en un dispositivo de elevación y bajo la supervisión de una persona calificada. Puesto que estas unidades no están montadas arriba del nivel de la cabeza en esta aplicación, las fuerzas de detención de caída máximas podrían exceder el nivel máximo estipulado en la etiqueta; no obstante, las fuerzas no deben exceder el límite de 8 kN (1,800 lb).

Al evaluar la aplicación debe considerarse lo siguiente:

- La debida distancia segura de caída se calcula desde la parte superior del barandal donde esté usándose, con base en las pautas con respecto a cuerdas salvavidas autorretráctiles del manual de instrucciones.
- Asegurarse de que no haya peligros de caídas
- Debe impedirse que la cuerda salvavidas toque bordes cortantes.
- Deben tomarse medidas preventivas para asegurarse de que la cuerda salvavidas autorretráctil no resulte mordida entre dos superficies, ya que esto puede causar un desgaste y un debilitamiento excesivos de la misma.

**Por favor contacte al Servicio Técnico de Honeywell al 1-800-873-5242 (presione 4) para obtener ayuda adicional cuando evalúe esta aplicación de instalación.**



## 5.4 Instalación para Uso Horizontal

Para aplicaciones horizontales donde la cuerda de seguridad del retractable tiene la capacidad de pasar por encima del borde de una superficie plana, Honeywell Safety Products recomienda el uso del modelo de amortiguador SofStop 928LS de Miller conectado entre el anillo en forma de D del arnés del trabajador y el gancho de cierre instantáneo de la cuerda de seguridad autorretráctil. Esto ayudará a proteger las cuerdas de seguridad y reducir las fuerzas de impacto en caso de caída.

**PRECAUCIÓN:** Cuando se instala una cuerda salvavidas autorretráctil para uso horizontal, se aplican ciertas consideraciones y advertencias especiales. Comuníquese con el Servicio Técnico de Honeywell para obtener la carta técnica correspondiente antes de proceder.

## 5.5 Instalación en una aplicación de avanzada

Las cuerdas de seguridad autorretráctiles selectas Miller han sido diseñadas especialmente con el amortiguador SofStop LE para aplicaciones de avanzada, mediante las que el usuario es sujetado a un punto de anclaje que puede estar al nivel de los pies y mediante el cual la cuerda de seguridad tiene la posibilidad de pasar por encima de un borde en caso de que el usuario caiga. Consulte el Suplemento de Instrucciones sobre las cuerdas de seguridad autorretráctiles de avanzada I322 para obtener información completa con respecto a esta aplicación de instalación.

Fig. 7



## 6.0 Cómo calcular la distancia del margen de caída

Es esencial comprender cómo calcular la distancia del margen de caída para cada aplicación de trabajo para evitar el contacto con un nivel inferior. Utilice el siguiente cálculo para determinar el margen de caída requerido.

Cálculo del margen de caída de las cuerdas de seguridad autorretráctiles

**[Cálculos tomados del nivel de trabajo]**

Distancia de frenado máxima  
 + (Factor de posición de trabajo que no es de pie)  
 + (Factor de caída con balanceo)  
 + Factor de seguridad de 3 pies (0.9 m)  
 = Margen de caída requerido

**PRECAUCIÓN:** Lea todas las notas y consulte los diagramas de márgenes de caída de las cuerdas de seguridad autorretráctiles y las etiquetas para determinar el margen exacto de caída requerido para su aplicación.

Distancia máxima de frenado del SRL/limitador de caída	Margen de caída mínimo requerido desde el nivel de trabajo hasta el nivel inferior*			
	Cuando trabaja directamente debajo del punto de anclaje			Quando NO trabajadirectamente debajo del punto de anclaje
	En una posición de pie	En una posición arrodillada/agachada	En una posición acostada	En una posición de caída con balanceo
24" (0,6 m)	5' (1,5m)	8' (2,4m)	10' (3,1m)	Varía - Margen de caída adicional requerido
39" (1m)	6'-3" (1,9m)	9'-3" (2,8m)	11'-3" (3,4m)	
54" (1,4m)	7'-6" (2,3m)	10'-6" (3,2m)	12'-6" (3,8m)	

\*Este cuadro muestra el margen de caída mínimo general requerido. Debe realizarse un cálculo exacto, basado en SRL/limitador de caída a ser usado y una evaluación del sitio de trabajo y las condiciones que pueden afectar el margen de caída del trabajador.

(ver Fig. 8a, 8b, 8c & 8d.)

#### NOTAS IMPORTANTES :

La cuerda de seguridad autorretráctil debe estar anclada en lo alto para asegurar la precisión del cálculo del margen de caída y la información relacionada.

Es importante comprender que otros factores, tales como el desempeño de un trabajo en una posición de pie, agachada o echada y/o si el usuario está trabajando directamente debajo del punto de anclaje o en un ángulo, pueden afectar la distancia de caída cuando usa un dispositivo retractable.

El cálculo del margen de caída de la cuerda de seguridad autorretráctil implica que el usuario está parado. Si el usuario está trabajando en una posición agachada o de rodillas, se requiere un margen de caída adicional de 3 pies (0,9 m). Si el usuario está trabajando en una posición acostada, se requiere un margen de caída adicional de 5 pies (1,5 m).

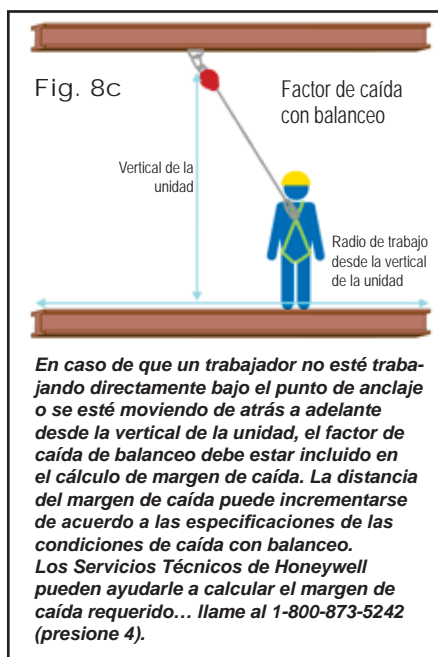
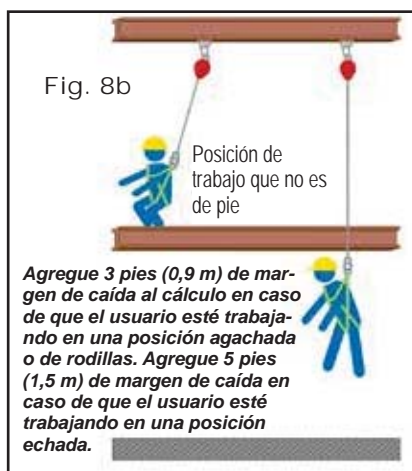
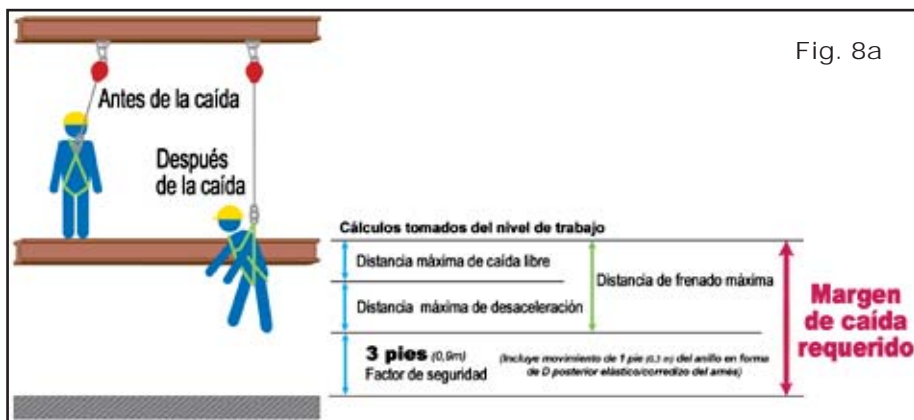
El cálculo de margen de caída de la cuerda de seguridad autorretráctil también implica que el usuario está trabajando directamente debajo del punto de anclaje, minimizando cualquier posibilidad de una caída con balanceo. En una situación de caída con balanceo, la distancia total de caída será mayor que cuando el usuario está directamente debajo del punto de anclaje. En algunas aplicaciones, no es posible trabajar directamente debajo del punto de anclaje. En dicho caso, el trabajador debe incrementar la distancia del margen de caída para considerar el factor de caída con balanceo. En cualquier caso, el trabajador no debe estar expuesto a una posible caída con balanceo donde pueda ocurrir un contacto con otro objeto.

La distancia de frenado máxima (caída libre + desaceleración) varía según el retractable. Siempre consulte las etiquetas de la unidad específica para determinar la distancia de frenado máxima.

Si un sistema de seguridad autoretráctil con una distancia máxima de detención menor a 54 pulg. (1,4 m) ha sido aprobado (por Honeywell) y se está utilizando en una aplicación que no es de altura, la distancia máxima de detención permitida según las normas (54 pulg. (1,4 m)) se debe utilizar cuando se calcula la distancia de espacio libre para la caída.

Si un sistema de seguridad autoretráctil con una distancia máxima de detención menor a 54 pulg. (1,4 m) ha sido aprobado (por Honeywell) y la está utilizando un trabajador que pesa entre 310 lbs (140,6 kg) y 400 lbs (181,4 kg), la distancia máxima de detención permitida según las normas (54 pulg. (1,4 m)) se debe utilizar cuando se calcula la distancia de espacio libre para la caída.





Si tiene alguna pregunta sobre el cálculo de la distancia del margen de caída, por favor contacte a los Servicios Técnicos de Honeywell:

**1-800-873-5242 (presione 4)**

# 7.0 Inspección y Mantenimiento

## 7.1 Funcionamiento e Inspección

**ADVERTENCIA:** El usuario debe desempeñar los siguientes puntos de control e inspecciones de operación antes de cada uso. Además, una persona competente debe inspeccionar el equipo a intervalos regulares, al menos anualmente.\*.

\*ANSI Z359.14 provides additional inspection requirements based on type of use and conditions of use. Refer to 6.1 Inspection and Appendix A: Inspection Requirements for compliance with the standard.

**PRECAUCIÓN:** Siempre póngase guantes al inspeccionar las unidades de cuerda o cable; ¡las hebras rotas pueden causar lesiones!

**1. Alojamiento y piezas del dispositivo (ver Fig. 9a):** Inspeccione la unidad para ver si tiene elementos de sujeción sueltos o piezas dobladas, agrietadas, deformes, gastadas, en mal funcionamiento o dañadas.



Fig. 9a

**2. Cuerda de seguridad / Cuerda salvavidas (ver Fig. 9b):**

**PRECAUCIÓN:** No suelte la cuerda de seguridad o salvavidas dejándola retraerse por sí misma; ¡siempre mantenga una tensión mientras se retrae!

a. Teniendo el dispositivo en la posición montada, pruebe la retracción y la tensión de la cuerda de seguridad o salvavidas; para ello, extraiga un tramo de la tira tejida o cable y déjelo que se retraiga. Siempre mantenga una tensión leve en la tira tejida o cable a medida que se retraiga. La tira tejida o cable debe poder extraerse y retraerse libre y completamente.

Si la tira tejida o cable no sale libremente o se pega al retraerse, extráigalo del alojamiento y deje que se retraiga lentamente bajo tensión. No use la unidad si la cuerda salvavidas no se retrae debidamente.

b. Debe revisarse de forma periódica la tira tejida o cable para ver si muestra señales de daños. Inspeccione la para ver si tiene cortaduras, quemaduras, corrosión, dobleces, desgarramientos o partes gastadas. Inspeccione las costuras para ver si están flojas, rotas o dañadas. Inspeccione el cable para ver si tiene hebras rotas o daños químicos.



Fig. 9b



Fig. 9c

**3. Mecanismo de freno (ver Fig. 9c):** Debe probarse el mecanismo de freno; para ello, sujete la tira tejida o cable ARRIBA del indicador de carga y aplique un tirón enérgico constante hacia abajo, con lo cual se activa el freno. No debe darse ningún resbalamiento de la tira tejida o cable mientras el freno esté activado. Una vez liberada la tensión, el freno se desactiva y la unidad vuelve al modo de retracción.

**4. Piezas metálicas: Gancho de cierre instantáneo/Mosquetones/ Ganchos para barra de refuerzo/Pivotes de anclaje, etc. (vea las figuras 9d y 9e):** Inspeccione cuidadosamente para detectar daños, distorsión, fisuras, corrosión o superficies picadas. La apertura del gancho de cierre instantáneo/mosquetón (gancho pequeño) debe apoyarse en el extremo sin atar y no debe estar torcida, distorsionada u obstruida. El resorte de la abertura debe ejercer suficiente presión para cerrar la abertura completamente. El mecanismo de seguro de la abertura debe prevenir que se abra cuando está cerrada. El gancho de cierre instantáneo y los pivotes de anclaje deben funcionar sin problemas.



Fig. 9d



Fig. 9e



- 5. Indicador de impacto de carga: (ver 7.1.1):** Cada vez antes de usar la unidad inspeccione el indicador de impacto de carga para ver si muestra señales de previa activación, o tiene componentes doblados, agrietados o deformados.
- 6. Etiquetas/Marcas:** Asegúrese de que todas las etiquetas y las marcas estén presentes y sean legibles.

## 7.1.1 Indicadores de Impacto de Carga

La cuerda salvavidas autorretráctil está equipada de uno de los siguientes indicadores de impacto de carga:

**Indicador de carga para tejido (ver Fig. 10a)**

Es un doblez cosido en la cuerda salvavidas tejida arriba del gancho de resorte que sirve de indicador de impacto. Se incorpora un indicador de advertencia, el cual queda expuesto si la cuerda salvavidas se sujeta a fuerzas de detención de caída.

**Indicador de carga para gancho de resorte (ver Fig. 10b)**

Este indicador de carga está integrado en el gancho de resorte y se localiza en la parte giratoria del gancho. El ojal del pivote debe alargarse y exponer un área roja en la ubicación ilustrada cuando está sujeto a fuerzas de frenado de caídas.

**Indicador de carga Karlstop (ver Fig. 10c)**

Si la unidad tiene un gancho de barra, puede estar equipada con el indicador de caída Karlstop. Cuando el indicador de carga es sometido a fuerzas de detención de caída ocurre una rotura en él, como se muestra.

**LAS UNIDADES QUE NO PASEN LA INSPECCIÓN O HAYAN SIDO SOMETIDAS A FUERZAS DE DETENCIÓN DE CAÍDAS DEBEN RETIRARSE DEL SERVICIO.**

Fig. 10a

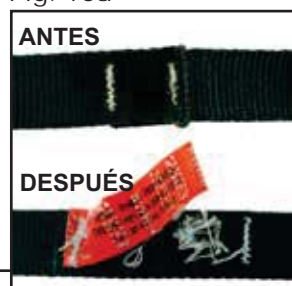


Fig. 10b



Fig. 10c



## 7.1.2 ANSI Z359.14 - Apéndice A: Requisitos de inspección

El equipo siempre debe ser inspeccionado por una persona/usuario autorizado antes de cada uso. Además, ANSI Z359.14 requiere que las inspecciones se lleven a cabo por una persona competente (que no sea el usuario) Y por una entidad autorizada por la fábrica conforme al siguiente programa. (\*Ver nota en 7.2 Mantenimiento)

ANSI Z359.14 - Apéndice A: Requisitos de inspección

Tipo de uso	Ejemplos de aplicación	Condiciones de uso	Frecuencia de inspección persona competente	Inspección autorizada por la fábrica
Poco frecuente a ligero	Rescate y espacio confinado, mantenimiento de fábrica	Buenas condiciones de almacenamiento, uso interno o uso externo poco frecuente, temperatura ambiente, entornos limpios	Anualmente	Al menos cada 2 a 5 años pero sin exceder los intervalos que requiere el fabricante
Moderado a intensivo	Transporte, construcción residencial, servicios públicos, depósitos	Condiciones de almacenamiento razonables, uso interno y externo extendido, todas las temperaturas, entornos limpios o con polvo	Semestral a anual	Al menos cada 1 a 2 años pero sin exceder los intervalos que requiere el fabricante
Severo a continuo	Construcción comercial, petróleo y gas, minería	Condiciones severas de almacenamiento, uso externo prolongado o continuo, todas las temperaturas, entorno sucio	Trimestral a semestral	Al menos anualmente pero sin exceder los intervalos requeridos por el fabricante

## 7.2 Mantenimiento

Con un cuidado básico de todo el equipo de protección contra caídas se prolonga la vida de servicio de la unidad y se contribuye al correcto desempeño de su vital función de seguridad.

### Servicio

El servicio de las cuerdas salvavidas autorretráctiles y limitadores de caídas Miller debe ser proporcionado exclusivamente por Honeywell Safety Products o bien por personas o entidades autorizadas por escrito por dicha compañía. Debe llevarse un registro con todas las fechas de servicio e inspecciones realizados al dispositivo. Sólo las piezas de repuesto originales de Miller se aprueban para ser usadas en este dispositivo. Los dispositivos reparables deben enviarse a nuestras instalaciones o a un centro de servicio autorizado cuando hayan sido sometidas a fuerzas de detención de caídas para su inspección física y recertificación. Aquellos dispositivos no reparables que no pasen la inspección deben desecharse de tal manera que se prevenga su posterior uso por accidente. Para obtener un número de autorización de devolución, comuníquese con su distribuidor de productos Miller o llame al Depto. de Servicios Técnicos de Honeywell, al 1-800-873-5242.

Las cuerdas salvavidas autorretráctiles Miller (incluidas en este manual) no requieren recertificación anual en la fábrica.\*

\*Honeywell Safety Products, como fabricante, no requiere una recertificación anual de fábrica para los sistemas de seguridad autoretráctiles de Miller. Las normas ANSI Z359.14 y CSA Z259.2.2 son voluntarias; y, básicamente, el usuario final/compañía debe elegir seguir los requisitos de inspección y de recertificación para cumplir con dicha norma.

\*[Nota para productos con aprobación CSA: La norma CSA Z259.2.2-98 requiere que los dispositivos Tipo 2 y Tipo 3 se envíen al fabricante o a un agente de servicio aprobado no más de 2 años después de la fecha de inspección y mantenimiento del fabricante, y anualmente en lo sucesivo.]

\*[Nota para los productos aprobados bajo ANSI: ANSI Z359.14 requiere una inspección de los dispositivos autorizada por la fábrica. La frecuencia se basa en el tipo de uso y las condiciones de uso. Consulte el Apéndice A: Requerimientos de inspección en ANSI Z359.14.]

### Limpieza y almacenamiento

Limpie periódicamente la parte exterior del dispositivo y limpie la cuerda de seguridad con un paño húmedo y detergente suave. Séquela con una toalla. Cuando no estén en uso, almacénalas en un lugar limpio, seco, libre de exposición al calor, a la luz, a la humedad excesiva, a aceites, a químicos, a vapores u otros elementos degradantes. **La cuerda de seguridad o salvavidas debe estar completamente retraída en el dispositivo cuando no esté en uso.**

# Product Identification, Specifications and Labels

## Identification du produit, spécifications et étiquettes Identificación del producto, especificaciones y etiquetas

Miller TurboLite Personal Fall Limiters .....	42-43
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### Miller TurboLite™ Personal Fall Limiters

Models Modèles Modelos	Lifeline Material Matériau du filin Material de la cuerda	Length Longueur Largo	Weight Poids Peso
MFL (/6FT)	1 in x .06 in polyester vectran webbing 25,4mm x 1,52mm sangle en polyester vectran 25,4mm x 1,52mm tejido de poliéster vectran	6 ft (1,8m)	1.9 lbs (0.86kg)  (MFL-11)

Models vary by unit connector and lanyard end connector. / Les modèles varient de connecteur de l'unité et le connecteur d'extrémité de longe. / Los modelos varían por el conector de la unidad y el conector del extremo del cordón.

Performance Specifications Spécifications de performance Especificaciones de desempeño	
Max Capacity Capacité Max Capacidad Máx	400 lbs (181,4kg)
Max Arrest Distance* Distance D'Arret Max Distancia De Detención Máx	24 in (0,6m)
Avg/Max Arrest Force** Force D'Arret De Chute Moyenne/Max Fuerza De Frenado Promedio/Máx	900 lbf (4kN)/1800 lbf (8kN) [310 lb (140,6kg) user]
Max Arrest Force*** Force D'Arret De Chute Max Fuerza De Frenado Máx	900 lbf (4kN) [310 lb (140,6kg) user]  1800 lbf (8kN) [400 lb (181,4kg) user]

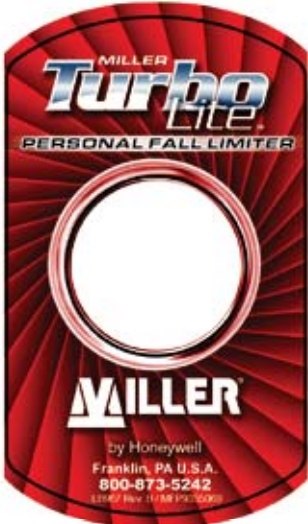
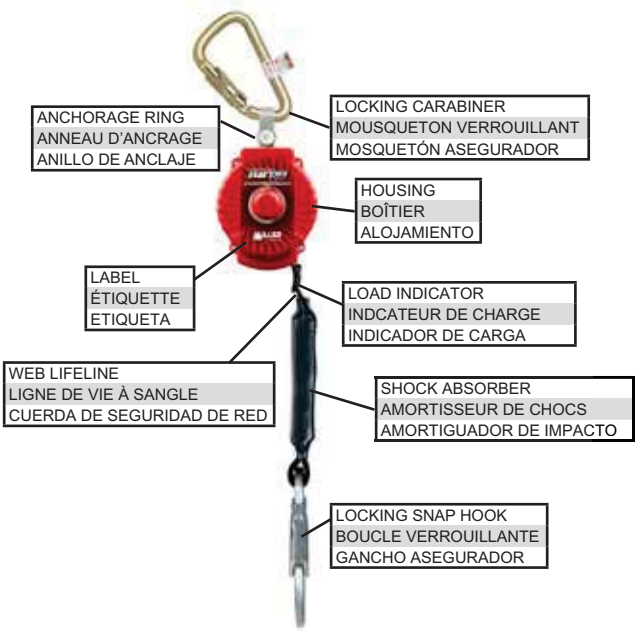
\*54 in. (1,4m) must be used in fall clearance calculations for a worker weighing between 310 lbs. (140,6kg) and 400 lbs. (181,4kg) and for non-overhead applications / \* Une distance de 1,4 m (54 po) doit être utilisée dans le calcul de la zone de dégagement pour un travailleur pesant entre 140,6 kg (310 lb) et 181,4 kg (400 lb), ainsi que pour les applications avec ancrage non vertical /

\* Se debe usar 54 pulg. (1,4 m) para calcular las distancias de caída libre para un trabajador que pese entre 310 lbs (140,6 kg) y 400 lbs (181,4 kg) y para aplicaciones que no sean en altura  
\*\*when tested to ANSI Z359.14 / \*\*lors d'essais conformément à la norme ANSI Z359.14 /  
\*\*\*cuando es probado bajo ANSI Z359.14

\*\*\*when tested to OSHA 1926.502 & CSA Z259.2.2 / \*\*\*lors d'essais conformément à la norme OSHA 1926.502 et la norme CSA Z259.2.2 / \*\*\*cuando es probado bajo OSHA 1926.502 y CSA Z259.2.2

Refer to variable label for unit compliances. / Prière de se reporter à l'étiquette variable pour les conformités d'unités. / Consulte la etiqueta variable para ver el cumplimiento de normas de la unidad.





by Honeywell

Contact manufacturer if instruction manual is needed. Toll-free 800-873-5242

LB969 Rev. D / MFP935062

## WARNING

Manufacturer's instructions supplied with this product at the time of shipment must be followed: FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH!

- For use by ONE person only. • Inspect before each use according to manufacturer's instructions. • Always test locking and retraction of device before each use. • Avoid lifeline contact with sharp, abrasive, rough or high-temperature surfaces, welding, heat sources, electrical hazards, or moving machinery. • Allow adequate fall clearance below work surface. Remove from service after arresting a fall or impact indicator has been activated.

## SAFETY INSTRUCTIONS

**BEFORE USING:** • Check lifeline retraction-- Pull out a min. 4 ft. (1.2m) of lifeline and allow it to retract under light tension. • Check braking action-- Grasp lifeline ABOVE load indicator and apply a sharp pull. The brake must engage. Release tension and allow lifeline to retract slowly into the unit. Lifeline must retract completely. • Inspect webbing load indicator. If warning flag is exposed, remove from service. **INSTALLATION:** • See instructions for mounting procedure. • Anchorage and mounting hardware must be capable of supporting a 5,000 lb. (22kN) static load or meet OSHA requirements for a safety factor of two. • Anchor device vertically overhead whenever possible; for suitability in other installation applications (i.e., lift, horizontal use/lifeline), refer to instructions.

**ADVERTISSEMENT** Vous devez respecter les instructions du fabricant que vous avez reçues avec le produit: **DANS LE CAS CONTRAIRE VOUS RISQUEZ DE BLESSURES GRAVES OU MEME LAMORTI!** Utiliser seulement par UNE personne comme arret de chute personnelle. L'appareil doit être mis hors d'utilisation pour apres avoir arrete une chute ou lorsque l'indicateur d'impact a été activé.

**ADVERTENCIA** Deben seguirse los instrucciones del fabricante provistas con este producto al momento de despacho: **EL NO HACERLO PUEDE RESULTAR EN LESIONES GRAVES O LA MUERTE!** Solo para el uso por UNA SOLA persona como detector personal contra caídas. El dispositivo debe retirarse del servicio luego de haber detenido una caída o cuando se haya activado el indicador de impacto.



# Miller 9 ft. TurboLite™

## Personal Fall Limiters

Models Modèles Modelos	Lifeline Material Matériau du filin Material de la cuerda	Length Longueur Largo	Weight Poids Peso
MFL (9FT)	1 in x .06 in polyester vectran webbing 25,4mm x 1,52mm sangle en polyester vectran 25,4mm x 1,52mm tejido de poliéster vectran	9 ft (2,74m)	2.3 lbs (1kg) to 3.6 lbs (1.6kg)

Models vary by unit connector and lanyard end connector. / Les modèles varient de connecteur de l'unité et le connecteur d'extrémité de longe. / Los modelos varían por el conector de la unidad y el conector del extremo del cordón.

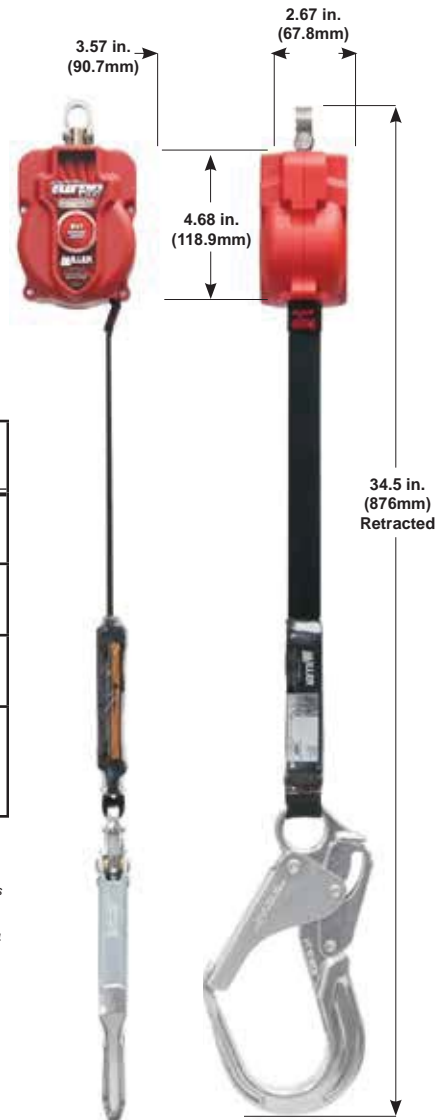
Performance Specifications Spécifications de performance Especificaciones de desempeño	
Max Capacity Capacité Max Capacidad Máx	400 lbs (181,4kg)
Max Arrest Distance* Distance D'Arret Max Distancia De Detención Máx	24 in (0,6m)
Avg/Max Arrest Force** Force D'Arret De Chute Moyenne/Max Fuerza De Frenado Promedio/Máx	900 lbf (4kN)/1800 lbf (8kN) [310 lb (140,6kg) user]
Max Arrest Force*** Force D'Arret De Chute Max Fuerza De Frenado Máx	900 lbf (4kN) [310 lb (140,6kg) user]  1800 lbf (8kN) [400 lb (181,4kg) user]

\*54 in. (1,4m) must be used in fall clearance calculations for a worker weighing between 310 lbs. (140,6kg) and 400 lbs. (181,4kg) and for non-overhead applications / \* Une distance de 1,4 m (54 po) doit être utilisée dans le calcul de la zone de dégagement pour un travailleur pesant entre 140,6 kg (310 lb) et 181,4 kg (400 lb), ainsi que pour les applications avec ancrage non vertical / \* Se debe usar 54 pulg. (1,4 m) para calcular las distancias de caída libre para un trabajador que pese entre 310 lbs (140,6 kg) y 400 lbs (181,4 kg) y para aplicaciones que no sean en altura

\*\*when tested to ANSI Z359.14 / \*\*lors d'essais conformément à la norme ANSI Z359.14 / \*\*cuando es probado bajo ANSI Z359.14

\*\*\*when tested to OSHA 1926.502 & CSA Z259.2.2 / \*\*\*lors d'essais conformément à la norme OSHA 1926.502 et la norme CSA Z259.2.2 / \*\*\*cuando es probado bajo OSHA 1926.502 y CSA Z259.2.2

Refer to variable label for unit compliances. / Prière de se reporter à l'étiquette variable pour les conformités d'unités. / Consulte la etiqueta variable para ver el cumplimiento de normas de la unidad.





by Honeywell

Contact manufacturer if instruction manual is needed. Toll-free 800-873-5242  
LB969 Rev. D / MFP9355062

## WARNING

Manufacturer's instructions supplied with this product at the time of shipment must be followed:  
**FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH!**

- For use by ONE person only. • Inspect before each use according to manufacturer's instructions. • Always test locking and retraction of device before each use. • Avoid lifeline contact with sharp, abrasive, rough or high-temperature surfaces, welding, heat sources, electrical hazards, or moving machinery. • Allow adequate fall clearance below work surface. Remove from service after arresting a fall or impact indicator has been activated.

## SAFETY INSTRUCTIONS

**BEFORE USING:** • Check lifeline retraction-- Pull out a min. 4 ft. (1.2m) of lifeline and allow it to retract under light tension. • Check braking action-- Grasp lifeline ABOVE load indicator and apply a sharp pull. The brake must engage. Release tension and allow lifeline to retract slowly into the unit. Lifeline must retract completely. • Inspect webbing load indicator. If warning flag is exposed, remove from service. **INSTALLATION:** • See instructions for mounting procedure. • Anchorage and mounting hardware must be capable of supporting a 5,000 lb. (22kN) static load or meet OSHA requirements for a safety factor of two. • Anchor device vertically overhead whenever possible; for suitability in other installation applications (i.e., lift, horizontal use/lifeline), refer to instructions.

**ADVERTISSEMENT** Vous devez respecter les instructions du fabricant que vous avez reçues avec le produit: **DANS LE CAS CONTRAIRE VOUS RISQUEZ DE BLESSURES GRAVES OU MEME LAMORT!** Utilisez seulement par UNE personne comme arrêt de chute personnelle. L'appareil doit être mis hors d'utilisation pour après avoir arrêté une chute ou lorsque l'indicateur d'impact a été activé.

**ADVERTENCIA** Deben seguirse los instrucciones del fabricante provistas con este producto al momento de despacho: **EL NO HACERLO PUEDE RESULTAR EN LESIONES GRAVES O LA MUERTE!** Solo para el uso por UNA SOLA persona como detector personal contra caídas. El dispositivo debe retirarse del servicio luego de haber detenido una caída o cuando se haya activado el indicador de impacto.

Next Inspection/Expiration Date:  
See manual for inspection

1	2	3	4	5	6	7	8	9	10	11	12
1	2	3	4	5	6	7	8	9	0		

LB970 MFP9355063



# Miller Scorpion™

## Personal Fall Limiters

Models Modèles Modelos	Lifeline Material Matériau du filin Material de la cuerda	Length Longueur Largo	Weight Poids Peso
PFL	1 in. x .06 in. polyester vectran webbing 25.4mm x 1.52mm sangle en polyester vectran 25.4mm x 1.52mm tejido de poliéster vectran	9 ft. (2.7m)	2.9 lbs. (1.3kg)  (PFL-1)

Models vary by unit connector and lanyard end connector. / Les modèles varient de connecteur de l'unité et le connecteur d'extrémité de longe. / Los modelos varían por el conector de la unidad y el conector del extremo del cordón.

Performance Specifications Spécifications de performance Especificaciones de desempeño	
Max Capacity Capacité Max Capacidad Máx	310 lbs (140,6kg)
Max Arresting Distance* Distance D'Arret Max Distancia De Detención Máx	24 in (0,6m)
Avg/Max Arrest Force** Force D'Arret De Chute Moyenne/Max Fuerza De Frenado Promedio/Máx	900 lbf (4kN)/ 1800 lbf (8kN)
Max Arresting Force*** Force D'Arret De Chute Max Fuerza De Frenado Máx	900 lbf (4kN)

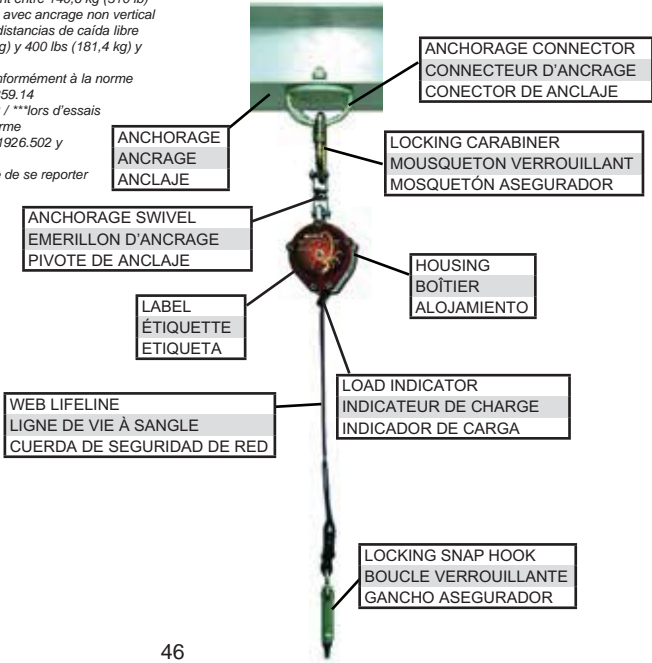
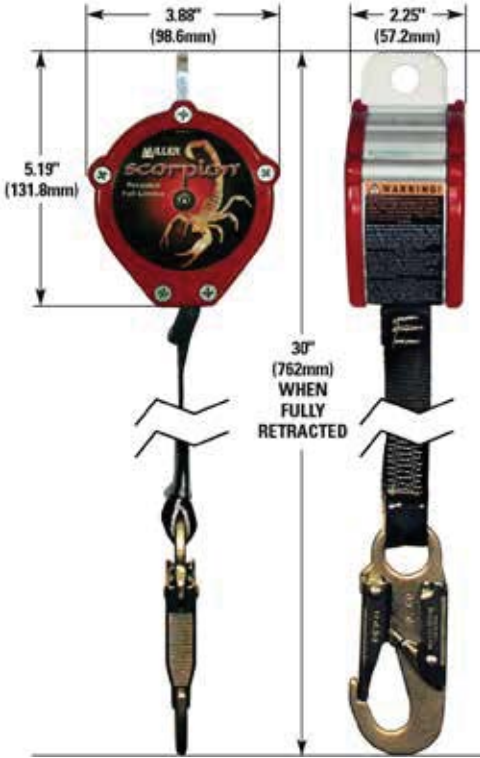
\*54 in. (1,4m) must be used in fall clearance calculations for a worker weighing between 310 lbs. (140,6kg) and 400 lbs. (181,4kg) and for non-overhead applications / \* Une distance de 1,4 m (54 po) doit être utilisée dans le calcul de la zone de dégagement pour un travailleur pesant entre 140,6 kg (310 lb) et 181,4 kg (400 lb), ainsi que pour les applications avec ancrage non vertical / \* Se debe usar 54 pulg. (1,4 m) para calcular las distancias de caída libre para un trabajador que pese entre 310 lbs (140,6 kg) y 400 lbs (181,4 kg) y para aplicaciones que no sean en altura

\*\*\*when tested to ANSI Z359.14 / \*\*\*lors d'essais conformément à la norme ANSI Z359.14 / \*\*\*cuando es probado bajo ANSI Z359.14

\*\*\*when tested to OSHA 1926.502 & CSA Z259.2.2 / \*\*\*lors d'essais conformément à la norme OSHA 1926.502 et la norme CSA Z259.2.2 / \*\*\*cuando es probado bajo OSHA 1926.502 y CSA Z259.2.2

Refer to variable label for unit compliances. / Prière de se reporter à l'étiquette variable pour les conformités d'unités.

/ Consulte la etiqueta variable para ver el cumplimiento de normas de la unidad.







# Miller Black Rhino™

## Self-Retracting Lifelines

Models Modèles Modelos	Lifeline Material Matériau du filin Material de la cuerda	Length Longueur Largo	Weight Poids Peso
CFL	3/16 in. stainless steel wire rope 5mm câble en acier inoxydable 5mm cable de acero inoxidable	9 ft. (2.7m)	4.3 lbs. (1.9kg) (CFL-1)

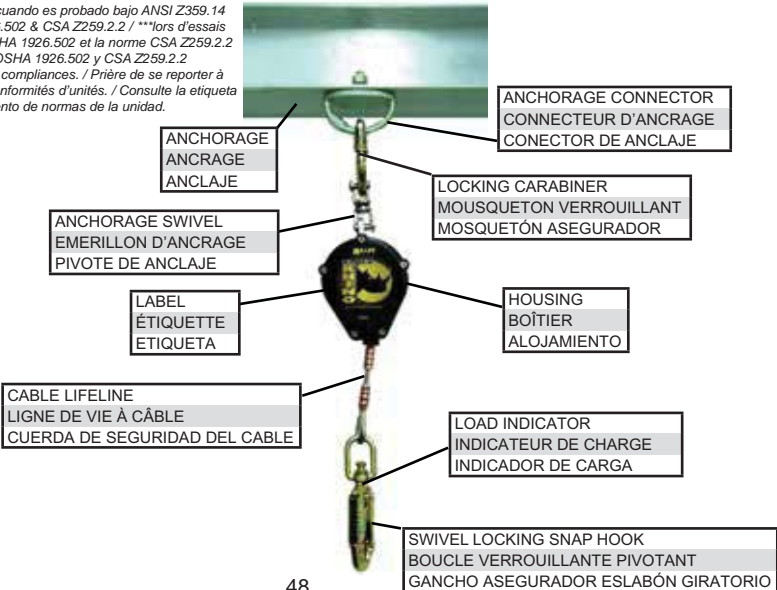
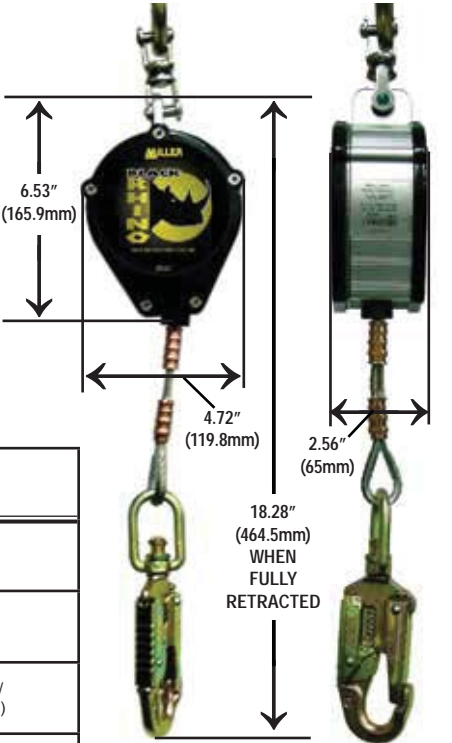
Models vary by unit connector and lanyard end connector. / Les modèles varient de connecteur de l'unité et le connecteur d'extrémité de longe. / Los modelos varían por el conector de la unidad y el conector del extremo del cordón.

Performance Specifications Spécifications de performance Especificaciones de desempeño	
Max Capacity Capacité Max Capacidad Máx	310 lbs (140,6kg)
Max Arrest Distance* Distance D'Arret Max Distancia De Detención Máx	24 in (0,6m)
Avg/Max Arrest Force** Force D'Arret De Chute Moyenne/Max Fuerza De Frenado Promedio/Máx	900 lbf (4kN)/ 1800 lbf (8kN)
Max Arrest Force*** Force D'Arret De Chute Max Fuerza De Frenado Máx	900 lbf (4kN)

\*54 in. (1,4m) must be used in fall clearance calculations for a worker weighing between 310 lbs. (140,6kg) and 400 lbs. (181,4kg) and for non-overhead applications / \* Une distance de 1,4 m (54 po) doit être utilisée dans le calcul de la zone de dégagement pour un travailleur pesant entre 140,6 kg (310 lb) et 181,4 kg (400 lb), ainsi que pour les applications avec ancrage non vertical / \* Se debe usar 54 pulg. (1,4 m) para calcular las distancias de caída libre para un trabajador que pese entre 310 lbs (140,6 kg) y 400 lbs (181,4 kg) y para aplicaciones que no sean en altura

\*\*when tested to ANSI Z359.14 / \*\*lors d'essais conformément à la norme ANSI Z359.14 / \*\*cuando es probado bajo ANSI Z359.14  
\*\*\*when tested to OSHA 1926.502 & CSA Z259.2.2 / \*\*\*lors d'essais conformément à la norme OSHA 1926.502 et la norme CSA Z259.2.2 / \*\*\*cuando es probado bajo OSHA 1926.502 y CSA Z259.2.2

Refer to variable label for unit compliances. / Prière de se reporter à l'étiquette variable pour les conformités d'unités. / Consulte la etiqueta variable para ver el cumplimiento de normas de la unidad.





DO NOT REMOVE THIS LABEL

## SAFETY INSTRUCTIONS

**BEFORE USING** • Check lifeline retraction—Pull out a min. 4 ft. (1.2m) of lifeline and allow it to retract under light tension. • Check braking action—Grasp lifeline ABOVE load indicator and apply a sharp pull. The brake must engage. Release tension and allow lifeline to retract slowly into the unit. Lifeline must retract completely. • Inspect swivel snap hook load indicator (see Fig. 1) or rebar hook Karistop load indicator (see Fig. 2), whichever is applicable. **INSTALLATION** • See instructions for mounting procedure. • Anchorage and mounting hardware must be capable of supporting a 5,000 lb (22kN) static load or meet OSHA requirements for a safety factor of two. • Anchor device vertically overhead whenever possible; for suitability in other installation applications (i.e. lift, horizontal use/lifeline), refer to instructions.

### WARNING

Manufacturer's instructions supplied with this product at the time of shipment must be followed: FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH! • Only for use by ONE person as a personal fall arrester. • Inspect before each use according to manufacturer's instructions. • Always test the locking and retraction of this device before each use. • Do not allow lifeline to come in contact with anything that will damage it including, but not limited to, sharp, abrasive, rough or high-temperature surfaces, welding, heat sources, electrical hazards, or moving machinery. • Allow adequate fall clearance below work surface when using this device. Device must be taken out of service for inspection and recertification after arresting a fall or when the impact indicator has been activated.

### ADVERTENCIA

Deben seguirse las instrucciones del fabricante provistas con este producto al momento de despacho: EL NO HACERLO PUEDE RESULTAR EN LESIONES GRAVES O LA MUERTE! • Solo para el uso por UNA SOLA persona como detenedor personal contra caídas. • El dispositivo debe retirarse del servicio para ser inspeccionado y recertificación luego de haber detenido una caída o cuando se haya activado el indicador de impacto.

### ADVERTISSEMENT

Vous devez respecter les instructions du fabricant que vous avez reçues avec le produit: DANS LE CAS CONTRAIRE VOUS RISQUEZ DE BLESSURES GRAVES OU MEME LAMORT! • Utiliser seulement par UNE personne comme arrêt de chute personnelle. • L'appareil doit être mis hors d'utilisation pour inspection et recertification après avoir arrêté une chute ou lorsque l'indicateur d'impact a été activé.

Max Total Arrest Distance (Distance Totale D'Arrêt Max) ..... 24 in (0.6m)  
Max Fall Arrest Force (Force D'Arrêt De Chute Max) ..... 900 lbf (4kN) [when tested to CSA 2259.2.2 & ANSI Z359.1]  
Avg. Max Fall Arrest Force ..... 900 lbf (1800 lbf) [when tested to ANSI Z359.14]  
Max Capacity (Capacité Max) ..... 310 lbs (140.6kg) [ANSI Capacity Range is 130 lbs-310 lbs.]

\*Refer to variable label on side for unit compliance.  
\*\*For a Max Capacity of 400 lbs (181.4kg), see instructions and appropriate Fall Protection Code

ANSI Free Fall  
Limit is 24 in

REMOVE FROM SERVICE IF  
RED APPEARS



REMOVE FROM SERVICE  
IF ACTIVATED



Expiration Date  
See manual  
for inspection

Contact manufacturer if instruction manual is needed  
LB567 Rev. E / MFP9345905

# Miller MiniLite®

## Fall Limiters

Models Modèles Modelos	Lifeline Material Matériau du filin Material de la cuerda	Length Longueur Largo	Weight Poids Peso
FL11	1 in. x .06 in. polyester vectran webbing 25.4mm x 1.52mm sangle en polyes- ter vectran 25.4mm x 1.52mm tejido de poliéster vectran	11 ft. (3.3m)	2.5 lbs. (1.1kg)

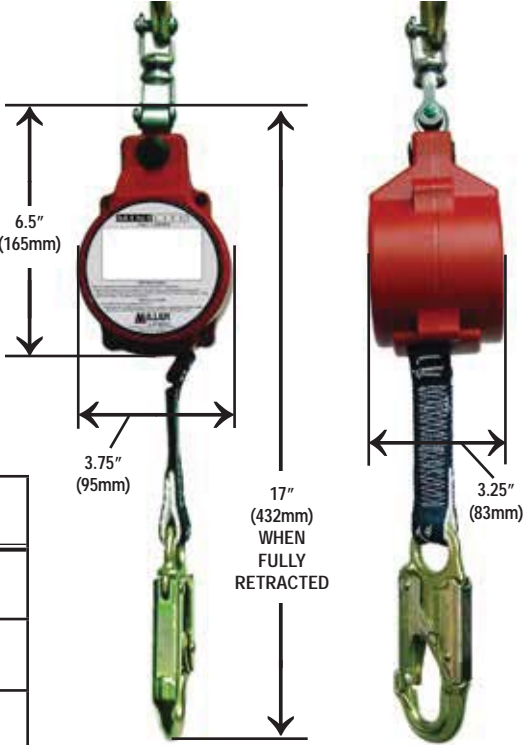
Performance Specifications Spécifications de performance Especificaciones de desempeño	
Max Capacity Capacité Max Capacidad Máx	310 lbs (140,6kg)
Max Arrest Distance* Distance D'Arret Max Distancia De Detención Máx	39 in (1m)
Max Free Fall Distance Distance de Chute Libre Max Distancia de Caída Libre Máx	24 in (0,6m)
Avg/Max Arrest Force** Force D'Arret De Chute Moyenne/Max Fuerza De Frenado Promedio/Máx	900 lbf (4kN)/ 1800 lbf (8kN)
Max Arrest Force*** Force D'Arret De Chute Max Fuerza De Frenado Máx	900 lbf (4kN)

\*54 in. (1,4m) must be used in fall clearance calculations for a worker weighing between 310 lbs. (140,6kg) and 400 lbs. (181,4kg) and for non-overhead applications / \* Une distance de 1,4 m (54 po) doit être utilisée dans le calcul de la zone de dégagement pour un travailleur pesant entre 140,6 kg (310 lb) et 181,4 kg (400 lb), ainsi que pour les applications avec ancrage non vertical / \* Se debe usar 54 pulg. (1,4 m) para calcular las distancias de caída libre para un trabajador que pese entre 310 lbs (140,6 kg) y 400 lbs (181,4 kg) y para aplicaciones que no sean en altura

\*\*when tested to ANSI Z359.14 / \*\*lors d'essais conformément à la norme ANSI Z359.14 / \*\*cuando es probado bajo ANSI Z359.14

\*\*\*when tested to OSHA 1926.502 & CSA Z259.2.2 / \*\*\*lors d'essais conformément à la norme OSHA 1926.502 et la norme CSA Z259.2.2 / \*\*\*cuando es probado bajo OSHA 1926.502 y CSA Z259.2.2

Refer to variable label for unit compliances. / Prière de se reporter à l'étiquette variable pour les conformités d'unités. / Consulte la etiqueta variable para ver el cumplimiento de normas de la unidad.



ANCHORAGE  
ANCRAGE  
ANCLAJE

ANCHORAGE CONNECTOR  
CONNECTEUR D'ANCRAGE  
CONECTOR DE ANCLAJE



LOCKING CARABINER  
MOUSQUETON VERROUILLANT  
MOSQUETÓN ASEGUADOR

LABELS  
ÉTIQUETTES  
ETIQUETAS

HOUSING  
BOÎTIER  
ALOJAMIENTO



LOAD INDICATOR  
INDICATEUR DE CHARGE  
INDICADOR DE CARGA

WEB LIFELINE  
LIGNE DE VIE À SANGLE  
CUERDA DE SEGURIDAD DE RED

LOCKING SNAP HOOK  
BOUCLE VERROUILLANTE  
GANCHO ASEGUADOR

Miller MiniLite®  
FALL LIMITER

CLEAR WINDOW

LB343  
Rev. F  
34-9345964

SPECIFICATIONS

Max Total Arrest Distance (Distance Totale D'Arrêt Max).....39 in (1m)

Max Free Fall Distance (Distance De Chute Libre Max).....24 in (0,6m)

Max Capacity (Capacite Max).....310 lbs (140,6kg) [130 lbs-310 lbs - ANSI Capacity Range]

For a Max Capacity of 400 lbs (181,4kg), see instructions & applicable Fall Protection Code.

Avg/Max Fall Arrest Force\*\*.....900 lbf/1800 lbf [when tested to ANSI Z359.14\*\*]

Max Fall Arrest Force (Force D'Arrêt De Chute Max)\*\*.....900 lbf (4kN)

[when tested to CSA Z259.2.2 & ANSI Z359.1\*\*]

\*\*Refer to variable label above for unit compliances.

Franklin, PA  
U.S.A.

MILLER

Toll-Free  
800-873-5242

by Honeywell

⚠ WARNING

Manufacturer's instructions supplied with this product at the time of shipment must be followed:  
FAILURE TO DO SO COULD RESULT IN  
SERIOUS INJURY OR DEATH!

- Only for use by ONE person as a personal fall arrester.
- Inspect before each use according to manufacturer's instructions.
- Always test the locking and retraction of this device before each use.
- Do not allow webbing to come in contact with anything that will damage it including, but not limited to, sharp, abrasive, rough or high-temperature surfaces, welding, heat sources, electrical hazards, or moving machinery.
- Allow adequate fall clearance below work surface when using this device. Device must be taken out of service after arresting a fall or when impact indicator has been activated.

⚠ ADVERTENCIA / ADVERTISSEMENT

Deben seguirse los instrucciones del fabricante provistas con este producto al momento de despacho: EL NO HACERLO PUEDE RESULTAR EN LESIONES GRAVES O LA MUERTE!  
Solo para el uso por UNA SOLA persona como detentor personal contra caídas. El dispositivo debe retirarse del servicio luego de haber detenido una caída o cuando se haya activado el indicador de impacto.

Vous devez respecter les instructions du fabricant que vous avez reçues avec le produit: DANS LE CAS CONTRAIRE VOUS RISQUEZ DE BLESSURES GRAVES OU MEME LA MORT!  
Utiliser seulement par UNE personne comme arrêt de chute personnelle. L'appareil doit être mis hors d'utilisation pour après avoir arrêté une chute ou lorsque l'indicateur d'impact a été activé.

Contact manufacturer if instruction manual is needed.  
DO NOT REMOVE THIS LABEL.  
LB342 Rev. G / 34-9345963

SAFETY INSTRUCTIONS

BEFORE USING: • Check lifeline retraction—Pull out a min. 4ft. (1.2m) of lifeline and allow to retract under light tension. • Check braking action—Grasp lifeline ABOVE load indicator and apply a sharp pull. The brake must engage. Release tension and allow lifeline to retract slowly into unit. Lifeline must retract completely. • Inspect webbing load indicator. If warning flag is exposed, remove from service. **INSTALLATION:** • See instructions for mounting procedure. • Anchorage and mounting hardware must be capable of supporting a 5,000lb. (22kN) static load or meet OSHA requirements for a safety factor of two. • Anchor device vertically overhead whenever possible; for suitability in other installation applications (i.e., lift, horizontal use/lifeline), refer to instructions.

INSPECTION GRID

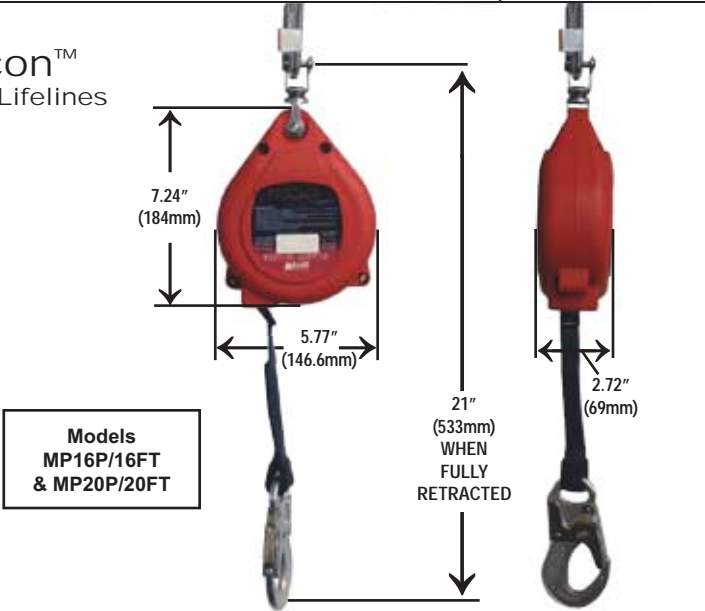
MARK GRID ON DATE OF FIRST USE

YR	J	F	M	A	M	J	J	A	S	O	N	D
1												
2												
3												
4												
5												

DO NOT REMOVE THIS LABEL  
LB1265 Rev. A / MFP9345919

# Miller Falcon™

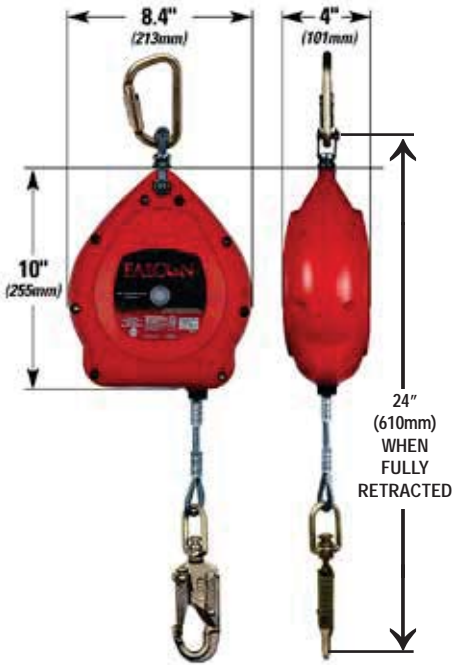
Self-Retracting Lifelines



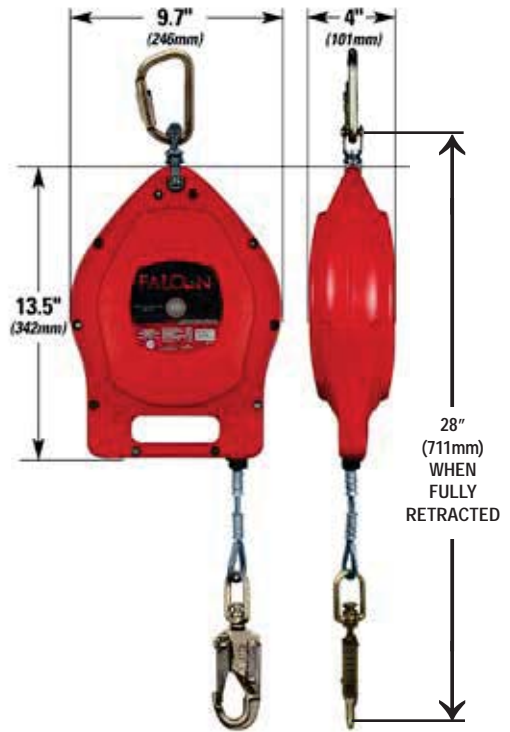
Model Modèle Modelo	Lifeline Material Matériau du filin Material de la cuerda	Length Longueur Largo	Weight Poids Peso
MP16P	1 in polyester webbing 25mm sangle en polyester 25mm tejido de poliéster vectran	16 ft (4,9m)	3.3 lbs (1,5kg)
MP20P	1 in polyester webbing 25mm sangle en polyester 25mm tejido de poliéster vectran	20 ft (6m)	3.4 lbs (1,54kg)
MP20G	3/16 in galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	20 ft (6m)	8.9 lbs (4kg)
MP20SS	3/16 in stainless steel wire rope 5mm câble en acier inoxydable 5mm cable de acero inoxidable	20 ft (6m)	8.9 lbs (4kg)
MP30G	3/16 in galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	30 ft (10m)	10.7 lbs (4,8kg)
MP30SS	3/16 in stainless steel wire rope 5mm câble en acier inoxydable 5mm cable de acero inoxidable	30 ft (10m)	10.7 lbs (4,8kg)
MP50G	3/16 in galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	50 ft (15m)	14.8 lbs (6,7kg)
MP50SS	3/16 in stainless steel wire rope 5mm câble en acier inoxydable 5mm cable de acero inoxidable	50 ft (15m)	14.8 lbs (6,7kg)
MP65G	3/16 in galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	65 ft (20m)	17.1 lbs (7,7kg)
MP65SS	3/16 in stainless steel wire rope 5mm câble en acier inoxydable 5mm cable de acero inoxidable	65 ft (20m)	17.1 lbs (7,7kg)

Performance Specifications Spécifications de performance Especificaciones de desempeño	
<b>Max Capacity</b> <b>Capacité Max</b> <b>Capacidad Máx</b>	310 lbs (140,6kg)  400 lbs (181,4kg)– MP16P & MP20P only
<b>Max Arrest Distance</b> <b>Distance D'Arret Max</b> <b>Distancia De Detención Máx</b>	54 in (1,4m)
<b>Max Free Fall Distance</b> <b>Distance de Chute Libre Max</b> <b>Distancia de Caída Libre Máx</b>	24 in (0,6m)
<b>Avg/Max Arrest Force*</b> <b>Force D'Arret De Chute Moy- enne/Max</b> <b>Fuerza De Frenado Promedio/ Máx</b>	900 lbf (4kN)/ 1800 lbf (8kN)
<b>Max Arrest Force**</b> <b>Force D'Arret De Chute Max</b> <b>Fuerza De Frenado Máx</b>	900 lbf (4kN)– 310 lb (140,6kg) user  1800 lbf (8kN)– 400 lb (181,4kg) user

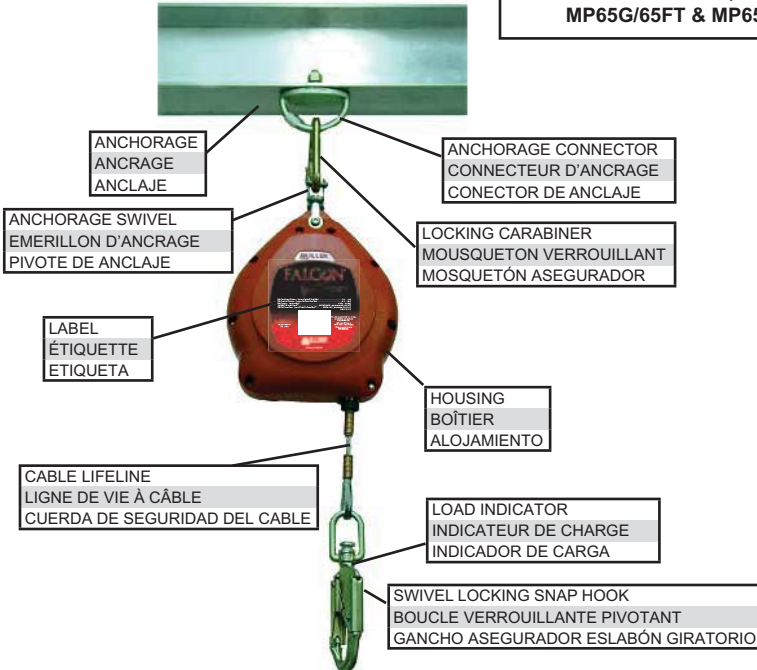
\*when tested to ANSI Z359.14 / \*lors d'essais conformément à la norme ANSI Z359.14 / \*cuando es probado bajo ANSI Z359.14  
\*\*when tested to OSHA 1926.502 & CSA Z259.2.2 / \*\*lors d'essais conformément à la norme OSHA 1926.502 et la norme CSA Z259.2.2  
/ \*\*cuando es probado bajo OSHA 1926.502 y CSA Z259.2.2  
Refer to variable label for unit compliances. / Prière de se reporter à l'étiquette variable pour les conformités d'unités. / Consulte la etiqueta variable para ver el cumplimiento de normas de la unidad.



**Models MP20G/20FT, MP20SS/20FT,  
MP30G/30FT & MP30SS/30FT**



**Models MP50G/50FT, MP50SS/50FT  
MP65G/65FT & MP65SS/65FT**









# FALCON™

SELF-RETRACTING  
LIFELINE

Max Total Arrest Distance (Distance Totale D'Arrêt Max) ..... 54 in (1.4m)  
 Max Free Fall Distance (Distance De Chute Libre Max) ..... 24 in (0.6m)  
 Max Capacity (Capacité Max)\* ..... 310 lbs (140.6kg)  
 Avg/Max Fall Arrest Force\*\* ..... 900 lbf/1800 lbf (when tested to ANSI Z359.14\*\*\*)  
 Max Fall Arrest Force (Force D'Arrêt De Chute Max)\* ..... 900 lbf (4kN) (when tested to CSA Z259.2.2 & ANSI Z359.1\*\*)

Expiration Date:  
See manual for inspection.

DO NOT REMOVE  
THIS LABEL

\*For a Max Capacity of 400 lbs (181.4kg),  
see instructions and applicable  
Fall Protection Code.

[ANSI Capacity Range is  
130 lbs-310 lbs (59kg-140.6kg)]

\*\*Refer to variable label for  
unit compliances.

## MILLER

by Honeywell  
LB543 Rev. E / MFP9345463

# FALCON™

### ⚠ WARNING

Manufacturer's instructions supplied with this product at the time of shipment must be followed: FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH!

- Only for use by ONE person as a personal fall arrester.
- Inspect before each use according to manufacturer's instructions.
- Always test the locking and retraction of this device before each use.
- Do not allow lifeline to come in contact with anything that will damage it including, but not limited to, sharp, abrasive, rough or high-temperature surfaces, welding, heat sources, electrical hazards, or moving machinery.
- Allow adequate fall clearance below work surface when using this device. Device must be taken out of service for inspection and recertification after arresting a fall or when the impact indicator has been activated.

### ⚠ ADVERTENCIA

Deben seguirse las instrucciones del fabricante provistas con este producto al momento de despacho: EL NO HACERLO PUEDE RESULTAR EN LESIONES GRAVES O LA MUERTE! • Solo para el uso por UNA SOLA persona como detentor personal contra caídas. • El dispositivo debe retirarse del servicio para ser inspeccionado y recertificación luego de haber detenido una caída o cuando se haya activado el indicador de impacto.

### ⚠ ADVERTISSEMENT

Vous devez respecter les instructions du fabricant que vous avez reçues avec le produit: DANS LE CAS CONTRAIRE VOUS RISQUEZ DE BLESSURES GRAVES OU MÊME LA MORT! • Utiliser uniquement par UNE personne comme arrêt de chute personnelle. • L'appareil doit être mis hors d'utilisation pour inspection et recertification après avoir arrêté une chute ou lorsque l'indicateur d'impact a été activé.

### SAFETY INSTRUCTIONS

**BEFORE USING** • Check lifeline retraction—Pull out a min. 4 ft. (1.3m) of lifeline and allow it to retract under light tension. • Check braking action—Grasp lifeline ABOVE load indicator and apply a sharp pull. The brake must engage. Release tension and allow lifeline to retract slowly into the unit. Lifeline must retract completely. • Inspect swing snap hook load indicator. If red is exposed, remove from service.

**INSTALLATION** • See instructions for mounting procedures. • Anchorage and mounting hardware must be capable of supporting a 5,000 lb. (2,270N) static load or meet OSHA requirements for a safety factor of two. • Anchor device vertically overhead whenever possible; for suitability in other installation applications (i.e., lift, horizontal use, horizontal lifelines), refer to instructions.

Contact manufacturer if  
instruction manual is needed.  
DO NOT REMOVE THIS LABEL.



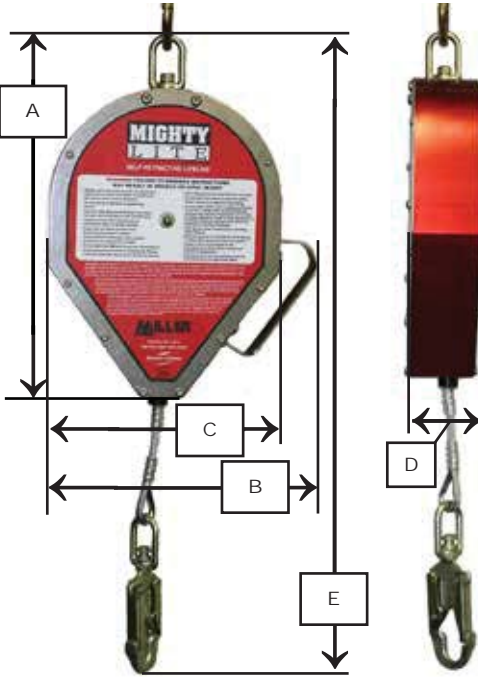
Franklin, PA, USA  
Toll Free 800-873-5242

LB544 Rev. D / MFP9345464

# Miller MightyLite

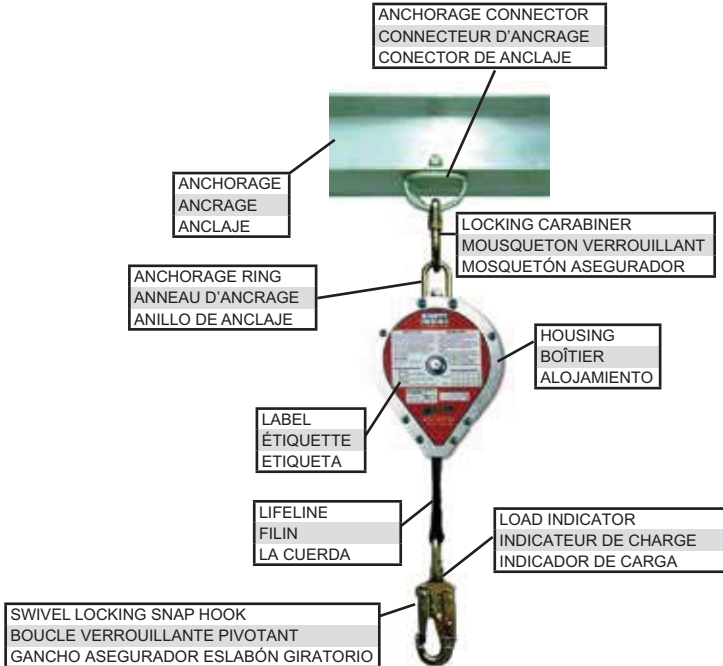
## Self-Retracting Lifelines

Model Modèle Modelo	Lifeline Material Matériau du filin Material de la cuerda	Length Longueur Largo	Weight Poids Peso	A	B	C	D	E
RL20P	1 in. polyester webbing 25mm sangle en polyester 25mm tejido de poliéster	20 ft. (6m)	8 lbs. (3.6kg)	10.50 in. (267mm)	***	6.38 in. (162mm)	2.25 in. (57mm)	22" (559mm)
RL20G	3/16 in. galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	20 ft. (6m)	9 lbs. (4kg)	10.50 in. (267mm)	***	6.38 in. (162mm)	2.25 in. (57mm)	24" (610mm)
RL20SS	3/16 in. stainless steel wire rope 5mm câble en acier inoxydable 5mm cable de acero inoxidable	20 ft. (6m)	9 lbs. (4kg)	10.50 in. (267mm)	***	6.38 in. (162mm)	2.25 in. (57mm)	24" (610mm)
RLS30G	3/16 in. galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	30 ft. (10m)	11 lbs. (5kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	3 in. (76mm)	24" (610mm)
RLS30S	3/16 in. stainless steel wire rope 5mm câble en acier inoxydable 5mm cable de acero inoxidable	30 ft. (10m)	11 lbs. (5kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	3 in. (76mm)	24" (610mm)
RL50P	1 in. polyester webbing 25mm sangle en polyester 25mm tejido de poliéster	50 ft. (15m)	19 lbs. (8.6kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	3 in. (76mm)	27" (686mm)
RL50G	3/16 in. galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	50 ft. (15m)	20 lbs. (9.1kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	3 in. (76mm)	29" (737mm)
RL50SS	3/16 in. stainless steel wire rope 5mm câble en acier inoxydable 5mm cable de acero inoxidable	50 ft. (15m)	20 lbs. (9.1kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	3 in. (76mm)	29" (737mm)
RL65G	3/16 in. galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	65 ft. (20m)	23 lbs. (10.4kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	3 in. (76mm)	29" (737mm)
RL65SS	3/16 in. stainless steel wire rope 5mm câble en acier inoxydable 5mm cable de acero inoxidable	65 ft. (20m)	23 lbs. (10.4kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	3 in. (76mm)	29" (737mm)
RL100G	3/16 in. galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	100 ft. (30m)	40 lbs. (18.1kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	5 in. (127mm)	29" (737mm)
RL100SS	3/16 in. stainless steel wire rope 5mm câble en acier inoxydable 5mm cable de acero inoxidable	100 ft. (30m)	40 lbs. (18.1kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	5 in. (127mm)	29" (737mm)
RL130G	3/16 in. galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	130 ft. (40m)	50 lbs. (22.7kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	5 in. (127mm)	29" (737mm)
RL130SS	3/16 in. stainless steel wire rope 5mm câble en acier inoxydable 5mm cable de acero inoxidable	130 ft. (40m)	50 lbs. (22.7kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	5 in. (127mm)	29" (737mm)
RL175G	3/16 in. galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	175 ft. (54m)	70 lbs. (31.7kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	7.18 in. (182mm)	29" (737mm)
RL175SS	3/16 in. stainless steel wire rope 5mm câble en acier inoxydable 5mm cable de acero inoxidable	175 ft. (54m)	70 lbs. (31.7kg)	13.25 in. (337mm)	11.75 in. (298mm)	10 in. (254mm)	7.18 in. (182mm)	29" (737mm)



Performance Specifications Spécifications de performance Especificaciones de desempeño	
Max Capacity Capacité Max Capacidad Máx	310 lbs (140,6kg)
Max Arrest Distance Distance D'Arret Max Distancia De Detención Máx	54 in (1,4m)
Max Free Fall Distance Distance de Chute Libre Max Distancia de Caída Libre Máx	24 in (0,6m)
Avg/Max Arrest Force* Force D'Arret De Chute Moyenne/Max Fuerza De Frenado Promedio/Máx	900 lbf (4kN)/ 1800 lbf (8kN)
Max Arrest Force** Force D'Arret De Chute Max Fuerza De Frenado Máx	900 lbf (4kN)

\*when tested to ANSI Z359.14 / \*lors d'essais conformément à la norme ANSI Z359.14 / \*cuando es probado bajo ANSI Z359.14  
\*\*when tested to OSHA 1926.502 & CSA Z259.2.2 / \*\*lors d'essais conformément à la norme OSHA 1926.502 et la norme CSA Z259.2.2 / \*\*cuando es probado bajo OSHA 1926.502 y CSA Z259.2.2  
Refer to variable label for unit compliances. / Prière de se reporter à l'étiquette variable pour les conformités d'unités. / Consulte la etiqueta variable para ver el cumplimiento de normas de la unidad.



# MIGHTY L I T E™

PAT. NO. 5,771,993

## SELF-RETRACTING LIFELINE

Max Total Arrest Distance  
(Distance Totale D'Arrêt Max)

54 in  
(1.4m)

Avg/Max Fall Arrest Force\*\* 900 lbf/1800 lbf  
[when tested to ANSI Z359.14\*\*]

Max Free Fall Distance  
(Distance De Chute Libre Max)

24 in  
(0.6m)

Max Fall Arrest Force\*\* 900 lbf  
(4kN)  
[when tested to CSA Z259.2.2 & ANSI Z359.1\*\*]

Max Capacity\* 310 lbs  
(Capacité Max)  
[130 lbs.-310 lbs. - ANSI Capacity Range]

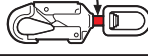
\*For a Max Capacity of 400 lbs (181.4kg),  
see instructions and applicable Fall  
Protection Code.



Contact manufacturer  
if instruction manual  
is needed.

DO NOT REMOVE THIS LABEL

REMOVE FROM SERVICE IF  
RED APPEARS



CLEAR WINDOW

# MILLER

by Honeywell  
Franklin, PA U.S.A.

Toll Free  
800-873-5242  
LB326 Rev. I  
34-934501

by Honeywell  
LB326 Rev. E  
34-934501

# MILLER

**BEFORE USING:** • Check lifeline retraction—Pull out a minimum 4 ft. (1.2m) of lifeline and allow it to retract under light tension. • Check breaking action—Grasp lifeline ABOVE load indicator and apply a sharp pull. The brake must engage. Release tension and allow lifeline to retract slowly into the unit. Lifeline must retract completely. • Inspect snivel snap hook load indicator. If red is exposed, remove from service.

**INSTALLATION:** • See instructions for mounting procedure. • Anchorage and mounting hardware must be capable of supporting a 5,000 lb. (22kN) static load or meet OSHA requirements for safety factor of two. • Anchor device vertically overhead whenever possible, for suitability in other installation applications (i.e., lift, horizontal use/lifeline), refer to instructions.

## SAFETY INSTRUCTIONS

Manufacture's instructions supplied with this product at the time of shipment must be followed: FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH!

Only for use by ONE person as a personal fall arrestor.

Inspect before each use according to manufacturer's instructions.

Avoid lifeline contact with anything that will damage it including, but not limited to, sharp, abrasive, rough or high-temperature surfaces, welding, heat sources, electrical hazards, or moving machinery.

**ADVERTENCIA**

Deben seguirse las instrucciones del fabricante provistas con este producto al momento de despegarlo. EL NO HACERLO PUEDE RESULTAR EN LESIONES GRAVES O LA MUERTE! Solo para el uso por UNA SOLA persona como detector personal contra caídas. El dispositivo debe retirarse del servicio para ser inspeccionado y cuando se haya activado el indicador de impacto.

Vous devez respecter les instructions du fabricant que vous avez reçues avec le produit. NE PAS CONTRAIRE VOS RISQUES DE LÉSIONS GRAVES OU MÊME LA MORT! Utiliser seulement par UNE personne comme arrêt de chute personnel. L'appareil doit être mis hors d'utilisation pour inspection et lorsque l'indicateur d'impact a été activé.

## ADVERTISSEMENT

Always test the locking and retraction of this device before each use.

Allow adequate fall clearance below work surface.

Inspection must be taken out of service for fall or when the impact indicator has been activated.

Manufacturer's instructions must be followed.

## ADVERTISSEMENT

Always test the locking and retraction of this device before each use.

Allow adequate fall clearance below work surface.

Inspection must be taken out of service for fall or when the impact indicator has been activated.

Manufacturer's instructions must be followed.

## WARNING

SELF-RETRACTING LIFELINE

PAT. NO. 5,771,993

# MIGHTY L I T E™

# MIGHTY L I T E™

PAT. NO. 5,771,933

## SELF-RETRACTING LIFELINE

CLEAR WINDOW



Contact manufacturer  
if instruction manual  
is needed.

### SPECIFICATIONS

Max Total Arrest Distance (Distance Totale D'Arrêt Max)	54 in (1.4m)
Max Free Fall Distance (Distance De Chute Libre Max)	24 in (0.6m)
Max Capacity* (Capacité Max)	310 lbs (140.6kg)
[130 lbs-310 lbs - ANSI Capacity Range]	
*For a Max Capacity of 400 lbs (181.4kg), see instructions and applicable Fall Protection Code.	
Avg/Max Fall Arrest Force** (when tested to ANSI Z359.14*)	900 lbf/1800 lbf (4kN)
Max Fall Arrest Force** (Force D'Arrêt De Chute Max) (when tested to CSA Z259.2.2 & ANSI Z359.1*)	900 lbf (4kN)

\*\*Refer to variable label at left for unit compliances.

DO NOT REMOVE THIS LABEL

REMOVE FROM SERVICE IF  
RED APPEARS



# MILLER

by Honeywell

Franklin, PA U.S.A.

Toll Free  
800-873-5242

LB311 Rev. K  
MFP9345930

by Honeywell  
MFP9345930  
LB311 Rev. E

# MILLER

**BEFORE USING:** • Check lifeline retraction--Pull out a min. 4 ft. (1.2m) of lifeline and allow it to retract under light tension. • Check braking action--Grasp lifeline ABOVE load indicator to retract slowly into the unit. Lifeline must retract completely. • Release tension and allow lifeline to snap hook load indicator. If red is exposed, remove from service. • See instructions for mounting procedure. • Anchorage and mounting hardware must be capable of supporting a safety factor of two. • Anchor device vertically in other installation applications (i.e., lift, horizontal use/lifeline), refer to instructions.

**INSTALLATION:** • See instructions for mounting procedure. • Anchorage and mounting hardware must be capable of supporting a safety factor of two. • Anchor device vertically in other installation applications (i.e., lift, horizontal use/lifeline), refer to instructions.

### SAFETY INSTRUCTIONS

Manufacturer's instructions supplied with this product at the time of shipment must be followed:  
**FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH!**

- Only for use by ONE person as a personal fall arrestor.
- Inspect before each use according to manufacturer's instructions.
- Avoid lifeline contact with anything that will damage rough or high-temperature surfaces, welding, heat including but not limited to, sharp, abrasive, sources, electrical hazards, or moving machinery.

**ADVERTENCIA**

Deben seguirse las instrucciones del fabricante que vienen con este producto al momento de despacho. EL NO HACERLO PUEDE RESULTAR EN LESIONES GRAVES O LA MUERTE! Solo para el uso por UNA SOLA persona como dispositivo personal de arresto de caída. El dispositivo debe retirarse del servicio para inspección y re-certificación luego de haber estado expuesto a superficies rugosas, altas temperaturas, soldadura, calor, superficies ásperas, abrasivas, superficies eléctricas peligrosas, o maquinaria en movimiento.

**ADVERTISSEMENT**

Vous devez respecter les instructions du fabricant que vous avez reçues avec le produit. DANS LE CAS CONTRAIRE, VOUS RISQUEZ DE BLESSURES GRAVES OU MÊME LA MORT! Seul usage adéquat avec le produit: DANS LE CAS CONTRAIRE, l'inspection et la recertification après avoir arrêté une chute ou lorsque l'indicateur d'impact a été activé.

### SELF-RETRACTING LIFELINE

PAT. NO. 5,771,933

# MIGHTY L I T E™

# Miller Retractable Web Lanyard

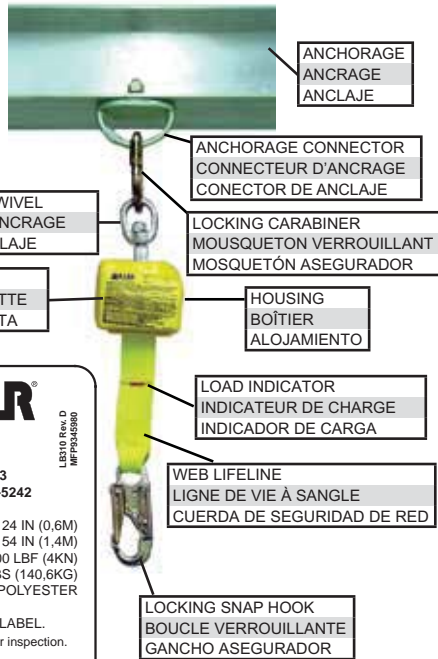
Models Modèles Modelos	Lifeline Material Matériau du filin Material de la cuerda	Length Longueur Largo	Weight Poids Peso
8327 8327A AD6902	1-3/4 in. x .06 in. polyester webbing 44.45mm x 1.52mm sangle en polyester 44.45mm x 1.52mm tejido de poliéster	8 ft. (2.4m) 10 ft. (3m)	2.8 lbs. (1.3kg)

Performance Specifications Spécifications de performance Especificaciones de desempeño	
<b>Max Capacity</b> Capacité Max Capacidad Máx	310 lbs (140,6kg)
<b>Max Arrest Distance</b> Distance D'Arret Max Distancia De Detención Máx	54 in (1,4m)
<b>Max Free Fall Distance</b> Distance de Chute Libre Max Distancia de Caída Libre Máx	24 in (0,6m)
<b>Max Arrest Force</b> Force D'Arret De Chute Max Fuerza De Frenado Máx	900 lbf (4kN)

Refer to variable label for unit compliances.

Prière de se reporter à l'étiquette variable pour les conformités d'unités.

Consulte la etiqueta variable para ver el cumplimiento de normas de la unidad.



## Retractable Web Lanyard

**BEFORE USE:** Inspect before each use according to the manufacturer's instructions. Check lifeline retraction—Pull out a max. 4 ft. (1.2m) of webbing and allow it to retract under light tension. Check braking action—Apply a sharp pull to the lifeline. The brakes must engage. Release tension and allow lifeline to retract slowly into the unit. Lifeline must retract completely. Remove from service if any damage is detected or after arresting a fall.

**INSTALLATION:** See instructions for mounting procedure. Connectors and anchorage points must be compatible and able to support a 5,000 lb. static load or meet OSHA 1926.602 requirements for a safety factor of 2. Allow adequate fall clearance below work surface.

**WARNING:** Manufacturer's instructions supplied with this product at the time of shipment must be followed: Failure to do so may result in serious injury or death! Contact Honeywell Safety Products if instruction manual is needed.

**ADVERTENCIA:** Deben seguirse las instrucciones del fabricante provistas con este producto al momento de despacho: El no hacerlo puede resultar en lesiones graves o la muerte! Solo para el uso por UNA SOLA persona como detector personal contra caídas. El dispositivo debe retirarse del servicio para ser inspeccionado y recertificación luego de haber detenido una caída o cuando se haya activado el indicador de impacto. Si se requiere el manual de instrucciones consulte Honeywell Safety Products.



by Honeywell  
Franklin, PA 16323  
TOLL FREE: 800-873-5242

MAX FREE FALL DISTANCE 24 IN (0,6M)  
TOTAL ARREST DISTANCE 54 IN (1,4M)  
MAX ARREST FORCE 900 LBF (4KN)  
MAX CAPACITY 310 LBS (140,6KG)  
MATERIAL 1-3/4" x 3/64" POLYESTER

DO NOT REMOVE THIS LABEL.

Expiration Date: See manual for inspection.

MADE IN USA

**AVERTISSEMENT:** Vous devez respecter les instructions du fabricant que vous avez reçues avec le produit: Dans le cas contraire, vous risquez des blessures graves ou même la mort! Utilisez seulement par UNE personne comme arrêt de chute personnelle L'appareil doit être mis hors d'utilisation pour inspection et recertification après avoir arrêté une chute ou lorsque l'indicateur l'impact a été activé. Contactez Honeywell Safety Products si vous avez besoin d'un nouveau manuel.

# Titan™ Fall Limiters

Models Modèles Modelos	Lifeline Material Matériau du filin Material de la cuerda	Length Longueur Largo	Weight Poids Peso
TFL	1 in x 0.06 in polyester vectran webbing 25,4mm x 1,52mm sangle en polyester vectran 25,4mm x 1,52mm cinchería de poliéster vectran	11 ft (3,3m)	2.5 lbs (1,1kg)



Performance Specifications Spécifications de performance Especificaciones de desempeño	
Max Capacity Capacité Max Capacidad Máx	310 lbs (140,6kg)
Max Arresting Distance Distance D'Arret Max Distancia De Detención Máx	39 in (1m)
Max Free Fall Distance Distance de Chute Libre Max Distancia de Caída Libre Máx	24 in (0,6m)
Max Arrest Force Force D'Arret De Chute Max Fuerza De Frenado Máx	900 lbf (4kN)

*Note: Dimensions are the same as the Mini-Lite Fall Limiters. Labels are also the same, with name and color exceptions.*

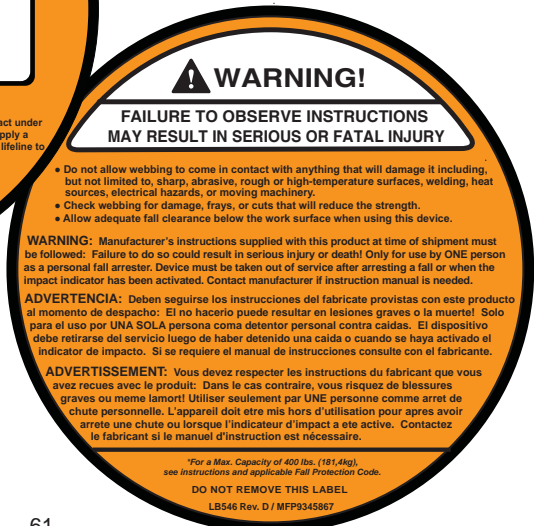
*Remarque : Les dimensions sont les mêmes que les limiteurs de chute MiniLite. Les étiquettes sont aussi les mêmes, sauf exceptions de désignation et de couleur.*

*Nota: Las dimensiones son iguales a las de los limitadores de caídas MiniLite. Las etiquetas también son iguales, a excepción de los nombres y los colores.*

Refer to variable label for unit compliances.

Prière de se reporter à l'étiquette variable pour les conformités d'unités.

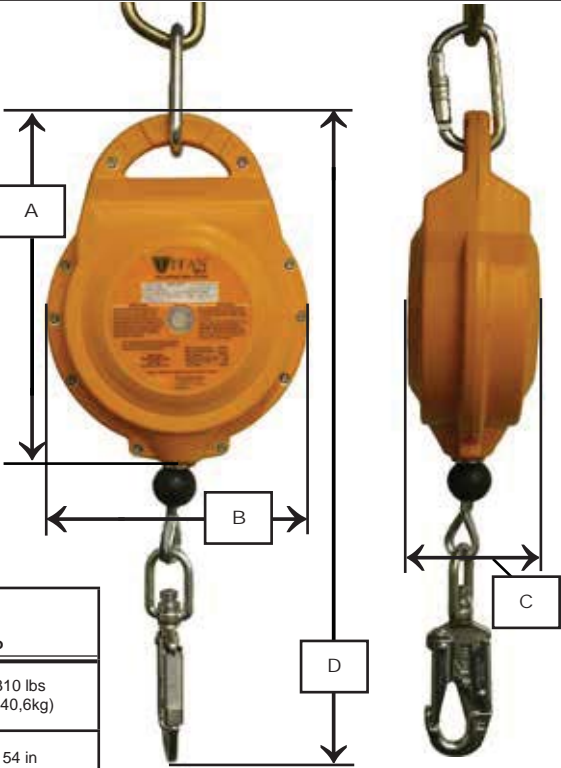
Consulte la etiqueta variable para ver el cumplimiento de normas de la unidad.





# Titan™

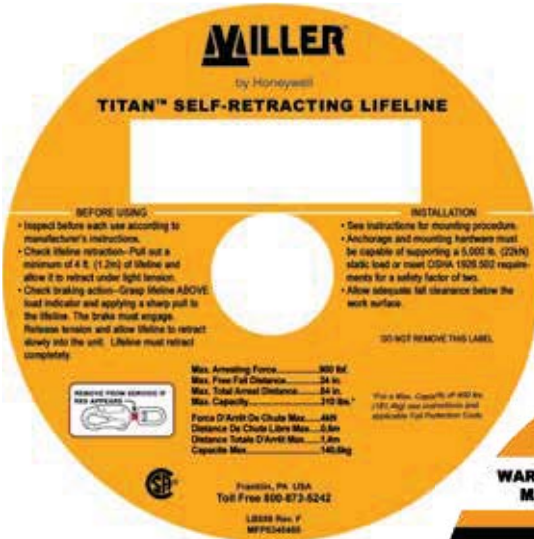
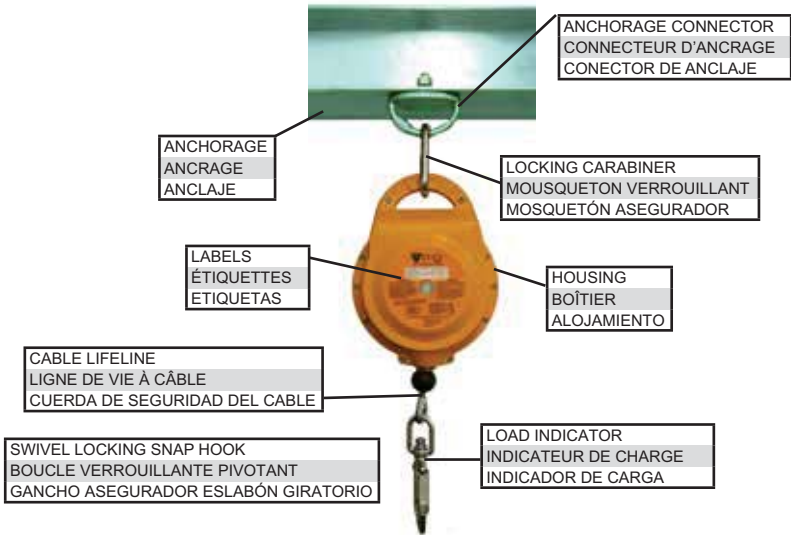
## Self-Retracting Lifelines



Performance Specifications Spécifications de performance Especificaciones de desempeño	
Max Capacity Capacité Max Capacidad Máx	310 lbs (140,6kg)
Max Arresting Distance Distance D'Arret Max Distancia De Detención Máx	54 in (1,4m)
Max Free Fall Distance Distance de Chute Libre Max Distancia de Caída Libre Máx	24 in (0,6m)
Max Arrest Force Force D'Arret De Chute Max Fuerza De Frenado Máx	900 lbf (4kN)

Refer to variable label for unit compliances.  
Prière de se reporter à l'étiquette variable pour les conformités d'unités.  
Consulte la etiqueta variable para ver el cumplimiento de normas de la unidad.

Model Modèle Modelo	Lifeline Material Matériau du filin Material de la cuerda	Length Longueur Largo	Weight Poids Peso	A	B	C	D
TR20	3/16 in. galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	20 ft. (6m)	11 lbs. (5kg)	10.75" (273mm)	8.25" (210mm)	3.75" (95mm)	24" (610mm)
TR30	3/16 in. galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	30 ft. (10m)	13 lbs. (5.8kg)	10.75" (273mm)	8.25" (210mm)	3.75" (95mm)	24" (610mm)
TR50	3/16 in. galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	50 ft. (15m)	18 lbs. (8kg)	12.75" (324mm)	10" (254mm)	3.75" (95mm)	26" (660mm)
TR65	3/16 in. galvanized wire rope 5mm câble galvanisé 5mm cable de acero galvanizado	65 ft. (20m)	19 lbs. (8.6kg)	12.75" (324mm)	10" (254mm)	3.75" (95mm)	26" (660mm)



# Titan™ TRW

## Self-Retracting Lifeline

Models Modèles Modelos	Lifeline Material Matériau du filin Material de la cuerda	Length Longueur Largo	Weight Poids Peso
TRW/20FT	1 in x 0.06 in polyester webbing 25,4mm x 1,52mm sangle en polyester 25,4mm x 1,52mm tejido de poliéster	20 ft (6m)	8 lbs (3,6kg)



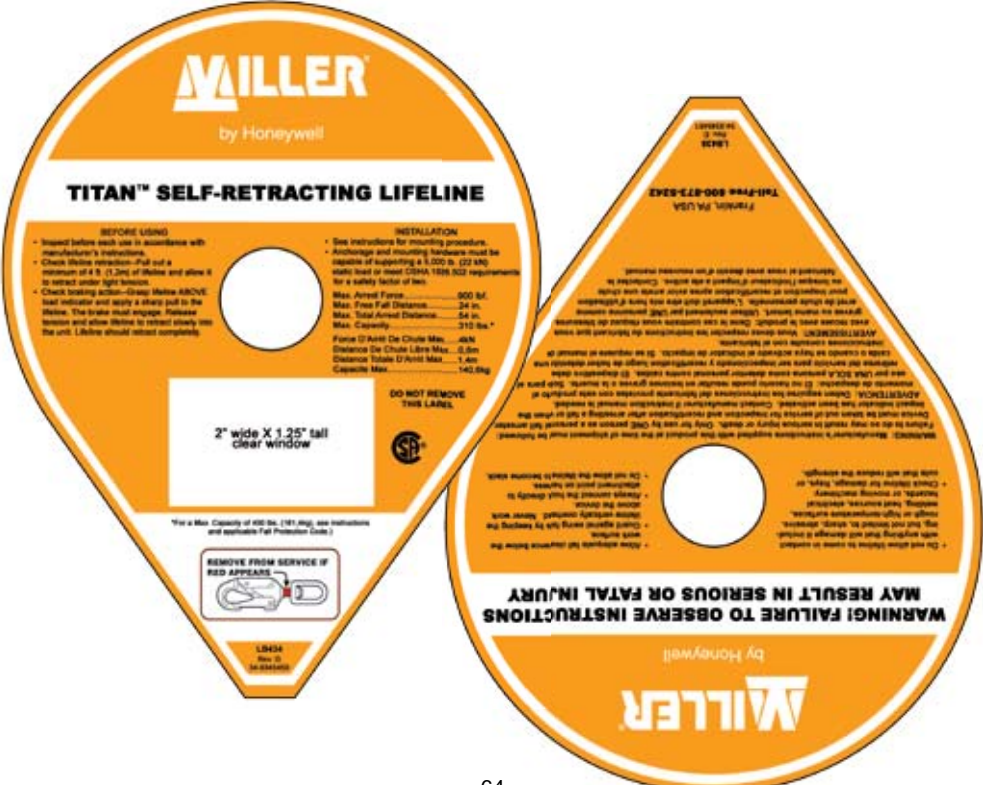
Performance Specifications Spécifications de performance Especificaciones de desempeño	
Max Capacity Capacité Max Capacidad Máx	310 lbs (140,6kg)
Max Arresting Distance Distance D'Arret Max Distancia De Detención Máx	54 in (1,4m)
Max Free Fall Distance Distance de Chute Libre Max Distancia de Caída Libre Máx	24 in (0,6m)
Max Arrest Force Force D'Arret De Chute Max Fuerza De Frenado Máx	900 lbf (4kN)

Note: Dimensions are the same as the MightyLite RL20 Self-Retracting Lifeline.

Remarque : Les dimensions sont les mêmes que la câble de sécurité autorétractable MightyLite RL20.

Nota: Las dimensiones son iguales a las de la cuerda salvavidas autorretráctil MightyLite RL20.

Refer to variable label for unit compliances.  
 Prière de se reporter à l'étiquette variable pour les conformités d'unités.  
 Consulte la etiqueta variable para ver el cumplimiento de normas de la unidad.



# Titan™ Retractable Web Lanyard

Models Modèles Modelos	Lifeline Material Matériau du filin Material de la cuerda	Length Longueur Largo	Weight Poids Peso
TRW/8FT TRWS/8FT	1-3/4 in. x .06 in. polyester webbing 44.45mm x 1.52mm sangle en polyester 44.45mm x 1.52mm tejido de poliéster	8 ft. (2.4m)	2.5 lbs. (1.1kg)



Note: Dimensions are 4" (101.6mm) wide, 3" (76.2mm) thick, and 14" (355.6) long when fully retracted.

Remarque : Les dimensions sont les suivantes : 4 po ( 101,6 mm ) de large, 3 po ( 76,2 mm ) d'épais et 14 po ( 355,6 mm ) de long lorsque complètement rétracté.

Nota: Las dimensioness son 101.6 mm (4") de ancho, 76.2 mm (3") de espesor y 355.6 mm (14") de largo cuando está completamente retraída.

Performance Specifications Spécifications de performance Especificaciones de desempeño	
Max Capacity Capacité Max Capacidad Máx	310 lbs (140,6kg)
Max Arresting Distance Distance D'Arret Max Distancia De Detención Máx	54 in (1,4m)
Max Free Fall Distance Distance de Chute Libre Max Distancia de Caída Libre Máx	24 in (0,6m)
Max Arrest Force Force D'Arret De Chute Max Fuerza De Frenado Máx	900 lbf (4kN)

Refer to variable label for unit compliances.  
Prière de se reporter à l'étiquette variable pour les conformités d'unités.  
Consulte la etiqueta variable para ver el cumplimiento de normas de la unidad.

## NOTES / REMARQUES / NOTAS

**Variable Information Label**

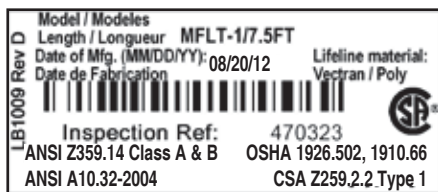
All Miller self-retracting lifelines/fall limiters also incorporate a variable label to specify information which varies from model to model (i.e., model number, date of manufacture, inspection/lot number, length, and standards met by specific model).

**Étiquette D'information Variable**

Tous les câbles de sécurité autorétractables et limiteurs de chute Miller comprennent aussi une étiquette variable pour indiquer les données qui varient d'un modèle à l'autre (c.-à-d., numéro de modèle, date de fabrication, numéro d'inspection / de lot, longueur, et normes respectées par un modèle particulier).

**Información Variable en Las Etiquetas**

Todas las cuerdas salvavidas autorretráctiles y limitadores de caídas Miller también incorporan una etiqueta para indicar información que varía de un modelo a otro (o sea, número de modelo, fecha de fabricación, número de inspección o lote y normas con que cumple cada modelo en particular).



◀Sample Variable Label: This label varies by product model.

**NOTE: Compliance with standards varies by product model. Always refer to the variable label on the unit.**

◀Modèle d'étiquette variable : cette étiquette varie en fonction du modèle du produit.

**REMARQUE : La conformité aux normes varie en fonction du modèle du produit. Toujours se reporter à l'étiquette variable sur l'unité.**

◀Etiqueta de muestra variable: Esta etiqueta varía según el modelo del producto.

**NOTA: El cumplimiento de los estándares varía según el modelo del producto. Siempre consulte la etiqueta de la variable en la unidad.**

Product specification sheets may be downloaded  
at [www.millerfallprotection.com](http://www.millerfallprotection.com).

Les fiches techniques des produits peuvent être téléchargées au  
[www.millerfallprotection.com](http://www.millerfallprotection.com).

Las hojas de especificaciones de los productos pueden bajarse de  
[www.millerfallprotection.com](http://www.millerfallprotection.com).

# Inspection and Maintenance Log

## Registre D'inspection et D'entretien

## Registro de Inspección y Mantenimiento

**DATE OF MANUFACTURE:** \_\_\_\_\_

DATE DE FABRICATION / FECHA DE FABRICACIÓN

**MODELNUMBER:** \_\_\_\_\_

NUMÉRO DE MODÈLE / NÚM. DE MODELO

**DATE PURCHASED:** \_\_\_\_\_

DATE D'ACHAT / FECHA DE COMPRA

INSPECTION DATE DATE D'INSPECTION FECHA DE INSPECCIÓN	INSPECTION ITEMS NOTED POINTS NOTÉS LORS DE L'INSPECTION PUNTOS DE INSPECCIÓN RELEVANTES	CORRECTIVE ACTION ACTION CORRECTIVE MEDIDA CORRECTIVA	MAINTENANCE PERFORMED ENTRETIEN EFFECTUÉ MANTENIMIENTO REALIZADO
Approved by: Approuvé par: Aprobado por:			
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## Registro de Inspección y Mantenimiento

DATE DE FABRICATION / FECHA DE FABRICACIÓN \_\_\_\_\_

NUMÉRO DE MODÈLE / NÚM. DE MODELO

DATE D'ACHAT / FECHA DE COMPRA \_\_\_\_\_

68





## **MILLER® FALL PROTECTION PRODUCTS TOTAL SATISFACTION ASSURANCE**

At Honeywell Safety Products and its predecessors, we have been providing quality Miller brand fall protection equipment to millions of workers worldwide since 1945.

### **LIMITED LIFETIME WARRANTY BACKED BY OVER 65 YEARS IN THE FALL PROTECTION BUSINESS**

We sincerely believe that our fall protection equipment is the best in the world.

Our products endure rigorous tests to ensure that the fall protection equipment you trust is manufactured to the highest standards. Miller fall protection products are tested to withstand normal wear and tear, but are not indestructible and can be damaged by misuse.

Our Limited Lifetime Warranty does not apply to normal wear and tear or abusive treatment of the product.

In the unlikely event that you should discover defects in either workmanship or materials, under our Limited Lifetime Warranty, we will repair or replace the product at our expense.

If a replacement is necessary and your product is no longer available, a comparable product will be substituted.

Should a product issue surface, contact us at 800.873.5242.

Manufacturing specifications are subject to change without notice.

---

## **PRODUITS MILLER® FALL PROTECTION ASSURANCE DE SATISFACTION TOTALE**

Honeywell Safety Products et ses prédécesseurs offrent les équipements antichute de marque Miller de qualité à des millions de travailleurs dans le monde entier depuis 1945.

### **GARANTIE LIMITÉE À VIE ASSURÉE GRÂCE À PLUS DE 65 ANS PASSÉS DANS LE DOMAINE DE LA PROTECTION CONTRE LES CHUTES**

Nous croyons sincèrement que notre équipement de protection contre les chutes est le meilleur au monde. Nos produits sont soumis à des tests rigoureux, afin d'assurer que les équipements de protection contre les chutes dans lesquels vous avez confiance sont fabriqués selon les normes les plus exigeantes. Les produits de protection contre les chutes Miller sont soumis à des essais pour vérifier qu'ils résistent à une usure normale; ils ne sont cependant pas indestructibles et peuvent s'endommager en cas de mauvaise utilisation. Notre garantie limitée à vie ne s'applique pas à l'usure normale ou à un usage abusif du produit.

Dans le cas peu probable où vous découvririez des défauts, soit de fabrication, soit de matériau,

dans le cadre de notre garantie à vie, nous réparerons ou remplacerons le produit à nos frais.

En cas de remplacement, si votre produit n'est plus offert, vous recevrez un produit comparable.

En cas de problème sur un produit, nous contacter au 800-873-5242.

Les caractéristiques de fabrication peuvent être modifiées sans préavis.

---

## **PRODUCTOS ANTICAÍDAS MILLER® GARANTÍA DE SATISFACCIÓN TOTAL**

En Honeywell Safety Products y sus predecesores, hemos estado brindando la calidad de la marca Miller en equipos de protección de caída a millones de trabajadores alrededor del mundo desde 1945.

### **GARANTÍA LIMITADA DE POR VIDA NOS RESPALDAN MÁS DE 65 AÑOS EN LA FABRICACIÓN DE EQUIPO ANTICAÍDAS**

Sinceramente creemos que su equipo de protección contra caídas es el mejor del mundo. Nuestros productos resisten rigurosas pruebas para garantizar que el equipo de protección contra caídas en el que usted confía está fabricado de conformidad con las normas más elevadas. Los productos anticaídas Miller son sometidos a pruebas para que resistan el desgaste normal, pero no son indestructibles y su incorrecta utilización puede dañarlos.

Nuestra Garantía limitada de por vida no se aplica al desgaste normal ni al maltrato del producto.

En el poco probable caso de que usted descubriera defectos de mano de obra o materiales, por nuestra Garantía limitada de por vida, repararemos o sustituiremos el producto por cuenta nuestra. Si un reemplazo es necesario y nuestro producto ya no está disponible, se lo sustituiremos por otro comparable.

En caso de que surja un problema con el producto, contáctenos al 800.873.5242.

Las especificaciones de fabricación están sujetas a modificaciones sin previo aviso.



by Honeywell

**Toll Free: 800.873.5242**

**Fax: 800.892.4078**

Download this manual at: [www.millerfallprotection.com](http://www.millerfallprotection.com)

Téléchargez ce manuel à l'adresse: [www.millerfallprotection.com](http://www.millerfallprotection.com)

Puede bajar por Internet este manual en: [www.millerfallprotection.com](http://www.millerfallprotection.com)

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**Honeywell Safety Products**

P.O. Box 271, 1345 15th Street

Franklin, PA 16323 USA



# LANYARDS & SHOCK ABSORBERS

## User Instruction Manual

Manuel D'utilisation

Manual de Instrucciones  
para El Usuario

I128 Rev 1.0  
MFP9720039

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## Thank You

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Thank you for your purchase of Miller Fall Protection equipment. Miller brand products are produced to meet the highest standards of quality at our ISO 9001:2000 certified facility. Miller Fall Protection equipment will provide you with years of use, if cared for properly.

### WARNING

All persons using this equipment must read, understand and follow all instructions. Failure to do so may result in serious injury or death. Do not use this equipment unless you are properly trained.

## Questions?

CALL  
1.800.873.5242

---

It is crucial that the authorized person/user of this fall protection equipment read and understand these instructions. In addition, it is the employer's responsibility to ensure that all users are trained in the proper use, inspection, and maintenance of fall protection equipment. Fall protection training should be an integral part of a comprehensive safety program.

Proper use of fall arrest systems can save lives and reduce the potential of serious injuries from a fall. The user must be aware that forces experienced during the arrest of a fall or prolonged suspension may cause bodily injury. Consult a physician if there is any question about the user's ability to use this product. Pregnant women and minors must not use this product.

---

## 1.0 General Requirements, Warnings and Limitations

All warnings and instructions shall be provided to authorized persons/users.

**All authorized persons/users must reference the regulations governing occupational safety, as well as applicable ANSI or CSA standards. Please refer to product labeling for information on specific OSHA regulations, and ANSI and CSA standards met by product.**

Proper precautions should always be taken to remove any obstructions, debris, material, or other recognized hazards from the work area that could cause injuries or interfere with the operation of the system.

All equipment must be inspected before each use according to the manufacturer's instructions.

All equipment should be inspected by a qualified person on a regular basis.

To minimize the potential for accidental disengagement, a competent person must ensure system compatibility.

Equipment must not be altered in any way. Repairs must be performed only by the manufacturer, or persons or entities authorized in writing by the manufacturer.

Any product exhibiting deformities, unusual wear, or deterioration must be immediately discarded.

Any equipment subject to a fall must be removed from service.

The authorized person/user shall have a rescue plan and the means at hand to implement it when using this equipment.

Never use fall protection equipment for purposes other than those for which it was designed. Fall protection equipment should never be used for towing or hoisting.

All synthetic material must be protected from slag, hot sparks, open flames, or other heat sources. The use of heat resistant materials is recommended in these applications.

Never use natural materials (manila, cotton, etc.) as part of a fall protection system.

Environmental hazards should be considered when selecting fall protection equipment. Equipment must not be exposed to chemicals which may produce a harmful effect. Polyester should be used in certain chemical or acidic environments. Consult the manufacturer in cases of doubt.

Do not allow equipment to come in contact with anything that will damage it including, but not limited to, sharp, abrasive, rough or high-temperature surfaces, welding, heat sources, electrical hazards, or moving machinery.

Always check for obstructions below the work area to make sure potential fall path is clear.

Allow adequate fall clearance below the work surface.

Never remove product labels, which include important warnings and information for the authorized person/user.

**Maximum working load is 310 lbs. (140.6kg), including tools, unless labeled otherwise.**

## 2.0 System Compatibility

All Miller fall protection products are designed for use with Miller approved components. Substitution or replacement with non-approved component combinations or subsystems or both may affect or interfere with the safe function of each other and endanger the compatibility within the system. This incompatibility may affect the reliability and safety of the total system.

### 2.1 Miller Fall Protection Product Groups

A comprehensive fall protection program must be viewed as a "total system" beginning with hazard identification and ending with ongoing management review. Miller Fall Protection views its products as a "system within a system." Three key components of the "Miller System" need to be in place and properly used to provide maximum worker protection.

#### A. ANCHOR POINT/ANCHORAGE CONNECTOR

The first component is the anchor point/anchorage connector. The anchor point, also referred to as the tie-off point, is a secure point of attachment for connecting devices and must be capable of supporting 5,000 lbs. (22.2kN) per worker or meet OSHA 1926.502 requirements for a safety factor of two, such as an I-beam or other support structure. Anchorage connectors, such as the cross-arm strap and eyebolt, are sometimes necessary to make compatible connections between the connecting device and the anchor point.

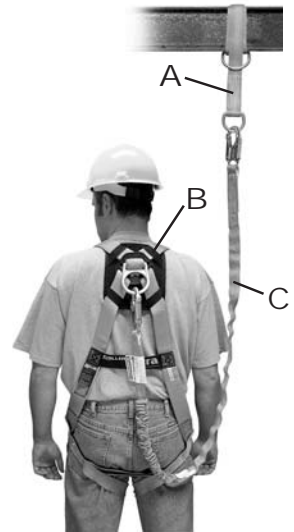
#### B. BODY WEAR

The second system component is the personal protective gear worn by workers while performing the job. Miller Fall Protection manufactures full-body harnesses, positioning belts and body belts for use in specific work environments. Full-body harnesses are engineered to aid in the arrest of a free fall and should be worn in all situations where workers are exposed to a potential free fall. The full-body harness must be used in conjunction with shock-absorbing equipment to keep fall forces to a minimum. It is imperative that the harness be worn properly.

#### C. CONNECTING DEVICE

The third component of the system is the connecting device. The most important feature of the connecting device is the built-in shock absorber. Whether the connecting device is a shock-absorbing lanyard or self-retracting lifeline, they are designed to dramatically reduce fall arresting forces. Rope, web or cable lanyards being used for fall arrest MUST be used in conjunction with a shock absorber (i.e., Miller SofStop pack).

***Individually, none of these components will provide protection from a fall. Used properly with each other, they form the "Miller System" and become a critically important part of the "total fall protection system."***





## 2.2 Component Warnings and Limitations

### ANCHORAGES

- Anchorages must be capable of supporting 5,000 pounds (22.2kN) per worker or meet OSHA 1926.502 requirements for a safety factor of two.
- Anchorage requirements based on ANSI are as follows:
  - For fall arrest systems, anchorages must withstand a static load of 5,000 lbs. (22.2kN) for non-certified anchorages or two times the maximum arresting force for certified anchorages.
  - For positioning systems, anchorages must withstand a static load of 3,000 lbs. (13.3kN) for non-certified anchorages or two times the foreseeable force for certified anchorages.
  - For travel restraint, anchorages must withstand a static load of 1,000 lbs. (4.5kN) for non-certified anchorages or two times the foreseeable force for certified anchorages.
  - When more than one personal fall arrest system is attached to an anchorage, the above anchorage strengths must be multiplied by the number of personal fall arrest systems attached to the anchorage.
- Always work directly under the anchor point to avoid a swing-fall injury.
- Ensure that the anchorage connector is at a height that will not allow a lower level to be struck should a fall occur.
- When selecting an anchorage point, always remember that shock absorbers may elongate up to 3-1/2 feet (1.07m).
- Ensure that the anchor point is at a height that limits free fall distance to 6 feet (1.8m) or less.
- Anchorage connector must be compatible with snap hook or carabiner and must not be capable of causing a load to be applied to the keeper.
- Never use an anchorage connector which will not allow snap hook or carabiner keeper to close.

### BODY WEAR

- Visually check all buckles to assure proper and secure connections before each use. All straps must be connected and adjusted to provide a snug fit.
- Fall protection connecting devices should be attached to the back D-ring of a full-body harness. A front D-ring attachment element may be used for fall arrest only in rescue, work positioning, rope access, and other ANSI Z359.1 recognized applications where the personal fall arrest system limits the maximum free fall distance to 2 ft. (0.6m) and limits the maximum arrest force to 900 lbs. (4.0kN).
- Side and front D-rings should be used for positioning only. (Note front D-ring exception above.)
- Shoulder D-rings should be used for retrieval only.
- Never attach non-locking snap hooks to a harness D-ring.
- Never attach rebar (pelican) hooks to a harness D-ring.
- Body belts should be used for positioning only.

### CONNECTING DEVICES

- Make only compatible connections.
- Use only connecting devices containing locking snap hooks or auto-locking carabiners.
- Always visually check that each snap hook and carabiner freely engages the D-ring or anchor point, and that its keeper is completely closed and locked.
- Never disable or restrict locking keeper or alter connecting device in any way.
- Make sure snap hook/carabiner is positioned so that its keeper is never load bearing.
- The use of shock absorbers is required to reduce fall arresting forces. Miller shock absorbers, constructed of polyester, limit maximum fall arrest force to 900 lbs. (4kN).
- Average arrest force = 874 lbs. (3.8kN)
- Shock absorbers can elongate up to 3-1/2 feet (1.07m). This maximum elongation distance must be considered when choosing an anchor point.
- Tie-off in a manner which ensures a lower level will not be struck should a fall occur.
- Connect in a manner that limits free fall to the shortest possible distance. [6ft. (1.8m) maximum]
- Never rig a two-legged lanyard to create more than a six-foot free fall.
- Never allow a retractable lanyard or lifeline to become slack.
- Never allow a lanyard, or either leg of a two-legged lanyard, to pass under or entwine around the user's arms, legs, neck or any other obstacle.
- Do not tie knots in lanyards or lifelines, or wrap around sharp, rough edges, or small diameter structural members.
- Do not attach multiple lanyards together, or attach a lanyard back onto itself unless it is specifically designed for that purpose.



## 3.0 Making Connections

### 3.1 Making Connections to the Body Support and Anchorage

#### Connecting to the Body Support

For general fall protection, connect the lanyard to the back D-ring on the full-body harness. The shock absorber portion of the lanyard should be connected to the body support (back D-ring). When using a two-legged lanyard, connect only the center snap hook to the fall arrest attachment element.



#### Connecting to the Anchorage

**Single leg lanyards:** Connect the other end of the lanyard to anchorage or anchorage connector. Make sure connections are compatible in regards to size, strength, and shape.

**Double leg lanyards:** Connect one of the free ends of the lanyard to anchorage or anchorage connector. To retain 100% tie off, make sure at least one leg of the lanyard is connected at all times to an anchorage or anchorage connector of compatible size, strength and shape.

**NOTE: CONNECT THE LEG OF THE LANYARD THAT IS NOT IN USE TO THE PULL-FREE LANYARD RING OR CLIP ONLY.** Do not connect the spare leg of the lanyard to permanently fixed components of the harness (i.e., chest strap, side or front D-rings, etc.).

CORRECT



INCORRECT



### 3.2 Connecting Tie-Back Lanyards

#### Miller BackBiter Tie-Back

Lanyards have a specially designed snap hook and webbing that allows connection back to the integral lanyard in a choking fashion (see Fig. 1). Titan T-BAK Lanyards are also designed for tie-back use by connecting the auto-lock carabiner back into the O-ring (see Fig. 2). Make sure the connection point is capable of supporting 5,000 lbs. (22.2kN) or meets OSHA 1926.502 requirements for a safety factor of two.



Fig. 1

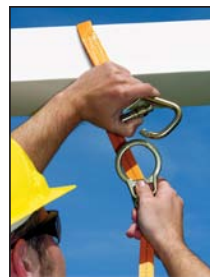


Fig. 2

**CAUTION: Do not attempt this type of connection with standard lanyards which are not specifically designed for such a connection. Failure to follow this warning may cause serious injury or death!**

### 3.3 Connecting a Choke-Through Loop Lanyard



- ① Pass lanyard loop through underside of D-ring.
- ② Pull lanyard loop through D-ring then pass opposite end of lanyard through lanyard loop.
- ③ Pull the full length of the lanyard through loop and tighten choke by pulling on lanyard while adjusting loop evenly over D-ring.

## 3.4 Connecting a Lanyard with Integral O-Ring Extension Option



The O-Ring Extension Option is available on any Miller shock-absorbing lanyard and provides either a choke-through loop or snap hook on the O-ring extension end, which connects to the back D-ring of the harness. Once attached, the user may use the lanyard or a retractable, which is connected to the O-ring of the lanyard.

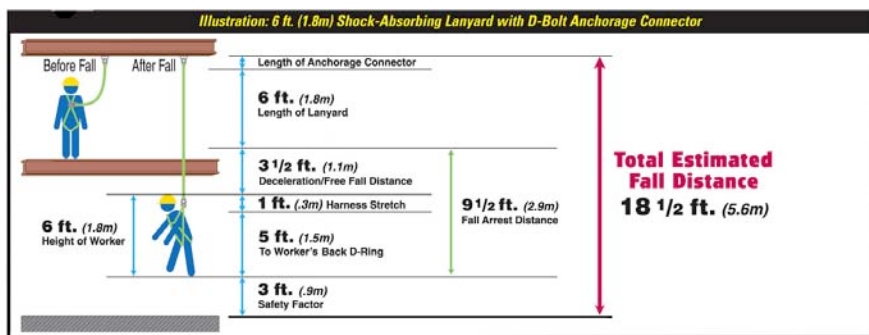
## 3.5 Connecting a D-Ring or O-Ring Extension



The O-Ring or D-Ring Extension is simply a separate webbing extension with a snap hook or loop on one end and a D-ring or O-ring on the other and is connected between the harness back D-ring and the lanyard being used as shown.

# 4.0 Calculating Fall Clearance Distance

It is important to understand how to calculate potential fall clearance to avoid contact with a lower level. The following diagram demonstrates a sample calculation using a shock-absorbing lanyard. When actually calculating fall clearance distance, the authorized person/user must consider all variables, including but not limited to, the height of the worker, the length of the lanyard, and the anchorage connector used, and then make necessary adjustments to the calculations.



1. When using a 6 ft. (1.8m) shock-absorbing lanyard and a full-body harness, first add the length of the shock-absorbing lanyard, 6 ft. (1.8m), to the maximum elongation of the shock absorber during deceleration, 3-1/2 ft. (1.1m).
2. Next, add the height to the worker's back D-ring, 5 ft. (1.8m) average, plus a harness stretch factor of 1 ft. (.3m).
3. Then, add 3 ft. (.9m) as a safety factor.
4. The Total, 18-1/2 ft. (5.6m) is the estimated safe fall clearance distance, the height at which you must attach to an anchorage to minimize the risk of contact with a lower level.

**NOTE: A fall clearance calculation made from the anchor point must take into consideration the length of the anchorage connector being used.**

If there is any question about calculating fall clearance distance, please contact Miller Fall Protection Technical Services Department at 1-800-873-5242.

## 5.0 Inspection and Maintenance

Miller lanyards are designed for today's rugged work environments. To maintain their service life and high performance, lanyards should be inspected frequently. Inspect the lanyard thoroughly before each use. Regular inspection by a competent person for wear, damage or corrosion should be a part of your safety program. Inspect your equipment daily and replace it if any of the defective conditions explained in this manual are found.

### 5.1 Lanyard Inspection

When inspecting lanyards, begin at one end and work to the opposite end. Slowly rotate the lanyard so that the entire circumference is checked. Spliced ends require particular attention. Hardware should be examined under procedures also detailed below, i.e., snap hooks, D-rings and thimbles.

#### ① HARDWARE

- a. Snap hooks: Inspect closely for hook and eye distortions, cracks, corrosion, or pitted surfaces. The keeper (latch) should seat into the nose without binding and should not be distorted or obstructed. The keeper spring should exert sufficient force to firmly close the keeper. Keeper locks must prevent the keeper from opening when the keeper closes.
- b. Thimbles: The thimble must be firmly seated in the eye of the splice, and the splice should have no loose or cut strands. The edges of the thimble must be free of sharp edges, distortion, or cracks.



#### ② WIRE ROPE LANYARD

**CAUTION: Always wear gloves when inspecting a wire rope lanyard; broken strands can cause injury!**

While rotating the wire rope lanyard, watch for cuts, frayed areas, or unusual wearing patterns on the wire. Broken strands will separate from the body of the lanyard.



#### ③ WEB LANYARD

While bending webbing over a pipe or mandrel, observe each side of the web lanyard. This will reveal any cuts, snags, or breaks. Swelling, discoloration, cracks, and/or charring are obvious signs of chemical or heat damage. Observe closely for any breaks in the stitching. Inspect lanyard warning flag for signs of activation. Titan tubular lanyards must be measured to determine activation.



#### ④ ROPE LANYARD

Rotation of the rope lanyard while inspecting from end-to-end will bring to light any fuzzy, worn, broken or cut fibers. Weakened areas from extreme loads will appear as a noticeable change in original diameter. The rope diameter should be uniform throughout, following a short break-in period.



#### ⑤ PACK-TYPE SHOCK ABSORBER

The outer portion of the pack should be examined for burn holes and tears. Stitching on areas where the pack is sewn to D-rings, belts, or lanyards should be examined for loose strands, rips, deterioration or other signs of activation.



## 5.2 Types of Material Damage

HEAT	CHEMICAL	MOLTEN METAL OR FLAME	PAINTS AND SOLVENTS
In excessive heat, rope/webbing becomes brittle and has a shriveled brownish appearance. Fibers will break when flexed. Should not be used above 180°F.	Change in color usually appearing as a brownish smear or smudge. Transverse cracks when rope/webbing is bent over a mandrel. Loss of elasticity in rope/webbing.	Rope/webbing strands fuse together. Hard shiny spots. Hard and brittle feel.	Paint which penetrates and dries restricts movement of fibers. Drying agents and solvents in some paints will appear as chemical damage.

Contact Miller Technical Service Department at 800-873-5242 if you have any questions about the above chart.

## 5.3 Cleaning and Storage

Basic care of all Miller Fall Protection equipment will prolong the durable life of the unit and will contribute toward the performance of its vital safety function. Proper storage and maintenance after use are as important as cleansing the equipment of dirt, corrosives, or contaminants. Storage areas should be clean, dry and free of exposure to fumes or corrosive elements. Wipe off all surface dirt with a sponge dampened in plain water. Squeeze the sponge dry. Dip the sponge in a mild solution of water and commercial soap or detergent. Work up a thick lather, with a vigorous back and forth motion. Then wipe dry with a clean cloth. Hang freely to dry, but away from excessive heat, steam, or long periods of sunlight.

## 5.4 Life Expectancy of Miller Brand Lanyards

It is the position of Miller Fall Protection (MFP) to use a 5-year life expectancy from date of first use as a guideline on all lanyards. MFP provides this recommendation as a **general** guideline, and is not to be used in lieu of the lanyard inspection section of this manual. This guideline only applies to product exhibiting no visual damage and that has not been exposed to chemicals, abnormal heat, or excessive ultra-violet light. It is possible that the equipment will last longer depending on the care and use the equipment may see.

Following these instructions may still necessitate removing the lanyard from service prior to the expiration of the five-year life expectancy guideline. Likewise, proper adherence to the inspection and maintenance criteria may extend the useful life beyond five years. Ultimately, it is the responsibility of the authorized person/user to determine when a lanyard is unfit for use and should be removed from service. Products removed from service should be disposed of in a manner that prevents inadvertent further use.

# Merci

Nous désirons vous remercier d'avoir acheté un équipement de Miller Fall Protection. Les produits de marque Miller sont fabriqués selon des normes de qualité des plus rigoureuses, dans notre usine certifiée ISO 9001:2000. Bien entretenu, un équipement Miller Fall Protection s'utilise des années durant.

## AVERTISSEMENT

Toutes les personnes qui utilisent cet équipement doivent lire, comprendre et suivre toutes les instructions. Tout manquement à cette règle peut avoir pour conséquence des blessures graves ou la mort. Ne pas utiliser cet équipement à moins d'avoir reçu une formation adéquate.

## Des Questions? **APPELEZ** 1.800.873.5242

Il est essentiel que la personne autorisée à utiliser cet équipement de protection contre les chutes lise et comprenne ces instructions. De plus, il incombe à l'employeur de s'assurer que tous les utilisateurs sont formés à l'emploi, à l'inspection et à l'entretien adéquats de l'équipement de protection contre les chutes. La formation sur la protection contre les chutes devrait faire partie intégrante d'un programme global de sécurité.

L'utilisation adéquate de systèmes d'arrêt de chute peut épargner des vies et réduire le risque de blessures graves consécutives à une chute. L'utilisateur doit être sensibilisé au fait que les forces subies lors d'un arrêt de chute ou d'une suspension prolongée peuvent causer des blessures corporelles. Dans l'incertitude sur la capacité de la personne à utiliser ce produit, consulter un médecin. Les femmes enceintes et les mineurs ne doivent pas utiliser ce produit.

# 1.0 Exigences Générales, Avertissements et Limitations

Les avertissements et instructions devront être mis à la disposition des personnes/utilisateurs autorisés.

**Les personnes/utilisateurs autorisés doivent se reporter à la réglementation applicable en matière de sécurité en milieu de travail, ainsi qu'aux normes ANSI ou CSA pertinentes. Veuillez vous reporter aux étiquettes apposées sur les produits pour des informations plus détaillées sur les règlements OSHA, ainsi que les normes ANSI et CSA auxquelles ces produits sont conformes.**

Des précautions doivent être prises afin d'éliminer de la zone de travail les obstacles, débris, matériaux ou autres éléments présentant un danger et qui pourraient causer des blessures ou nuire au bon fonctionnement du système.

L'équipement doit être inspecté avant chaque utilisation selon les directives du fabricant.

L'équipement doit être régulièrement inspecté par une personne qualifiée.

Pour minimiser le risque de décrochage accidentel, une personne compétente doit s'assurer de la compatibilité du système.

Il est interdit de modifier l'équipement, de quelque façon que ce soit.

Les réparations doivent être effectuées uniquement par le fabricant de l'équipement, ou par des personnes ou entités autorisées par écrit par le fabricant.

Tout produit déformé, anormalement usé ou détérioré doit être immédiatement mis au rebut.

Tout équipement soumis à une chute doit être mis hors service.

L'utilisateur doit posséder un plan de sauvetage et avoir les moyens de le mettre en œuvre lorsqu'il utilise cet équipement.

Ne jamais utiliser un équipement de protection contre les chutes dans un but autre que celui pour lequel il a été prévu. Ne jamais utiliser un tel équipement pour remorquer ou lever une charge.

Les matériaux synthétiques doivent être protégés contre le laitier (de soudure), les étincelles chaudes, les flammes nues ou autres sources de chaleur. Dans de tels cas, on recommande d'utiliser des matériaux résistants à la chaleur.

Ne jamais utiliser de matériaux naturels (chanvre de Manille, coton, etc.) dans un système de protection contre les chutes.

Lorsqu'on sélectionne un équipement de protection contre les chutes, prendre en compte les risques reliés à l'environnement. L'équipement ne doit pas être mis en contact avec des produits chimiques susceptibles d'avoir des effets nuisibles. Utiliser du polyester en présence de certains produits chimiques ou d'une atmosphère acide. En cas de doute, se renseigner auprès du fabricant.

Éviter tout contact entre un équipement et un objet susceptible de l'endommager, incluant notamment, sans que la liste soit exhaustive : des arêtes vives, une surface abrasive, rugueuse ou à haute température, du matériel de soudage, une source de chaleur, un appareil électrique présentant un danger ou une machine mobile.

Toujours vérifier qu'il n'y a pas d'obstacles en dessous de la zone de travail et que le trajet en cas de chute est dégagé.

Prévoir une distance de dégagement suffisante en dessous de la surface de travail.

Ne jamais ôter une étiquette apposée sur un produit; des informations et avertissements importants y sont en effet inscrits à l'intention de la personne/de l'utilisateur autorisé.

**La capacité maximale en service est de 310 lb (140.6 kg), incluant les outils, sauf indications contraires sur l'étiquette.**

## 2.0 Compatibilité du Système

Les cordes d'amarrage et absorbeurs d'énergie Miller ont été conçus pour une utilisation avec les composants Miller approuvés. Les substitutions ou les remplacements par des combinaisons de composants ou de sous-systèmes non approuvés peuvent nuire à leur sécurité de fonctionnement réciproque et ainsi remettre en cause la compatibilité des éléments du système. Cette incompatibilité peut nuire à la sécurité et à la fiabilité de l'ensemble du système.

### 2.1 Groupes de Produits Miller Fall Protection

Un programme complet de protection contre les chutes doit être considéré comme un « système total », débutant par une identification des risques et se terminant par une revue de la direction; cette revue doit avoir lieu en permanence. Pour Miller Fall Protection, ces produits représentent un « système dans un système ». Une protection maximale du travailleur passe par la mise en place et l'utilisation adéquate de trois composants clés du « système Miller ».

#### A. POINT D'ANCRAGE/CONNECTEUR D'ANCRAGE

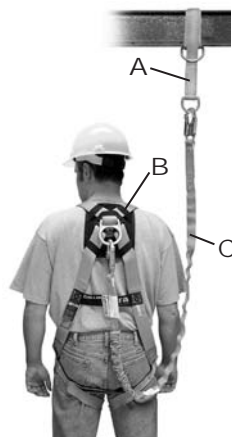
Le premier composant est le point d'ancrage/connecteur d'ancrage. Le point d'ancrage, également dénommé point de fixation, constitue un point d'attache sécuritaire des dispositifs de connexion et il doit pouvoir supporter 5000 lb (22.2 kN) par travailleur ou satisfaire aux exigences 1926.502 de l'OSHA, avec une marge de sécurité de 2, comme une poutre en I ou autre structure de supportage. Il est parfois nécessaire d'utiliser des connecteurs d'ancrage, comme la sangle transversale et le boulon à œil, afin de réaliser des connexions compatibles entre le dispositif de connexion et le point d'ancrage.

#### B. ÉQUIPEMENT DE PROTECTION INDIVIDUELLE

L'équipement de protection individuelle porté par les travailleurs dans l'accomplissement de leurs tâches constitue le second composant. Miller Fall Protection fabrique des harnais de sécurité complets, des ceintures de maintien au travail et des ceintures de travail pour utilisation dans des conditions (de travail) bien précises. Un harnais de sécurité complet est étudié pour l'arrêt d'une chute libre et doit être porté par tout travailleur exposé à un risque de chute. Un harnais de sécurité complet doit être utilisé en même temps qu'un absorbeur d'énergie afin de réduire au minimum les forces présentes en cas de chute. Il est essentiel de porter le harnais de la bonne manière.

#### C. DISPOSITIF DE CONNEXION

Le dispositif de connexion constitue le dernier composant du système. L'élément le plus important du dispositif de connexion est l'absorbeur d'énergie incorporé. Que le dispositif soit une corde d'amarrage à absorbeur d'énergie ou un cordage de sécurité à rétraction automatique, il a été conçu pour réduire substantiellement les forces mises en jeu lors de l'arrêt d'une chute. Une corde d'amarrage constituée par une corde, une sangle ou un câble et servant de dispositif antichute DOIT ÊTRE utilisé en même temps qu'un absorbeur d'énergie (par exemple : enveloppe compacte SofStop de Miller).



**Aucun de ces composants ne peut assurer à lui seul une protection contre les chutes. Utilisés comme un tout, ces composants forment le « système Miller » et constituent une partie du « système total de protection contre les chutes », système d'une importance vitale.**





## 2.2 Instructions et Avertissements se Rapportant aux Composants

### ANCAGES

- Les ancrages doivent pouvoir supporter une charge de 5 000 livres (22.2 kN) ou satisfaire aux exigences 1926.502 de l'OSHA, avec une marge de sécurité de 2.
- Les exigences ANSI qui s'appliquent aux ancrages sont les suivantes :
  - L'ancrage non certifié d'un dispositif anti-chute doit supporter une charge statique de 5 000 lb (22.2 kN), tandis qu'un ancrage certifié doit supporter deux fois la force maximale mise en jeu lors de l'arrêt d'une chute.
  - Dans le cas d'un dispositif de maintien, l'ancrage non certifié doit supporter une charge statique de 3 000 lb (13.3 kN), tandis qu'un ancrage certifié doit supporter deux fois la force prévisible.
  - Dans le cas d'une limitation de déplacement, l'ancrage non certifié doit supporter une charge statique de 1 000 lb (4.5 kN), tandis qu'un ancrage certifié doit supporter deux fois la force prévisible.
- Lorsque plusieurs dispositifs anti-chute individuels sont fixés à un même ancrage, les résistances d'ancrage ci-dessus doivent être multipliées par le nombre de dispositifs anti-chute rattachés à l'ancrage.
- Toujours travailler directement sous le point d'ancrage, pour éviter toute blessure par chute avec déplacement latéral.
- S'assurer que le connecteur d'ancrage est suffisamment haut pour qu'il n'y ait pas de risque de heurt d'un niveau inférieur en cas de chute.
- Lorsqu'on choisit un point d'ancrage, ne pas oublier qu'un absorbeur d'énergie peut s'allonger jusqu'à 3 1/2 pi (1.07 m).
- S'assurer que le point d'ancrage est situé à une hauteur limitant la distance de chute libre à 6 pi (1.8 m) ou moins.
- Un connecteur d'ancrage doit être compatible avec le crochet mousqueton ou le mousqueton et ne doit en aucun cas faire supporter une charge au système d'ouverture.
- Ne jamais utiliser un connecteur d'ancrage ne permettant pas de fermer le système d'ouverture d'un crochet mousqueton ou d'un mousqueton.

### ÉQUIPEMENT DE PROTECTION INDIVIDUELLE

- Vérifier les boucles visuellement afin d'assurer des connexions adéquates et sûres avant chaque utilisation. Les sangles doivent être connectées et réglées pour un ajustement serré.
- Les dispositifs de connexion antichute doivent être fixés à l'anneau en D situé à l'arrière d'un harnais de sécurité complet. Un élément de fixation avant à anneau en D s'utilise comme dispositif anti-chute uniquement en cas de sauvetage, de maintien au travail, d'accès sur corde et pour toute application reconnue selon ANSI Z359.1 et dans laquelle le dispositif anti-chute individuel limite la distance de chute libre à 2 pi (0.6 m) et la force d'arrêt à 900 lb (4.0 kN).
- Les anneaux en D situés sur le côté et à l'avant doivent servir uniquement au maintien en place. (Remarquer l'exception ci-dessus concernant l'anneau en D).
- Un anneau en D au niveau de l'épaule doit servir uniquement à la fonction de sauvetage.
- Ne jamais fixer un crochet mousqueton sans verrouillage à un anneau en D.
- Ne jamais fixer un crochet pélican à un anneau en D de harnais.
- Une ceinture de travail doit servir uniquement à la fonction de positionnement.

### DISPOSITIFS DE CONNEXION

- Ne réaliser que des connexions compatibles.
- Utiliser uniquement des dispositifs de connexion de sécurité munis de crochets mousquetons à verrouillage ou de mousquetons à verrouillage automatique.
- Toujours vérifier visuellement que les crochets mousquetons et les mousquetons s'insèrent librement dans les anneaux en D ou les points d'ancrage, et que leurs systèmes d'ouverture sont bien fermés et verrouillés.
- Ne jamais rendre inutilisable un système d'ouverture à verrouillage ou en limiter l'action, ou modifier un dispositif de connexion de quelque façon que ce soit.
- S'assurer qu'un crochet mousqueton/mousqueton soit positionné de telle sorte que son système d'ouverture ne supporte jamais de charge.
- Utiliser obligatoirement un absorbeur d'énergie pour réduire les forces mises en jeu lors de l'arrêt d'une chute. Un absorbeur d'énergie Miller limite ces forces à 900 lb (4 kN).
- Force moyenne mise en jeu lors de l'arrêt d'une chute = 874 lb (3.8 kN)
- L'allongement d'un absorbeur d'énergie atteint 3 1/2 pi (1.07 m). Il est indispensable de tenir compte de l'allongement maximal lorsqu'on choisit un point d'ancrage.
- Fixer les dispositifs de telle sorte qu'il n'y ait aucune possibilité de heurter un niveau inférieur en cas de chute.
- Connecter les dispositifs de façon à limiter la chute libre à la distance la plus courte possible. [6 pi (1.8 m) au maximum]
- Ne jamais mettre en place une corde d'amarrage dans le but d'avoir une distance de chute libre de plus de six pieds.
- Ne jamais laisser une corde d'amarrage ou un cordage de sécurité rétractable prendre du mou (en se détendant).
- Ne pas faire passer une corde d'amarrage ou un cordage de sécurité, ni les brins d'une corde d'amarrage à deux brins sous, entre ou autour d'un bras, d'une jambe, du cou de l'utilisateur ou de tout autre obstacle.
- Ne pas faire de nœud dans une corde d'amarrage ou un cordage de sécurité ou l'enrouler autour d'arêtes brutes ou coupantes ou encore d'éléments de structure de petit diamètre.
- Ne jamais fixer plusieurs cordes d'amarrage les unes aux autres ou fixer une corde d'amarrage sur elle-même, à moins qu'elle ait été spécialement conçue à cet effet.



## 3.0 Raccordements

### 3.1 Raccordement au dispositif de soutien du corps et à l'ancrage



#### Raccordement au dispositif de soutien du corps

Pour une protection contre les chutes en général, raccorder la corde d'amarrage à l'anneau en D situé à l'arrière du harnais de sécurité complet. Raccorder l'absorbeur d'énergie de la corde d'amarrage au dispositif de soutien du corps (anneau en D situé à l'arrière). Dans le cas d'une corde à deux brins, raccorder uniquement le crochet mousqueton central à l'élément de fixation anti-chute.

#### Raccordement à l'ancrage

Corde d'amarrage à un brin : raccorder l'autre extrémité de la corde d'amarrage à l'ancrage ou au connecteur d'ancrage. Vérifier que les dimensions, la résistance et la forme des connexions sont compatibles. Corde d'amarrage à deux brins : raccorder l'une des extrémités libres de la corde d'amarrage à l'ancrage ou au connecteur d'ancrage. Pour disposer d'une fixation à 100%, vérifier qu'au moins l'un des brins de la corde soit raccorder en permanence à un ancrage ou un connecteur d'ancrage de dimensions, résistance et forme compatibles.

**NOTE : RACCORDER LE BRIN DE LA CORDE NON UTILISÉ UNIQUEMENT À L'ANNEAU OU À L'AGRAFE À OUVERTURE RAPIDE DE LA CORDE. NE PAS RACCORDER LE BRIN DE SECOURS DE LA CORDE À UN COMPOSANT DU HARNAIS FIXÉ EN PERMANENCE (par exemple une sangle de buse, des anneaux en D latéraux).**



### 3.2 Raccordement de cordes d'amarrage doubles

Les cordes d'amarrage doubles BackBiter sont munies d'un crochet mousqueton et d'une sangle de conception spéciale permettant un raccordement à la corde elle-même par étranglement (voir fig. 1). Une corde d'amarrage Titan T-BAK est également conçue comme corde double permettant de raccorder le mousqueton à verrouillage automatique à l'anneau circulaire (voir fig. 2). S'assurer que le point de raccordement puisse supporter une charge de 5 000 livres (22.2 kN) ou satisfaire aux exigences 1926.502 de l'OSHA, avec une marge de sécurité de 2.



Fig. 1



Fig. 2

**ATTENTION : ne pas faire ce type de raccordement avec un crochet mousqueton qui n'a pas été spécialement conçu à cet effet. Le fait de ne pas faire attention à cet avertissement peut entraîner des blessures graves ou mortelles.**

### 3.3 Raccordement d'une corde d'amarrage à anneau de serrage par étranglement



- ① Faire passer la boucle de la corde d'amarrage par le dessous de l'anneau en D.



- ② En tirant, faire passer la boucle de la corde dans l'anneau en D, puis enfiler l'extrémité opposée de la corde dans la boucle de cette dernière.



- ③ En tirant, faire passer toute la longueur de corde dans la boucle, puis serrer par étranglement en tirant sur la corde tout en répartissant la boucle uniformément sur l'anneau en D.

### 3.4 Raccordement d'une corde d'amarrage munie d'une rallonge optionnelle d'anneau circulaire intégrée



La rallonge optionnelle d'anneau circulaire est offerte sur toute corde d'amarrage à absorbeur d'énergie Miller; elle présente à son extrémité soit un anneau de serrage par étranglement, soit un crochet mousqueton, que l'on raccorde à l'anneau en D situé à l'arrière du harnais. Une fois le raccordement effectué, l'utilisateur peut se servir de la corde d'amarrage ou du cordage de sécurité rétractable, relié à l'anneau circulaire de la corde.

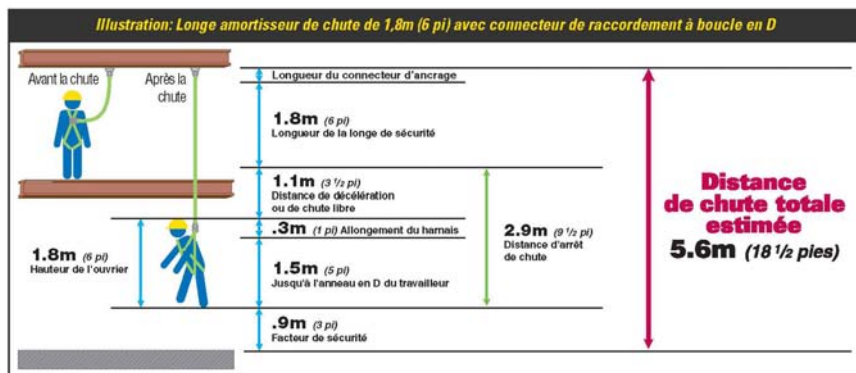
### 3.5 Raccordement d'une rallonge d'anneau en D ou d'anneau circulaire



La rallonge d'anneau circulaire ou d'anneau en D est tout simplement une sangle de rallonge séparée, munie d'un crochet mousqueton ou d'une boucle à une extrémité et d'un anneau en D ou circulaire à l'autre extrémité; elle se raccorde entre l'anneau en D situé à l'arrière du harnais et la corde d'amarrage utilisée comme illustré.

## 4.0 Calcul de la Distance de Dégagement

Il est important de savoir calculer la distance de dégagement possible, pour éviter de heurter un niveau inférieur en cas de chute. Le diagramme ci-après illustre un exemple de calcul se rapportant à une corde d'amarrage à absorbeur d'énergie. Lors du calcul de la distance de dégagement, la personne/l'utilisateur autorisé(e) doit tenir compte de tous les paramètres, incluant notamment, sans que la liste soit exhaustive : la taille du travailleur, la longueur de la corde d'amarrage, ainsi que le connecteur d'ancrage utilisé; il est ensuite nécessaire de raffiner les calculs en faisant les corrections nécessaires.



1. Lorsqu'on utilise une corde d'amarrage à absorbeur d'énergie de 6 pi (1.8 m) et un harnais de sécurité complet, commencer par ajouter la longueur de la corde - 6 pi (1.8 m) - à l'allongement maximal de l'absorbeur d'énergie pendant la décélération - 3 1/2 pi (1.1 m).
2. Ajouter ensuite la hauteur jusqu'à l'anneau en D du travailleur - 5 pi (1.8 m) en moyenne - plus un facteur d'allongement du harnais de 1 pi (0.3 m).
3. Ajouter enfin une marge de sécurité de 3 pi (0.9 m).
4. Le total - 18 1/2 pi (5.6 m) - représente la distance de chute sécuritaire estimée, soit la hauteur à laquelle vous devez vous fixer à un ancrage afin de minimiser tout risque de heurt avec un objet situé à un niveau inférieur.

**NOTE : dans un calcul de distance de dégagement à partir du point d'ancrage, il faut tenir compte de la longueur du connecteur d'ancrage utilisé.** consideration the length of the anchorage connector being used.

Pour toute question sur le calcul de la distance de dégagement, veuillez contacter le Service technique Miller Fall Protection au 1-800-873-5242.

## 5.0 Inspection et Entretien

Les cordes d'amarrage Miller sont conçues pour les conditions difficiles rencontrées sur les chantiers d'aujourd'hui. Une corde d'amarrage doit être inspectée fréquemment si l'on veut en prolonger la durée de vie et en conserver les performances. Bien vérifier la corde d'amarrage avant chaque utilisation. Votre programme de sécurité doit comprendre une inspection régulière par une personne compétente, pour voir s'il n'y a pas d'usure, de dommages ou de corrosion. Inspecter votre équipement tous les jours et le remplacer en cas de découverte d'une défectuosité présentée dans ce manuel.

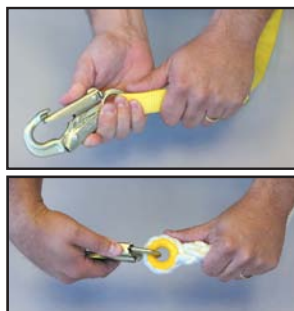
### 5.1 Inspection d'une corde d'amarrage

Lorsqu'on inspecte une corde d'amarrage, débiter à l'une des extrémités et poursuivre jusqu'à l'autre. Faire tourner lentement la corde de manière à en vérifier toute la circonférence. Les extrémités épissées nécessitent une attention particulière. Les attaches doivent être examinées selon les méthodes décrites ci-dessous : crochets mousquetons, anneaux en D et cosses.

#### ① ATTACHES

**a. Crochets mousquetons** : vérifier soigneusement le crochet et l'oeil, pour voir s'il n'y a pas de déformations, de fissures, de corrosion ou de corrosion par piqûres. Le système d'ouverture (avec verrou) doit s'insérer dans le nez sans se coincer et ne doit être ni déformé, ni bloqué par un obstacle. Le ressort du système d'ouverture doit exercer une force suffisante pour une bonne fermeture. Les verrous d'un système d'ouverture doivent empêcher ce dernier de s'ouvrir lors de la fermeture.

**b. Cosses** : une cosse doit être solidement fixée dans l'oeil de l'épissure et aucun fil de cette épissure ne doit être détaché ni coupé. Les rebords de la cosse doivent être exempts d'arêtes vives, de déformations ou de fissures.



#### ② CORDE D'AMARRAGE EN CÂBLE D'ACIER

**ATTENTION : toujours porter des gants lorsqu'on inspecte une corde d'amarrage en câble d'acier, car un fil cassé risque de provoquer une blessure!**

En faisant tourner la corde, vérifier s'il n'y a pas de coupures, d'endroits effilochés ou d'usure anormale sur le câble. Les fils cassés se séparent du corps de la corde d'amarrage.



#### ③ CORDE D'AMARRAGE CONSTITUÉE PAR UNE SANGLE

Plier la sangle sur un tuyau ou un mandrin et observer la corde de chaque côté. On peut ainsi mettre en évidence les coupures, les fils tirés ou les cassures. Le gonflement, la décoloration, les fissures et/ou les traces de surchauffe (surface charbonneuse) constituent des indices probants d'un endommagement par des produits chimiques ou la chaleur. Bien observer s'il n'y a pas de cassures dans la couture. Inspecter l'indicateur de chute pour voir s'il n'a pas été activé. Une corde d'amarrage tubulaire Titan doit être mesurée lorsqu'on veut savoir si l'indicateur a été activé.



#### ④ CORDE D'AMARRAGE CONSTITUÉE PAR UNE CORDE

Lors de l'inspection de la corde d'une extrémité à l'autre, la faire tourner pour mettre éventuellement en évidence des fibres pelucheuses, usées, cassées ou coupées. Une zone affaiblie sous une charge extrême se remarque par un changement notable du diamètre (par rapport à celui d'origine). Après une brève période de rodage, le diamètre de la corde doit être uniforme d'un bout à l'autre.



#### ⑤ ABSORBEUR D'ÉNERGIE À ENVELOPPE COMPACTE

Examiner la partie extérieure de l'enveloppe, pour voir s'il n'y a pas de trous dus à des brûlures ou des déchirures. Vérifier de près les coutures des zones où l'enveloppe est rattachée aux anneaux en D, aux ceintures ou aux cordes d'amarrage pour voir s'il n'y a pas de fils détachés, de déchirures, de détérioration ou autres indices d'activation.



## 5.2 Types de dommages matériels

CHALEUR	PRODUITS CHIMIQUES	MÉTAL FONDU OU FLAMME	PEINTURES ET SOLVANTS
Exposée à une chaleur excessive, une corde/une sangle devient cassante comme du verre, se ratatine et prend une couleur brunâtre. Les fibres se cassent lorsqu'on les fléchit. Ne pas utiliser à une température supérieure à 180°F (82°C).	Le changement de couleur se présente habituellement sous la forme d'une maculation ou d'une empreinte brunâtre. Fissures transversales lorsqu'on plie le cordage/la sangle sur un mandrin. Perte d'élasticité dans le cordage/la sangle.	Les fils de cordage/sangle fusionnent. Points durs brillants. Dur et cassant au toucher.	La peinture qui durcit après avoir pénétré nuit au bon déplacement des fibres. Les agents de séchage et les solvants contenus dans certaines peintures produisent des dommages semblables à ceux dus à des produits chimiques.

Pour toute question sur le tableau ci-dessus, contacter le Service technique Miller au 800-873-5242.

## 5.3 Nettoyage et entreposage

Grâce à un entretien de base, on prolonge la durée de vie des équipements Miller Fall Protection et on leur permet de mieux remplir leur fonction de sécurité vitale. Un entreposage et un entretien adéquats après utilisation ont autant d'importance que le nettoyage des équipements pour en ôter la saleté, les produits corrosifs ou les contaminants. L'endroit réservé à l'entreposage doit être propre, sec et exempt de fumées ou de substances corrosives. Ôter la saleté en surface avec une éponge imbibée d'eau. Sécher l'éponge en la comprimant. Tremper l'éponge dans une solution douce d'eau et de savon ou détergent du commerce. Travailler avec une brosse épaisse, en un mouvement de va-et-vient vigoureux. Sécher ensuite en essuyant avec un chiffon propre. Suspendre pour le séchage, mais à l'abri de la chaleur excessive, de la vapeur ou de la lumière solaire (éviter une exposition prolongée).

## 5.4 Durée de vie escomptée des cordes d'amarrage de marque Miller

À titre indicatif, Miller Fall Protection (MFP) recommande de prévoir une durée de vie utile de 5 ans à compter de la date de la première utilisation, pour toutes les cordes d'amarrage. MFP considère cette recommandation comme ayant une valeur générale et qui ne saurait donc remplacer les consignes de la section Inspection d'une corde d'amarrage de ce manuel. Cette directive s'applique seulement à un produit ne portant aucune trace de dommage et qui n'a pas été exposé à des produits chimiques, une chaleur anormale ou des rayons ultraviolets trop forts. Selon la manière dont il est entretenu et utilisé, l'équipement peut durer plus longtemps.

# Gracias

Le agradecemos su compra de equipo anticaídas Miller. Los productos de la marca Miller son manufacturados para cumplir con las más altas normas de calidad en nuestra fábrica, la cual posee la certificación ISO 9001:2000. Cuidados como es debido, los equipos anticaídas Miller le servirán muchos años.

## WARNING

Toda persona que use este equipo debe leer, comprender y seguir cabalmente todas las instrucciones. No hacerlo podría tener como consecuencia lesiones graves o mortales. No use este equipo si no ha sido debidamente entrenado.

## ¿Consultas?

LLAMAR AL  
1.800.873.5242

Es fundamental que la persona o usuario autorizado de este equipo anticaídas lea y comprenda las presentes instrucciones. Además, es responsabilidad del empleador que todos los usuarios hayan recibido capacitación para usar, inspeccionar y dar el debido mantenimiento al equipo anticaídas. La capacitación anticaídas debe ser parte integral de un programa completo de seguridad.

La utilización correcta de los sistemas de detención de caídas puede salvar vidas y disminuir las posibilidades de lesiones graves en caso de una caída. Los usuarios deben estar conscientes de que las fuerzas ejercidas para detener una caída o durante una suspensión prolongada pueden causar lesiones. Consulte a un médico en caso de duda sobre la capacidad del usuario para emplear este producto. Las mujeres embarazadas y los niños no deben usar este producto.

# 1.0 Requisitos Generales, Advertencias y Limitaciones

Deben suministrarse a las personas y usuarios autorizados todas las advertencias e instrucciones.

**Todas las personas y usuarios autorizados deben consultar los reglamentos de seguridad laboral y las normas ANSI o CSA que correspondan. Las etiquetas del producto contienen información sobre los reglamentos OSHA y las normas ANSI y CSA que cumple el producto.**

Siempre deben tomarse las debidas precauciones al retirar del área de trabajo obstrucciones, basura, material y otros peligros reconocidos que pudieran causar lesiones o interferir en el funcionamiento del sistema.

Todo el equipo debe ser inspeccionado visualmente antes de cada uso de conformidad con las instrucciones del fabricante.

Todo el equipo debe ser inspeccionado con regularidad por una persona calificada.

A fin de reducir al mínimo las posibilidades de un desenganche accidental, una persona competente debe garantizar la compatibilidad del sistema.

El equipo no debe ser alterado de ninguna forma.

Las reparaciones deben ser efectuadas exclusivamente por el fabricante del equipo o bien por personas o entidades autorizadas por escrito por el fabricante.

Todo producto con deformidades, desgaste anormal o deterioro debe ser desechado de inmediato.

Todo equipo sometido a una caída debe ser puesto fuera de servicio.

El usuario debe contar con un plan y medios de rescate a mano para poder aplicarlos al usar este equipo.

Jamás lo utilice para fines distintos al proyectado. No use jamás el equipo para remolcar o izar objetos.

Debe protegerse todo el material sintético con el objeto de mantenerlo alejado de escorias, chispas calientes, llamas y otras fuentes de calor. Para tales usos se recomienda el uso de materiales resistentes al calor.

Jamás use materiales naturales (cáñamo de Manila, algodón, etc.) como parte de un sistema de protección contra caídas.

Al seleccionar equipo anticaídas deben tomarse en cuenta los riesgos medioambientales. No debe exponerse el equipo a sustancias químicas que puedan producir un efecto perjudicial. En ciertos ambientes con presencia de determinados agentes químicos o ácidos se debe usar poliéster. En caso de duda consulte al fabricante.

No permita que la cuerda o el tejido entren en contacto con cualquier cosa que pueda dañarlos, como superficies afiladas, abrasivas, ásperas o a alta temperatura, soldadura, fuentes de calor, peligros eléctricos o maquinaria en movimiento.

Siempre revise para ver si hay obstrucciones abajo del área de trabajo con el fin de asegurarse de que esté despejada la trayectoria de una posible caída.

Deje una distancia segura de caída adecuada abajo de la superficie de trabajo.

Nunca desprenda etiquetas de los productos, las cuales pueden incluir importantes advertencias e información para la persona o usuario autorizado.

**La carga de trabajo máxima es 310 lb (140.6 kg), incluidas las herramientas, a menos que esté marcado distinto.**

## 2.0 Compatibilidad del Sistema

Las cuerdas de seguridad y amortiguadores de impacto Miller están fabricados para usarse con componentes aprobados por dicha compañía. La sustitución o reemplazo de dichos componentes con combinaciones no aprobadas de componentes o subsistemas, puede afectar o interferir en el funcionamiento seguro de cada componente y poner en peligro la compatibilidad dentro del sistema. Esta incompatibilidad puede afectar la fiabilidad y seguridad del sistema total.

### 2.1 Grupos de Productos Anticaídas Miller

Un programa integral anticaídas debe ser visto como un "sistema total" que comienza con el reconocimiento del peligro y culmina con una revisión administrativa continua. Miller Fall Protection considera sus productos como "un sistema dentro de un sistema". Tres componentes principales del "sistema Miller" deben estar en su lugar y usarse debidamente para que puedan proporcionar la máxima protección al trabajador.

#### A. PUNTO DE ANCLAJE / CONECTOR DE ANCLAJE

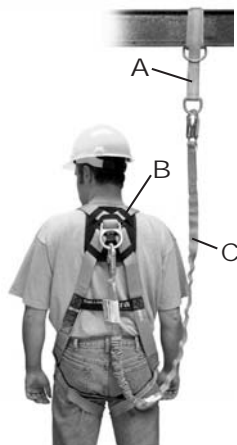
El primer componente es el punto de anclaje / conector de anclaje. El punto de anclaje, también conocido como punto de amarre, es un punto seguro utilizado para fijar los dispositivos de conexión y debe ser capaz resistir 5000 lb (22.2 kN) por trabajador o cumplir con los requisitos de la norma OSHA 1926.502 para un factor de seguridad de dos, como los de una viga "I" u otra estructura de soporte. A veces se requieren conectores de anclaje, por ejemplo, correas para travesaños y pernos de argolla, para que las conexiones sean compatibles entre el dispositivo de conexión y el punto de anclaje.

#### B. APAREJO

El segundo componente del sistema es el equipo de protección personal que traen puesto los trabajadores mientras realizan su labor. Miller Fall Protection fabrica arneses de cuerpo entero, cinturones de posicionamiento y cinturones para entornos de trabajo específicos. Los arneses de cuerpo entero están diseñados para contribuir a la parada de una caída libre y se deben usar siempre que el trabajador esté expuesto a una posible caída libre. Para reducir al mínimo las fuerzas de la caída, el arnés de cuerpo entero se debe usar conjuntamente con un equipo amortiguador de impacto. Es imperativo usar el arnés como es debido.

#### C. DISPOSITIVO DE CONEXIÓN

El último componente del sistema es el dispositivo de conexión. La característica más importante del dispositivo de conexión es el amortiguador de impacto incorporado. Independientemente de que dicho dispositivo sea una cuerda de seguridad con amortiguador de impacto o una cuerda salvavidas retráctil, ambas están diseñadas para reducir de manera impresionante las fuerzas ejercidas para detener la caída. Las cuerdas de seguridad de fibra, tejidas o de alambre usadas para la detención de caídas DEBEN usarse conjuntamente con un amortiguador de impacto (por ejemplo, el paquete Miller SofStop).



**De manera individual, ninguno de estos componentes ofrece protección contra una caída. Usados en conjunto como es debido, conforman el "sistema Miller" y se convierten en una parte de vital importancia del "sistema completo de protección contra caídas".**





## 2.2 Advertencias y Limitaciones con Respecto a los Componentes

### ANCRAJES

- Los anclajes deben ser capaces de soportar 5,000 libras (22.2 kN) o cumplir los requisitos de la norma OSHA 1926.502 con un factor de seguridad de dos.
- Los requisitos para el anclaje basados en las normas ANSI son como sigue:
  - Para los sistemas de detención de caídas, los anclajes deben poder soportar una carga estática de 5,000 lb (22.2 kN) en el caso anclajes no certificados o dos veces la fuerza de detención máxima en el caso de anclajes certificados.
  - Para los sistemas de detención de posicionamiento, los anclajes deben poder soportar una carga estática de 3,000 lb (13.3 kN) en el caso anclajes no certificados o dos veces la fuerza previsible en el caso de anclajes certificados.
  - Para limitación de desplazamiento, los anclajes deben poder soportar una carga estática de 1,000 lb (4.5 kN) en el caso anclajes no certificados o dos veces la fuerza previsible en el caso de anclajes certificados.
- Cuando se sujeta más de un sistema personal de detención de caídas a un anclaje, se deben multiplicar las fuerzas de anclaje indicadas arriba por el número de sistemas sujetos a dicho anclaje.
- Siempre trabaje directamente bajo el punto de anclaje para evitar una lesión por caída columpiada.
- Asegúrese de que el conector de anclaje se encuentre a una altura tal que, en caso de una caída, no haga impacto en un nivel inferior.
- Al seleccionar un punto de anclaje, siempre recuerde que los amortiguadores de impacto pueden estirarse hasta 3 1/2 pies (1.07 m).
- Asegúrese de que la altura del punto de anclaje limite la distancia de caída libre a 6 pies (1.8 m) o menos.
- El conector de anclaje debe ser compatible con el gancho de resorte o mosquetón, y no debe aplicar ninguna carga en el lingüete.
- Jamás use un conector de anclaje que impida el cierre del gancho de resorte o del mosquetón.

### APAREJO

- Cada vez antes de usar el equipo revise visualmente todas las hebillas para asegurarse de que las conexiones sea hayan realizado correctamente y sean seguras. Todas las correas deben estar conectadas y ajustadas para que ofrezcan un ajuste apretado.
- Los dispositivos de conexión para protección anticaídas deben estar conectados al anillo "D" posterior del arnés de cuerpo entero. Un elemento de fijación de anillo "D" frontal puede usarse para detención de caídas sólo en rescates, posicionamiento de trabajo, acceso con cuerda y otros usos reconocidos en la norma ANSI Z359.1, en los cuales el sistema personal de detención de caídas limita la distancia máxima de caída libre a 2 pies (0.6 m) y limita la fuerza máxima de detención a 900 lb (4.0 kN).
- Los anillos "D" laterales y frontales sólo deben usarse para posicionamiento. (Lea la excepción con respecto al anillo "D" señalada arriba.)
- Los anillos "D" para los hombros deben usarse exclusivamente para rescate.
- Jamás conecte ganchos aseguradores sin traba a un anillo "D" de un arnés.
- Jamás conecte un gancho (pelicano) de barra a un anillo "D" de un arnés.
- Los cinturones deben usarse sólo para posicionamiento.

### DISPOSITIVOS DE CONEXIÓN

- Sólo conecte elementos compatibles.
- Use exclusivamente dispositivos de conexión con ganchos de resorte o mosquetones de autoaseguramiento.
- Siempre verifique visualmente que cada gancho de resorte y mosquetón se enganche sin problemas al anillo "D" o al punto de anclaje y que el lingüete esté perfectamente cerrado y trabado.
- Jamás inutilice ni restrinja un lingüete de aseguramiento ni modifique en modo alguno los dispositivos de conexión.
- Asegúrese de que el gancho de resorte o el mosquetón estén colocados de tal manera que no sometan a cargas el lingüete.
- Para disminuir las fuerzas de detención de caída se requiere el uso de amortiguadores de impacto. Los amortiguadores de impacto Miller Shock limitan la fuerza de detención de caída a 900 lb (4 kN).
- Fuerza de detención promedio = 874 lb (3.8 kN)
- Los amortiguadores de impacto pueden alargarse hasta 3 1/2 pies (1.07 m). Es menester tener en cuenta este alargamiento máximo a la hora de escoger un punto de anclaje.
- Realice el amarre de tal manera que no impacte contra un nivel inferior en caso de una caída.
- Conecte los componentes de manera tal que la caída libre se limite a la menor distancia posible [6 pies (1.8 m) máximo].
- Jamás apareje una cuerda de seguridad de dos perneras para permitir una caída libre de una longitud superior a seis pies.
- Nunca permita que una cuerda de seguridad o salvavidas retráctil se ponga holgada.
- Nunca permita que una cuerda de seguridad o una cuerda salvavidas, o ninguna de las perneras de una cuerda de seguridad de dos perneras pasen por abajo de los brazos, piernas, cuello o ningún obstáculo, entre ellos, ni se enreden alrededor de los mismos.
- No haga nudos en las las cuerdas de seguridad ni en las cuerdas salvavidas, ni las enrolle alrededor de bordes afilados o ásperos o de miembros estructurales delgados.
- No conecte varias cuerdas de seguridad entre sí, ni conecte una cuerda de seguridad a sí misma, salvo que esté específicamente diseñada para tal fin.



## 3.0 Realización de Conexiones

### 3.1 Realización de conexiones al soporte del cuerpo y al anclaje

#### Conexión al soporte del cuerpo

Para protección anticaídas general, conecte la cuerda de seguridad al anillo "D" posterior del arnés de cuerpo entero. La parte de absorción de energía de la cuerda de seguridad debe estar conectada al soporte del cuerpo (el anillo "D" posterior). Cuando utilice una cuerda de seguridad de dos perneras, sólo conecte el gancho de resorte al elemento de unión para detención de caída.



#### Conexión al anclaje

**Cuerdas de seguridad de una pernera:** Conecte el otro extremo de la cuerda de seguridad al anclaje o conector de anclaje. Asegúrese de que las conexiones sean compatibles en tamaño, resistencia y forma.

**Cuerdas de seguridad de dos perneras:** Conecte uno de los extremos de la cuerda de seguridad al anclaje o conector de anclaje. Para conservar un amarre de 100%, asegúrese de que por lo menos una de las perneras de la cuerda de seguridad esté conectada todo el tiempo a un anclaje o a un conector de anclaje de tamaño, resistencia y forma compatibles.

**NOTA: CONECTE LA PERNERA DE LA CUERDA DE SEGURIDAD QUE NO ESTÉ EN USO SÓLO AL CLIP O AL ANILLO DE SUELTA DE LA CUERDA DE SEGURIDAD.**

No conecte la pernera sobrante de la cuerda de seguridad a los componentes permanentemente fijos del arnés (como la correa pectoral y los anillos "D" laterales).

CORRECTO



INCORRECTO



### 3.2 Cómo conectar cuerdas de seguridad de amarre posterior

Las cuerdas de seguridad BackBiter disponen de un gancho de resorte y un tejido de fabricación especial que permiten conectarlas con la cuerda de seguridad integral formando una lazada corrediza (ver fig. 1). Las cuerdas de seguridad Titan T-BAK también sirven para amarre posterior conectando el mosquetón de autoaseguramiento en el anillo redondo (ver fig. 2). Asegúrese de que el punto de conexión sea capaz de soportar 5,000 lb (22 kN) o cumpla los requisitos de la norma OSHA 1926.502 con un factor de seguridad de dos.



Fig. 1

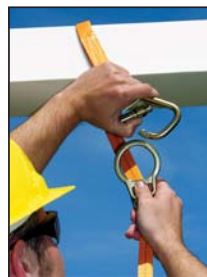


Fig. 2

**PRECAUCIÓN: No intente este tipo de conexión con ganchos de resorte normales, los cuales no están fabricados para tal conexión. No prestar atención a esta advertencia podría causar una lesión grave o mortal.**

### 3.3 Conexión con una cuerda de seguridad mediante



① Pase el lazo de la cuerda de seguridad por la parte inferior del anillo "D".



② Pase el lazo de la cuerda de seguridad a través del anillo "D" y luego pase el extremo opuesto la cuerda a través de dicho lazo.



③ Pase la cuerda de seguridad a través del lazo, formando una lazada corrediza, y apriétela tirando de ella mientras ajusta el lazo uniformemente en el anillo "D".

### 3.4 Cómo conectar una cuerda de seguridad con la opción de extensión con anillo redondo



La opción de extensión con anillo redondo está disponible con cualquier cuerda de seguridad con amortiguación de impacto y proporciona ya sea una lazada o un gancho de resorte en el extremo de dicha extensión, la cual se conecta al anillo "D" del arnés. Una vez realizado el amarre, el usuario puede usar la cuerda de seguridad o una retráctil, la cual se conecta al anillo redondo de dicha cuerda.

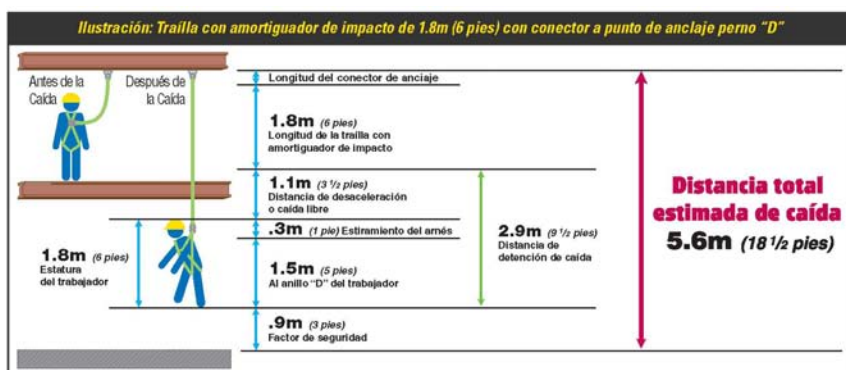


### 3.5 Cómo conectar una extensión con anillo

La extensión con anillo redondo o "D" es simplemente una extensión tejida separada con un gancho de resorte o una lazada en un extremo y un anillo "D" o uno redondo en el otro, y se conecta entre el anillo "D" del arnés y la cuerda de seguridad que está usándose, como se muestra.

## 4.0 Cálculo de La Distancia Segura de Caída

Es importante comprender cómo calcular la distancia segura de una posible caída para evitar tocar un nivel inferior. En el siguiente diagrama se muestra un cálculo de ejemplo usando una cuerda de seguridad con amortiguación de impacto. Al calcular en la realidad la distancia segura de caída, la persona o usuario autorizado debe tener en consideración todas las variables, como la estatura del trabajador, la longitud de la cuerda de seguridad y el conector de anclaje usado, y debe hacer los ajustes necesarios a los cálculos.



1. Al utilizar una cuerda de seguridad de 6 pies (1.8 m) con amortiguador de impacto, primero agregue la longitud de dicha cuerda, 6 pies (1.8 m) a la elongación máxima del amortiguador de impacto durante la desaceleración, 1 1/2 pies (1.1 m).
2. En seguida agregue la altura al anillo "D" posterior del trabajador, 5 pies (1.8 m) en promedio, más un factor de estiramiento de 1 pie (0.3 m) del arnés.
3. Después agregue 3 pies (0.9 m) como factor de seguridad.
4. El total, 18-1/2 pies (5.6 m) es la distancia segura estimada de caída, que es la altura a la cual usted debe amarrarse a un anclaje para reducir al mínimo el riesgo de tocar un nivel inferior.

**NOTA:** Si el cálculo de la distancia de caída se realiza a partir del punto de anclaje, debe tomarse en cuenta la longitud del conector de anclaje que está usándose.

Si tiene preguntas sobre la forma de calcular la distancia segura de caída, comuníquese con el Departamento de Servicio Técnico de Miller Fall Protection, o llame al 1-800-873-5242.

## 5.0 Inspección y Mantenimiento

Las cuerdas de seguridad Miller están diseñadas para los rudos ambientes de trabajo de hoy en día. Para mantener su vida útil y gran desempeño, deben inspeccionarse con frecuencia. Inspeccione meticulosamente la cuerda de seguridad antes de cada uso. Debe ser parte del programa de seguridad una inspección habitual realizada por una persona competente para buscar indicios de desgaste, daños o corrosión. Inspeccione a diario el equipo y reemplácelo si se encuentra alguna condición defectuosa.

### 5.1 Inspección de las cuerdas de seguridad

Al inspeccionar las cuerdas de seguridad, comience por un extremo y avance hacia el extremo opuesto. Gire lentamente la cuerda de seguridad de manera que revise todo el contorno. Los extremos empalmados requieren atención en particular. Las piezas sólidas, como los ganchos de resorte, los anillos "D" y los casquillos, deben examinarse según los procedimientos descritos abajo.

#### ① PIEZAS SÓLIDAS

**a. Ganchos de resorte:** Inspeccione cuidadosamente el gancho y el ojo para ver si tienen deformaciones, grietas, corrosión o superficies picadas. El linguete (el pestillo) debe asentarse en la punta del gancho sin atorarse, y no debe tener distorsiones ni obstrucciones. El resorte debe ejercer suficiente fuerza para cerrar firmemente el linguete. Las trabas del linguete deben evitar la apertura de éste cuando cierra.

**b. Casquillos:** El casquillo debe estar firmemente asentado en el ojo del empalme, y éste debe carecer de hebras flojas o cortadas. Los bordes del casquillo deben carecer de bordes afilados, distorsiones y grietas.



#### ② CUERDA DE SEGURIDAD DE ALAMBRE

**PRECAUCIÓN: Siempre póngase guantes al inspeccionar cuerdas de seguridad de alambre; ¡las hebras rotas pueden causar lesiones!**

Mientras gira la cuerda de seguridad de alambre, observe para ver si tiene cortaduras o áreas desgarradas, o si el alambre tiene patrones de desgaste inusuales. Las hebras rotas se separan del cuerpo de la cuerda de seguridad.



#### ③ CUERDA DE SEGURIDAD TEJIDA

Mientras mantiene doblada la cuerda de seguridad tejida en un tubo o mandril, observe cada lado de la misma. De esta manera se encuentra toda cortadura, desgarradura o rotura presentes. Toda hinchazón, decoloración, agrietamiento o chamuscamiento es señal de daño químico o térmico. Observe de cerca para ver si hay cualquier rotura en las costuras. Inspeccione el indicador de advertencia para ver si muestra señales de activación. Las cuerdas de seguridad tubulares Titan deben medirse para determinar si han sido activadas.



#### ④ CUERDA DE SEGURIDAD DE FIBRA

Gire la cuerda de seguridad de fibra mientras la inspecciona de un extremo a otro para ver si hay fibras deshilachadas, gastadas, rotas o cortadas. Las áreas debilitadas causadas por cargas extremas se manifiestan en forma de un cambio notable en el diámetro original de la pieza. El diámetro de la cuerda debe ser uniforme a todo lo largo, después de un breve período de uso inicial.



#### ⑤ AMORTIGUADOR DE IMPACTO TIPO PAQUETE

Debe examinarse la parte exterior del paquete para ver si tiene agujeros o desgarramientos. Deben examinarse las costuras de las zonas donde el paquete está cosido a los anillos "D", cinturones o cuerdas de seguridad para ver si hay hebras sueltas, desgarres o deterioro y otras señales de activación.



## 5.2 Tipos de daños del material

CALOR	SUSTANCIAS QUÍMICAS	METAL FUNDIDO O LLAMA	PINTURAS Y SOLVENTES
Sometidas a calor excesivo, las correas tejidas y las cuerdas se vuelven quebradizas y tienen aspecto apergaminado y tono amarillado. Las fibras se rompen al ser flexionadas. No debe usarse a temperaturas superiores a 180 °F (82 °C).	Se produce un cambio de color, y por lo general aparece como una mancha o borrón amarillado. Grietas transversales cuando la cuerda o correa tejida se enrolla en un mandril. Pérdida de elasticidad en la cuerda o correa tejida.	Las hebras de la cuerda o tira tejida se fusionan entre sí. Puntos brillantes duros. Duros y quebradizos al tacto.	La pintura que penetra y se seca, restringe el movimiento de las fibras. Los agentes de secado y solventes de algunas pinturas aparecen como daño de sustancias químicas.

Si tiene preguntas acerca de la tabla anterior, comuníquese con el Departamento de Servicio al Cliente de Miller Fall Protection, al 800-873-5242.

## 5.3 Limpieza y almacenamiento

Con un cuidado básico de todo el equipo Miller Fall Protection se prolonga la vida de servicio de la unidad y se contribuye al correcto desempeño de su vital función de seguridad. Un correcto almacenamiento y mantenimiento después de usarse el equipo son tan importantes como la debida limpieza del mismo con respecto a la suciedad, corrosivos y contaminantes. Las áreas de almacenamiento deben estar limpias, secas y carentes de exposición a emanaciones y agentes corrosivos. Elimine toda la suciedad de la superficie con una esponja humedecida sólo con agua. Estruje la esponja para dejarla seca. Sumerja la esponja en una solución suave de agua y jabón o detergente comercial. Forme una capa espesa de espuma con un movimiento enérgico de vaivén. Luego seque con un paño limpio. Deje colgando libremente la pieza para secarla, lejos de un calor o vapor excesivos, y sin dejarla expuesta a la luz solar por períodos de tiempo prolongados.

## 5.4 Vida de servicio esperada de las cuerdas de seguridad Miller

La posición de Miller Fall Protection (MFP) es esperar una vida de servicio de cinco años a partir de la fecha de uso inicial de todas las cuerdas de seguridad. MFP presenta esta recomendación como pauta general, y no debe tomarse como sustituto de las instrucciones indicadas en la sección sobre inspección de este manual. Esta pauta sólo se aplica a productos sin señales visibles de daños y sin exposición a sustancias químicas, nivel anormal de calor o excesiva luz ultravioleta. Es posible que el equipo dure más, según el cuidado y uso dados al equipo.

Además de seguirse estas instrucciones, puede ser necesario retirar del servicio la cuerda de seguridad antes del vencimiento de los cinco años de vida de servicio esperada. De la misma manera, el debido cumplimiento de las pautas de inspección y mantenimiento puede prolongar la vida útil del equipo más allá de los cinco años. En último término, es responsabilidad de la persona o usuario autorizados determinar cuando una cuerda de seguridad ya no sea apta para usarse y deba retirarse del servicio. Los productos retirados del servicio deben desecharse de tal manera que se impida su posterior uso por accidente.

# Family Identification

## Identification par Famille

## Identificación de Familias de Productos

### MILLER SHOCK-ABSORBING LANYARDS

CORDES D'AMARRAGE À ABSORBEUR D'ÉNERGIE

CUERDAS DE SEGURIDAD MILLER CON AMORTIGUACIÓN DE IMPACTO MILLER

### Manyard & HP Manyard Shock-Absorbing Lanyards

Cordes d'amarrage à absorbeur d'énergie Manyard et HP Manyard

Cuerdas de seguridad Manyard y HP Manyard con amortiguación de impacto

Base Model #'s:

Numéros des modèles de base:

Núm. de modelo base:

216WLS	216TWLS
219WRS	219TWRS
219WRXS	233TWLS
233WRS	233TWRS
233WLS	231TWRS
233WRXS	232TWLS
231WRS	266TWLS
231WRXS	266TWRS
232WLS	
266WRS	
216WO	
219WO	
231WO	
232WO	
266WO	
266WOR	



233WLS



219WRS



231WRS



232WLS



216TWLS-Z7



233TWRS



232TWLS

### Manyard II Shock-Absorbing Lanyards

Cordes d'amarrage à absorbeur d'énergie Manyard II

Cuerdas de seguridad Manyard II con amortiguación de impacto

Base Model #'s:

Numéros des modèles de base:

Núm. de modelo base:

216M
216MD
219M
219MD
233M
219MRX
233MRS
231M
232M

216MO
219MO
231MO
232MO
233MORS
266MO
266MOR

233M



232M



216M

231M



219M



## StretchStop Lanyards with SofStop Shock Absorber

### Cordes d'amarrage StretchStop à absorbeur d'énergie SofStop

### Cuerdas de seguridad StretchStop con amortiguador de impacto SofStop

Base Model #'s:

Números des modèles de base:

Núm. de modelo base:

8798RSS

8798SS

913RSS

913SS



8798SS



8798RSS



913SS-Z7



913RSS

## Lanyards with SofStop Shock Absorber and HP Lanyards with SofStop Shock Absorber

### Cordes d'amarrage à absorbeur d'énergie SofStop

### et cordes d'amarrage HP à absorbeur d'énergie SofStop

### Cuerdas de seguridad con amortiguador de impacto SofStop

### y cuerdas de seguridad HP con amortiguador de impacto SofStop

Base Model #'s:

Números des modèles de base:

Núm. de modelo base:

910WLS

913K

913WLS

922WRS

928LS

8798

8798K

8798KR

8798R

8878

901RLS

903RLS

907K

907LS

907NLS

940WLS

980WLS

940K

947K

910TWLS

913TWLS

922TWRS

8798T

8798TR

8878T

8878TR



910WLS



901RLS



913WLS



8878-6R



907NLS

**MILLER TIE-BACK LANYARDS**  
**CORDES D'AMARRAGE DOUBLES MILLER**  
**CUERDAS DE SEGURIDAD MILLER CON AMARRE POSTERIOR**

**BackBiter Tie-Back Lanyards with SofStop Shock Absorber**  
**Cordes d'amarrage doubles BackBiter à absorbeur d'énergie SofStop**  
**Cuerdas de seguridad con amarre posterior BackBiter y amortiguador de impacto SofStop**

Base Model #'s:  
 Numéros des modèles de base:  
 Núm. de modelo base:

8798B  
 8798BD  
 913B  
 913BD  
 940B



913B



8798B

**MILLER POSITIONING AND RESTRAINT LANYARDS**  
**CORDES D'AMARRAGE MILLER SERVANT AU POSITIONNEMENT ET À LA RETENUE**  
**CUERDAS DE SEGURIDAD MILLER PARA POSICIONAMIENTO Y LIMITACIÓN DE DESPLAZAMIENTO**

**Rope, Web and Wire Rope Lanyards**  
**Cordes d'amarrage constituées par une corde, une sangle ou un câble métallique**  
**Cuerdas de seguridad de fibra, tejidas y de alambre**

Base Model #'s:  
 Numéros des modèles de base:  
 Núm. de modelo base:

198RLS  
 201RLS  
 202RRXS  
 202RRS  
 203RLS  
 204RLS  
 210WLS  
 212WLS  
 213WLS  
 226WRS  
 235WLS  
 235WRS  
 207LS  
 207NLS



213WLS



201RLS



207LS

**MILLER O-RING AND D-RING EXTENSIONS**  
**RALLONGES D'ANNEAU CIRCULAIRE ET D'ANNEAU EN D MILLER**  
**EXTENSIONES CON ANILLO REDONDO Y CON ANILLO "D" DE MILLER**

**O-Ring Extension**  
**Rallonge d'anneau circulaire**  
**Extensión con anillo redondo**

Base Model #:  
 Modèle de base n°:  
 Modelo base #:  
 8927



**D-Ring Extension**  
**Rallonge d'anneau en D**  
**Extensión con anillo "D"**

Base Model #:  
 Modèle de base n°:  
 Modelo base #:  
 8928





**TITAN SHOCK-ABSORBING LANYARDS**  
**CORDES D'AMARRAGE À ABSORBEUR D'ÉNERGIE TITAN**  
**CUERDAS DE SEGURIDAD TITAN CON AMORTIGUACIÓN DE IMPACTO**

**Titan Pack-Type Shock-Absorbing Lanyards**

**Cordes d'amarrage à absorbeur d'énergie à enveloppe compacte Titan**  
**Cuerdas de seguridad Titan con amortiguación de impacto tipo paquete**

Base Model #'s:

Numéros des modèles de base:

Núm. de modelo base:

T6111

T6111V

T6112

T6112V

T6113



T6111

**Titan Stretch Pack-Type Shock-Absorbing Lanyards**

**Cordes d'amarrage à absorbeur d'énergie à enveloppe compacte à allongement Titan**  
**Cuerdas de seguridad Titan estirables con amortiguación de impacto tipo paquete**

Base Model #'s:

Numéros des modèles de base:

Núm. de modelo base:

T6111SS

T6112SS

T6121SS

T6122SS

T6111SS



**Titan Tubular-Type Shock-Absorbing Lanyards**

**Cordes d'amarrage à absorbeur d'énergie tubulaire Titan**  
**Cuerdas de seguridad Titan tubulares con amortiguación de impacto**

Base Model #'s:

Numéros des modèles de base:

Núm. de modelo base:

T5011

T5111

T5112

T5113

T5121

T5122



T5113

**Titan Stretch Tubular Built-In Shock-Absorbing Lanyards**

**Cordes d'amarrage à absorbeur d'énergie intégré tubulaire à allongement Titan**  
**Cuerdas de seguridad Titan tubulares estirables con amortiguación de impacto integrada**

Base Model #'s:

Numéros des modèles de base:

Núm. de modelo base:

T5111SS

T5112SS

T5121SS

T5122SS

T5111SS



**TITAN TIE-BACK LANYARDS**  
**CORDES D'AMARRAGE DOUBLES TITAN**  
**CUERDAS DE SEGURIDAD TITAN DE AMARRE POSTERIOR**

**Titan T-BAK Pack-Type Shock-Absorbing Tie-Back Lanyards**

**Cordes d'amarrage doubles à absorbeur d'énergie à enveloppe compacte T-BAK Titan**

**Cuerdas de seguridad Titan T-BAK de amarre posterior con amortiguación de impacto tipo paquete**

Base Model #':  
Numéros des modèles de base:  
Núm. de modelo base:  
T6111TB  
T6121TB

T6121TB



**TITAN POSITIONING LANYARDS**  
**CORDES D'AMARRAGE ET DE POSITIONNEMENT TITAN**  
**CUERDAS DE SEGURIDAD TITAN PARA POSICIONAMIENTO**

**Titan Rope and Web Lanyards**

**Cordes d'amarrage Titan constituées par une corde et une sangle**

**Cuerdas de seguridad de fibra y tejidas**

Base Model #':  
Numéros des modèles de base:  
Núm. de modelo base:  
T9111R  
T9111W  
T9112R  
T9112W

T9111R



*All Miller lanyards and shock absorbers include this instruction manual. Special order and custom product model numbers may not be listed. If there is any doubt as to whether this instruction manual applies to your particular product, please contact Miller Fall Protection Technical Service Department at 1-800-873-5242.*

*Toutes les cordes d'amarrage et tous les absorbeurs d'énergie Miller sont accompagnés de ce manuel d'utilisation. Les numéros de modèles correspondant à des produits sur commande spéciale et sur mesure peuvent ne pas être indiqués ici. En cas de doute sur la validité de ce manuel d'utilisation pour votre produit particulier, veuillez contacter le Service technique Miller au 1-800-873-5242.*

*Todas las cuerdas de seguridad y amortiguadores de impacto Miller incluyen este manual de instrucciones. No se enumeran los números de productos de órdenes especiales y hechos a la orden. Si no sabe con seguridad si este manual de instrucciones se aplica a su producto en particular, comuníquese con el Departamento de Servicio Técnico de Miller Fall Protection, o llame al 1-800-873-5242.*

# Parts Identification

## Identification des Pièces

## Identificación de Piezas

Pack-Type Shock Absorber  
Absorbeur d'énergie à enveloppe compacte  
Amortiguación de impacto tipo paquete



Length Adjustment  
Réglage de longueur  
Ajuste de la longitud

Choke-through Loop  
Anneau de serrage par étranglement  
Mediante una lazada corrediza

O-Ring for Attachment of Retractable  
Anneau circulaire pour fixation du cordage à rétraction  
Anillo o para el accesorio de retractable



Warning Flag  
Indicateur de chute  
Indicador de advertencia

Rebar Hook  
Crochet pélican  
Gancho pelicano

BackBiter 5K Snaphook  
Crochet mousqueton BackBiter 5K  
Gancho de resorte BackBiter 5K



Snaphook  
Crochet mousqueton  
Gancho de resorte



## Product Labels

Étiquettes sur les Produits

Etiquetas de los Productos

Manyard & Lanyard Product Label  
Étiquette sur corde d'amarrage et  
produit Manyard  
Etiqueta de producto de las cuer-  
das de seguridad Manvard

[illegible]

CAUTION: INSPECT BEFORE EACH USE

**ATTACH THIS END TO HARNESS**

Date of Manufacture:

**Expiration Date:** See manual for inspection.

**Compliance:**



Made in USA

**DO NOT REMOVE THIS LABEL.**

LB957 Rev A

Model/Size:

WO#:



**Inspection No.:**

**Material:**

**Capacity:**

**CSA Class:**

Contact Miller Fall Protection if instruction manual is needed. Max. Arrest Force 900 lbs.; Max. Free Fall Distance of not more than 6-ft.; Max. Extension 3'-6" beyond stated length. Remove from service if product has been subject to a fall.

▲ This variable label is included on all Manyard and Manyard II Shock-Absorbing Lanyards.

Cette étiquette sur laquelle les inscriptions varient est apposée sur les cordes d'amarrage à absorbeur d'énergie *Manvard* et *Manvard II*.

*Esta etiqueta variable se incluye en todas las cuerdas de seguridad Manyard y Manyard II con amortiguación de impacto.*

**WARNING:**  
- CONNECTORS AND ANCHORAGE POINTS MUST BE COMPATIBLE AND ABLE TO SUPPORT 5,000 LBS (229k).  
- RIG MANUFACTURER TO ALLOW A MAXIMUM FREE FALL DISTANCE OF NOT MORE THAN SIX FEET (6'11.33m).  
- USER MUST ALLOW FOR 3'-6" (1.07m) EXTENSION DISTANCE BEYOND THE STATED LENGTH OF THE MANVARD.  
- DO NOT ALLOW MANVARD TO CONTACT SHARP OR ABRASIVE SURFACES.  
- SPARKS OR TEMPERATURES ABOVE 100 DEGREES F. (40 DEGREES C.)  
- SPARKS WITH GATE OPENINGS LARGER THAN ONE INCH (1" 2.54cm) MUST NOT BE CONNECTED TO D-RINGS OR NO WORN HARNESSSES AND BELTS.  
- REMOVE FROM SERVICE IF ANY DAMAGE IS DETECTED.

**WARNING:** MANUFACTURER'S INSTRUCTIONS SUPPLIED WITH THIS PRODUCT AT TIME OF SHIPMENT MUST BE FOLLOWED: FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH. CONTACT FALL PROTECTION IF INSTRUCTION MANUAL IS NEEDED.

**ADVERTENCIA:** DEBEN SEGUIRSE LAS INSTRUCCIONES DEL FABRICANTE PROVISTAS CON ESTE PRODUCTO AL MOMENTO DEL DESPACHO: EL NO HACERLO PUEDE RESULTAR EN LESIONES GRAVES O LA MUERTE. SI SE REQUIERE EL MANUAL DE INSTRUCCIONES CONSULTE CON MILLER FALL PROTECTION.

**AVERTISSEMENT:** VOUS DEVEZ RESPECTER LES INSTRUCTIONS DU FABRICANT QUE VOUS AVEZ RECUES AVEC LE PRODUIT. DANS LE CAS CONTRAIRE, VOUS RISQUEZ DES BLESSURES GRAVES OU MÊME LA MORT. CONTACTEZ MILLER FALL PROTECTION SI VOUS AVEZ BESOIN D'UN NOUVEAU MANUEL.

**EXPIRATION DATE: SEE MANUAL FOR INSPECTION.**

**ARRESTING FORCE 900 LBS.**

1-800-873-5242 PAT. 4,253,544 M.P.N. 9350370 LB954 REV. A

**DO NOT REMOVE THIS TAG**

ATTACH THIS END TO HARNESS

**CAUTION: INSPECT BEFORE EACH USE**



**MILLER**  
by SPERIAN

**MANYARD®**  
SHOCK-ABSORBING LANYARD



StretchStop, SofStop & BackBiter Product Label  
 Étiquette sur les produits StretchStop, SofStop  
 et BackBiter  
 Etiqueta de producto StretchStop, SofStop  
 y BackBiter



**WARNING:**  
 • USE FALL PROTECTION IN ACCORDANCE WITH REGULATORY REQUIREMENTS.  
 • DO NOT ALLOW PRODUCT TO CONTACT SHARP OR ABRASIVE SURFACES.  
 • CONNECTORS AND ANCHORAGE POINTS MUST BE COMPATIBLE AND ABLE TO SUPPORT 5,000 LBS. (2224N) OR MEET OSHA 1926.502 REQUIREMENTS FOR A SAFETY FACTOR OF TWO. (e.g., Max Arrest Force = 1,500 lbs.; Anchorage Point must be rated for 3,500 lbs.)  
 • SNAP HOOKS WITH GATE OPENINGS LARGER THAN 1 INCH (25.4mm) MUST NOT BE CONNECTED TO D-RINGS ON HARNESSES.  
 • ONLY ATTACH SHOCK ABSORBER PACK SNAP HOOK TO HARNESS.

**SOFSTOP®**  
**MILLER**  
 by SPERIAN

**WARNING:** MANUFACTURER'S INSTRUCTIONS SUPPLIED WITH THIS PRODUCT AT TIME OF SHIPMENT MUST BE FOLLOWED. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.  
**ADVERTENCIA:** DEBEN SEGUIRSE LAS INSTRUCCIONES DEL FABRICANTE PROVISTAS CON ESTE PRODUCTO AL MOMENTO DE DESPACHO. EL NO HACERLO PUEDE RESULTAR EN LESIONES GRAVES O LA MUERTE.  
**AVERTISSEMENT:** VOUS DEVEZ RESPECTER LES INSTRUCTIONS DU FABRICANT QUE VOUS AVEZ RECUES AVEC LE PRODUIT. DANS LE CAS CONTRAIRE, VOUS RISQUEZ DES BLESSURES GRAVES OU MEME LAMORT.

**INSPECT BEFORE EACH USE**

LB303 Rev. F / MFP9347502

◀ This label is included on all SofStop, StretchStop, and BackBiter products, with the name variation.

Cette étiquette est apposée sur les produits StretchStop, SofStop et BackBiter; seul le nom varie.

Esta etiqueta se incluye en todos los productos SofStop, StretchStop y BackBiter, con la variación en el nombre.

**WARNING:**  
 • THIS PRODUCT IS ENGINEERED FOR TWO SPECIFIC FALL PROTECTION SITUATIONS: 1.) FOR A WORKER WEIGHING 310 LBS. (140.6kg) OR LESS THAT IS SUBJECT TO A FREE FALL OF GREATER THAN 6 FT. (1.83m) OR 2.) FOR A WORKER THAT WEIGHS BETWEEN 311 LBS. (141.1kg) TO 400 LBS. (181.4kg) AND WHERE THE FREE FALL WILL BE LIMITED TO A MAXIMUM OF 6 FT. (1.83m).  
 • CONNECTORS AND ANCHORAGE POINTS MUST BE COMPATIBLE AND ABLE TO SUPPORT 5,000 LBS. (2224N) OR MEET OSHA 1926.502 REQUIREMENTS FOR A SAFETY FACTOR OF TWO. (e.g., Max Arrest Force = 1,500 lbs.; Anchorage Point must be rated for 3,500 lbs.)  
 • RIG FALL PROTECTION TO REGULATORY REQUIREMENTS.  
 • DO NOT ALLOW PRODUCT TO CONTACT SHARP OR ABRASIVE SURFACES.  
 • SNAP HOOKS WITH GATE OPENINGS LARGER THAN 1 INCH (25.4mm) MUST NOT BE CONNECTED TO D-RINGS ON HARNESSES.  
 • ONLY ATTACH SHOCK ABSORBER PACK SNAP HOOK TO HARNESS.

**MILLER**  
**BACKBITER®**  
**LANYARD**  
**with SOFSTOP®**  
**MAX**

**WARNING:** MANUFACTURER'S INSTRUCTIONS SUPPLIED WITH THIS PRODUCT AT TIME OF SHIPMENT MUST BE FOLLOWED. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.  
**ADVERTENCIA:** DEBEN SEGUIRSE LAS INSTRUCCIONES DEL FABRICANTE PROVISTAS CON ESTE PRODUCTO AL MOMENTO DE DESPACHO. EL NO HACERLO PUEDE RESULTAR EN LESIONES GRAVES O LA MUERTE.  
**AVERTISSEMENT:** VOUS DEVEZ RESPECTER LES INSTRUCTIONS DU FABRICANT QUE VOUS AVEZ RECUES AVEC LE PRODUIT. DANS LE CAS CONTRAIRE, VOUS RISQUEZ DES BLESSURES GRAVES OU MEME LAMORT.

**INSPECT BEFORE EACH USE**

LB648 Rev. G / MFP7284591

◀ This label is included on all SofStop Max, StretchStop Max, and BackBiter Max products, with the name variation.

Cette étiquette est apposée sur les produits StretchStop Max, SofStop Max et BackBiter Max; seul le nom varie.

Esta marca se incluye en todos los productos SofStop Max, StretchStop Max y BackBiter Max, con la variación en el nombre.



**Date of Manufacture:**

Expiration Date: See manual for inspection.

Compliance:



Made in USA

Contact Miller Fall Protection if instruction manual is needed. Max. Arrest Force 900 lbs.; Max. Free Fall Distance of not more than 6-ft.; Max. Extension 3'-6" beyond stated length. Remove from service if product has been subject to a fall.

LB956 Rev A.

Model/Size:

CSA Class:

WO#:

Inspection No.:

INSPECTION GRID

YR	J	F	M	A	M	J	J	A	S	O	N	D
1												
2												
3												
4												
5												

MARK GRID ON DATE OF FIRST USE.  
DO NOT REMOVE THIS LABEL.

BackBiter Tie-Back Lanyards include this warning label on the 5K snap-hook end of the lanyard.

Cette étiquette de mise en garde est apposée sur l'extrémité côté crochet mousqueton 5K des cordes d'amarrage doubles BackBiter.

Las cuerdas de seguridad de amarre posterior BackBiter incluyen esta etiqueta de advertencia en el extremo del gancho de resorte 5K de la cuerda.

This variable label is included on all Miller shock absorber pack products.

Cette étiquette sur laquelle les inscriptions varient est apposée sur les absorbeurs d'énergie à enveloppe compacte Miller.

Esta etiqueta variable se incluye en todos los productos Miller de amortiguador de impacto.

Le mousqueton attaché à l'extrémité de la longe peut être utilisé pour former des boucles d'étranglement.  
N'utilisez pas les mousquetons standard car ils n'ont pas été conçus pour ce type d'application. L'incobervation de cet avertissement risque d'entraîner des blessures graves ou la mort.  
Voir figure au verso.

El gancho de mosquetón adjunto al extremo de la cuerda ha sido diseñado para permitir la formación de los bucles de estrangulamiento. No utilizar este tipo de conexión estándar que no han sido diseñados específicamente para este uso. La no observancia de esta advertencia puede causar serias lesiones o la muerte.  
Consulte la figura en el reverso.

AVERTISSEMENT!

ADVERTENCIA!

**TYPICAL INSTALLATION**



LB968 Rev. B

The snaphook attached to this end of the lanyard is designed to permit connection back to the integral lanyard in a choking fashion. Do not attempt this type of a connection with standard snaphooks which are not specifically designed for such a connection. Failure to follow this warning may cause serious injury or death.

**MILLER**

QUESTIONS? Call 1-800-873-5242  
Miller Fall Protection





Titan Lanyard Product Label  
Étiquette sur corde d'amarrage Titan  
Etiqueta de producto de cuerdas de seguridad Titan



## Titan® Lanyards and Lifelines

**WARNING:** Manufacturer's instructions supplied with this product at the time of shipment must be followed - failure to do so may result in serious injury or death. Inspect before each use in accordance to the manufacturer's instructions supplied at the time of shipment. Avoid contact with sharp or abrasive surfaces. Connectors and anchorage points must be compatible and able to support 5000 lbs. This product is designed for positioning only and must be used in conjunction with a shock-absorber when used for fall arrest. Contact Miller Fall Protection if instruction manual is needed.

**Advertissement:** Vous devez respecter les instructions du fabricant que vous avez reçues avec le produit. Dans la cas contraire, vous risquez de blessures graves ou même la mort. Contactez Miller Fall Protection si vous avez besoin d'un nouveau manuel.

**Advertencia:** Deben seguirse las instrucciones del fabricante provistas con este producto - el no hacerlo puede resultar en lesiones graves o la muerte. Si se requiere el manual de instrucciones consulte con Miller Fall Protection.

Compliance:

**Model/Length:**

**Date of Manufacture:**

Capacity:

CSA Class:

Expiration Date: See manual for inspection.



Material:



Inspection No.:

DO NOT REMOVE THIS LABEL.

INSPECTION GRID

YR	J	F	M	A	M	J	J	A	S	O	N	D
1												
2												
3												
4												
5												

LB02 Rev. 5

MARK GRID ON DATE OF FIRST USE

Model/Size:

CSA Class:

Date of Manufacture:

Capacity:

Material:

Compliance:



Inspection No.:

**Warning:** Manufacturer's instructions supplied with this product must be followed - failure to do so could result in serious injury or death. Contact Miller Fall Protection if instruction manual is needed. Inspect before each use. Remove from service if product has been subject to a fall. Only attach shock absorber pack snaphook to harness. Avoid contact with sharp or abrasive surfaces. Connectors and anchorage points must be compatible and able to support 5000 lbs.

LB958 Rev. A



## SHOCK-ABSORBING LANYARD

INSPECTION GRID

YR	J	F	M	A	M	J	J	A	S	O	N	D
1												
2												
3												
4												
5												

MARK GRID ON DATE OF FIRST USE

DO NOT REMOVE THIS LABEL.



Titan Pack-Type Lanyard Product Label  
(markings located on shock absorber pack)  
Étiquette sur les cordes d'amarrage à absorbeur  
d'énergie à enveloppe compacte Titan  
Etiqueta de producto de las cuerdas de seguridad  
Titan tipo paquete

• ONLY ATTACH SHOCK ABSORBER PACK SNAP HOOK TO HARNESS.  
• MUST NOT BE CONNECTED TO D-RINGS OR HARNESSES.  
• SNAP HOOKS WITH GATE OPENINGS LARGER THAN 1 INCH (25.4mm)  
1,800 lbs.; Anchorage Point must be rated for 3,600 lbs.)  
MENTS FOR A SAFETY FACTOR OF TWO. (e.g., Max Arrest Force =  
ABLE TO SUPPORT 5,000 LBS. (22kN) OR MEET OSHA 1926.502 REQUIRE-  
• CONNECTORS AND ANCHORAGE POINTS MUST BE COMPATIBLE AND  
• DO NOT ALLOW PRODUCT TO CONTACT SHARP OR ABRASIVE SURFACES.  
• USE FALL PROTECTION IN ACCORDANCE WITH REGULATORY REQUIREMENTS.  
WARNING:

**Titan® T-BAK™**  
**MILLER**  
by SPERIAN

WARNING: MANUFACTURER'S INSTRUCTIONS SUPPLIED WITH THIS  
PRODUCT AT TIME OF SHIPMENT MUST BE FOLLOWED. FAILURE TO DO  
SO COULD RESULT IN SERIOUS INJURY OR DEATH.  
ADVERTENCIA: DEBEN SEGUIRSE LAS INSTRUCCIONES DEL FABRICANTE  
PROVISTAS CON ESTE PRODUCTO AL MOMENTO DE DESPACHO. EL NO  
HACERLO PUEDE RESULTAR EN LESIONES GRAVES O LA MUERTE.  
AVERTISSEMENT: VOUS DEVEZ RESPECTER LES INSTRUCTIONS DU FAB-  
RICANT QUE VOUS AVEZ RECUES AVEC LE PRODUIT. DANS LE CAS CON-  
TRAIRE. VOUS RISQUEZ DES BLESSURES GRAVES OU MEME LAMORT.

**INSPECT BEFORE EACH USE**

LB557 Rev. C / MFP9346031

• ONLY ATTACH SHOCK ABSORBER PACK SNAP HOOK TO HARNESS.  
• MUST NOT BE CONNECTED TO D-RINGS OR HARNESSES.  
• SNAP HOOKS WITH GATE OPENINGS LARGER THAN 1 INCH (25.4mm)  
1,800 lbs.; Anchorage Point must be rated for 3,600 lbs.)  
MENTS FOR A SAFETY FACTOR OF TWO. (e.g., Max Arrest Force =  
ABLE TO SUPPORT 5,000 LBS. (22kN) OR MEET OSHA 1926.502 REQUIRE-  
• CONNECTORS AND ANCHORAGE POINTS MUST BE COMPATIBLE AND  
• DO NOT ALLOW PRODUCT TO CONTACT SHARP OR ABRASIVE SURFACES.  
• USE FALL PROTECTION IN ACCORDANCE WITH REGULATORY REQUIREMENTS.  
WARNING:

**Titan®**  
**Shock Absorber**  
**MILLER**  
by SPERIAN

WARNING: MANUFACTURER'S INSTRUCTIONS SUPPLIED WITH THIS  
PRODUCT AT TIME OF SHIPMENT MUST BE FOLLOWED. FAILURE TO DO SO  
COULD RESULT IN SERIOUS INJURY OR DEATH.  
ADVERTENCIA: DEBEN SEGUIRSE LAS INSTRUCCIONES DEL FABRICANTE  
PROVISTAS CON ESTE PRODUCTO AL MOMENTO DE DESPACHO. EL NO  
HACERLO PUEDE RESULTAR EN LESIONES GRAVES O LA MUERTE.  
AVERTISSEMENT: VOUS DEVEZ RESPECTER LES INSTRUCTIONS DU FABRI-  
CANT QUE VOUS AVEZ RECUES AVEC LE PRODUIT. DANS LE CAS CON-  
TRAIRE. VOUS RISQUEZ DES BLESSURES GRAVES OU MEME LAMORT.

**INSPECT BEFORE EACH USE**

LB383 Rev. E / 34-9346022

Date of Manufacture:

Expiration Date: See manual for inspection.

Compliance:



Made in USA

Contact Miller Fall Protection if  
instruction manual is needed. Max.  
Arrest Force 900 lbs.; Max. Free Fall  
Distance of not more than 6-ft.; Max.  
Extension 3'-6" beyond stated length.  
Remove from service if product has  
been subject to a fall.

LB956 Rev A.

Model/Size:

CSA Class:

WO#:



Inspection No.:

Material:

Capacity:

INSPECTION GRID

YR	J	F	M	A	M	J	J	A	S	O	N	D
1												
2												
3												
4												
5												

MARK GRID ON DATE OF FIRST USE  
DO NOT REMOVE THIS LABEL.

▲ This variable label is included  
on all Titan shock absorber pack  
products.

Cette étiquette sur laquelle les  
inscriptions varient est apposée  
sur les absorbeurs d'énergie à  
enveloppe compacte Titan.

Esta etiqueta variable se incluye  
en todos los productos Titan de  
amortiguador de impacto.

## Registro de Inspección y Mantenimiento

DATE OF MANUFACTURE:

DATE DE FABRICACION / FECHA DE FABRICACIÓN

**MODEL NUMBER:**

NUMÉRO DE MODÈLE / NÚM. DE MODELO

DATE PURCHASED:

DATE D'ACHAT / FECHA DE COMPRA

<b>INSPECTION DATE</b> DATE D'INSCRIPTION FECHA DE INSPECCIÓN	<b>INSPECTION ITEMS NOTED</b> POINTS NOTÉS LORS DE L'INSCRIPTION PUNTOS DE INSPECCIÓN RELEVANTES	<b>CORRECTIVE ACTION</b> ACTION CORRECTIVE MEDIDA CORRECTIVA	<b>MAINTENANCE PERFORMED</b> ENTRETIEN EFFECTUÉ MANTENIMIENTO REALIZADO
Approved by: Approuvé par: Aprobado por:			
Approved by: Approuvé par: Aprobado por:			
Approved by: Approuvé par: Aprobado por:			
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## **MILLER® FALL PROTECTION PRODUCTS TOTAL SATISFACTION ASSURANCE**

At Miller Fall Protection, we have been providing quality Miller brand fall protection equipment to millions of workers worldwide since 1945.

### **LIMITED LIFETIME WARRANTY BACKED BY OVER 60 YEARS IN THE FALL PROTECTION BUSINESS**

We sincerely believe that our fall protection equipment is the best in the world. Our products endure rigorous tests to ensure that the fall protection equipment you trust is manufactured to the highest standards. Miller fall protection products are tested to withstand normal wear and tear, but are not indestructible and can be damaged by misuse. Our Limited Lifetime Warranty does not apply to normal wear and tear or abusive treatment of the product.

In the unlikely event that you should discover defects in either workmanship or materials, under our Limited Lifetime Warranty, we will repair or replace the product at our expense. If a replacement is necessary and your product is no longer available, a comparable product will be substituted. Should a product issue surface, contact us at 800.873.5242.

Manufacturing specifications are subject to change without notice.

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## **PRODUITS MILLER® FALL PROTECTION ASSURANCE DE SATISFACTION TOTALE**

Chez Miller Fall Protection, nous fournissons des équipements de protection contre les chutes de marque Miller de qualité à des millions de travailleurs dans le monde entier depuis 1945.

### **GARANTIE LIMITÉE À VIE ASSURÉE GRÂCE À PLUS DE 60 ANS PASSÉS DANS LE DOMAINE DE LA PROTECTION CONTRE LES CHUTES**

Nous croyons sincèrement que notre équipement de protection contre les chutes est le meilleur au monde. Nos produits sont soumis à des tests rigoureux, afin d'assurer que les équipements de protection contre les chutes dans lesquels vous avez confiance sont fabriqués selon les normes les plus exigeantes. Les produits de protection contre les chutes Miller sont soumis à des essais pour vérifier qu'ils résistent à une usure normale; ils ne sont cependant pas indestructibles et peuvent s'endommager en cas de mauvaise utilisation. Notre garantie limitée à vie ne s'applique pas à l'usure normale ou à un usage abusif du produit.

Dans le cas peu probable où vous découvririez des défauts, soit de fabrication, soit de matériau, dans le cadre de notre garantie à vie, nous réparerons ou remplacerons le produit à nos frais. En cas de remplacement, si votre produit n'est plus offert, vous recevrez un produit comparable. En cas de problème sur un produit, nous contacter au 800-873-5242.

Les caractéristiques de fabrication peuvent être modifiées sans préavis.

---

## **PRODUCTOS ANTICAÍDAS MILLER® GARANTÍA DE SATISFACCIÓN TOTAL**

En Miller Fall Protection, venimos suministrando desde 1945 los equipos de protección anticaídas con la calidad Miller a millones de trabajadores en todo el mundo.

### **GARANTÍA LIMITADA DE POR VIDA NOS RESPALDAN MÁS DE 60 AÑOS EN LA FABRICACIÓN DE EQUIPO ANTICAÍDAS**

Sinceramente creemos que su equipo de protección contra caídas es el mejor del mundo. Nuestros productos resisten rigurosas pruebas para garantizar que el equipo de protección contra caídas en el que usted confía está fabricado de conformidad con las normas más elevadas. Los productos anticaídas Miller son sometidos a pruebas para que resistan el desgaste normal, pero no son indestructibles y su incorrecta utilización puede dañarlos.

Nuestra Garantía limitada de por vida no se aplica al desgaste normal ni al maltrato del producto.

En el poco probable caso de que usted descubriera defectos de mano de obra o materiales, por nuestra Garantía limitada de por vida, repararemos o sustituiremos el producto por cuenta nuestra. Si un reemplazo es necesario y nuestro producto ya no está disponible, se lo sustituiremos por otro comparable.

En caso de que surja un problema con el producto, contáctenos al 800.873.5242.

Las especificaciones de fabricación están sujetas a modificaciones sin previo aviso.



Toll Free: 800.873.5242

Fax: 800.892.4078

Download this manual at: [www.millerfallprotection.com](http://www.millerfallprotection.com)

Téléchargez ce manuel à l'adresse: [www.millerfallprotection.com](http://www.millerfallprotection.com)

Puede bajar por Internet este manual en: [www.millerfallprotection.com](http://www.millerfallprotection.com)

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Sperian Fall Protection, Inc.  
P.O. Box 271, 1345 15th Street  
Franklin, PA 16323 USA



**Instructions for the  
following series products:**  
DELTA™ Full Body Harnesses

(See back pages for specific  
model numbers.)

## **DELTA™ USER INSTRUCTION MANUAL FULL BODY HARNESS**

*This manual is intended to meet the Manufacturer's Instructions as required by ANSI Z359.1 and CSA 259.10-06 and should be used as part of an employee training program as required by OSHA*

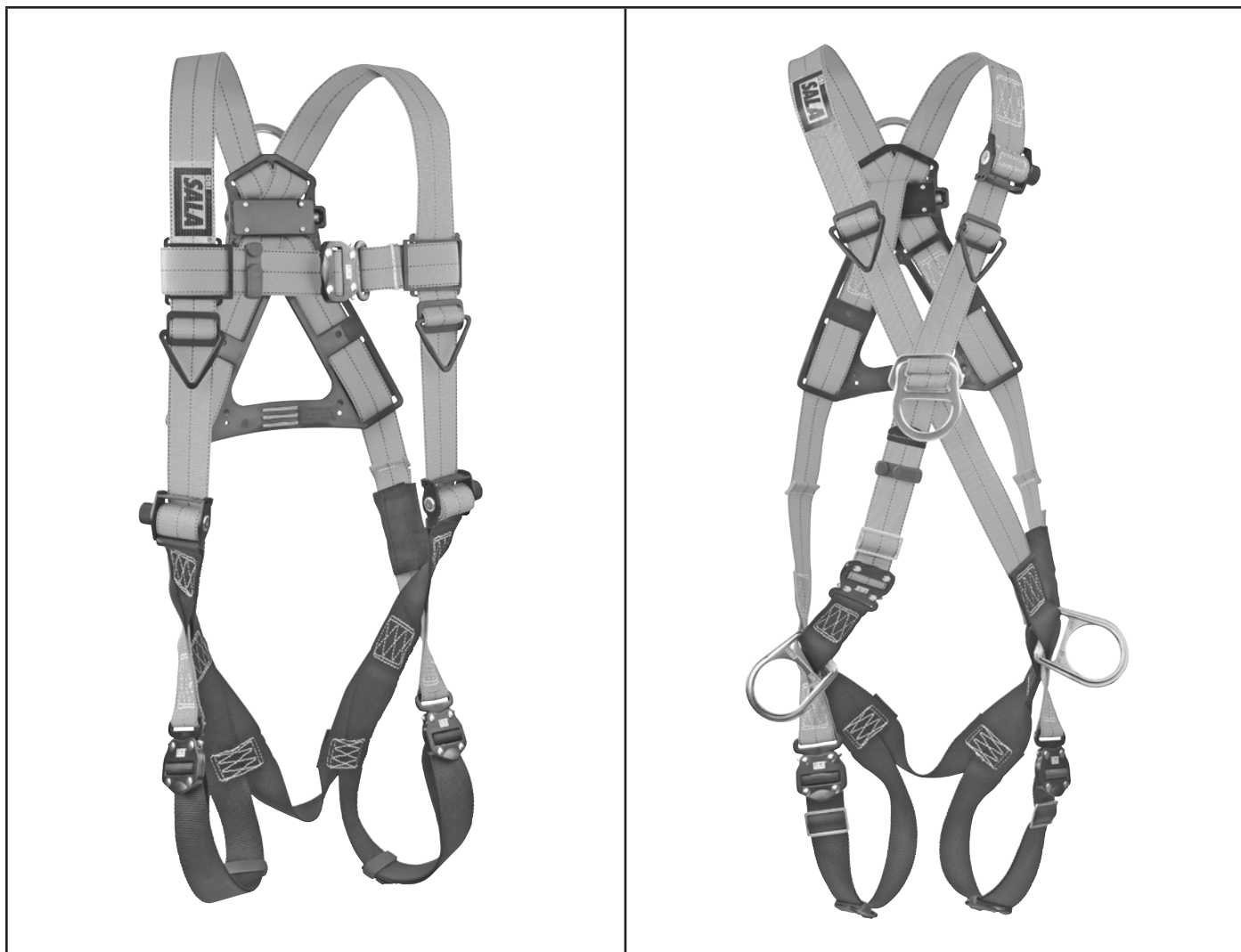


Figure 1





Figure 2



Figure 3



Figure 4



**WARNING:** This product is part of a personal fall arrest, restraint, work positioning, personnel riding, climbing, or rescue system. The user must follow the manufacturer's instructions for each component of the system. These instructions must be provided to the user of this equipment. The user must read and understand these instructions before using this equipment. Manufacturer's instructions must be followed for proper use and maintenance of this equipment. Alterations or misuse of this product or failure to follow instructions may result in serious injury or death.

**IMPORTANT:** If you have questions on the use, care, or suitability of this equipment for your application, contact Capital Safety.

**IMPORTANT:** Before using this equipment, record the product identification information from the ID label in the inspection and maintenance log of this manual.

## DESCRIPTIONS

Delta Vest™ Full Body Harness: See Figure 1.

Vest Style Full Body Harness: See Figure 2.

Cross-Over Style Full Body Harness: See Figure 3.

Step-In Style Full Body Harness: See Figure 4.

### OPTIONS:

DBI-SALA Full Body Harnesses are available with options and accessories. Following is a partial list of commonly used options and accessories (some options may not be available on all harnesses):

- Shoulder D-rings
- Side D-rings
- Hip pad with side D-rings
- Quick Connect buckles
- Tongue buckle body belt
- Loops on harness for body belt
- Kevlar® webbing
- High visibility webbing
- Non-sparking/Non conductive PVC coated hardware
- Shoulder pads
- Tool belt support straps
- Seat sling
- Lanyard attached directly to D-ring or attachment element
- Snap fastener on shoulder strap for retaining lanyard
- Delta Vest™
- Tool holders

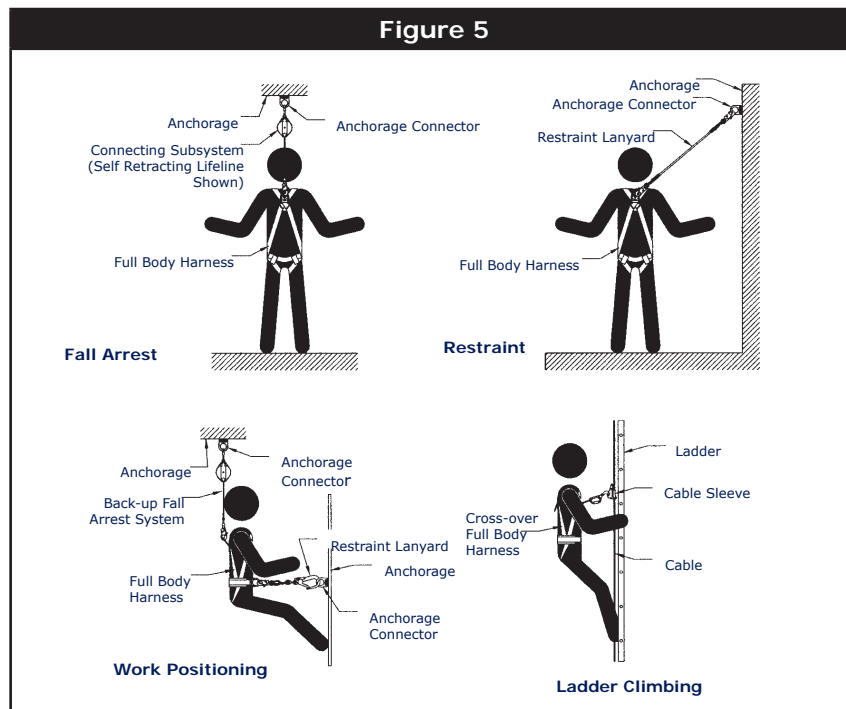
## 1.0 APPLICATIONS

**1.1 PURPOSE:** DBI-SALA full body harnesses are to be used as components in personal fall arrest, restraint, work positioning, or rescue systems. See Figures 1, 2, 3, and 4 for harness styles.

Harnesses included in this manual are full body harnesses and meet ANSI Z359.1, OSHA, and CSA Z259.10-06 requirements. See Figure 5 for application illustrations.

- Full body harnesses with Kevlar web should be used when working with tools, materials, or environments of high temperature (foundries, chemical manufacturing, steel fabrication, emergency rescue services, fire services, welders, oil industry, nuclear industry, explosives).
- Harnesses with PVC coated hardware should be used when working in explosive or electrically conductive environments, or where surfaces must be protected from the hardware.
- Harnesses with high visibility webbing should be used when increased visibility of the user is required.

- A. **PERSONAL FALL ARREST:** The full body harness is used as a component of a personal fall arrest system. Personal fall arrest systems typically include a full body harness and a connecting subsystem (energy absorbing lanyard). Maximum arresting force must not exceed 1,800 lbs (8 kN). For fall protection applications connect the fall arrest subsystem (example: lanyard, SRL, energy absorber, etc.) to the D-ring or attachment element on your back, between your shoulder blades.
- B. **WORK POSITIONING:** The full body harness is used as a component of a work positioning system to support the user at a work position. Work positioning systems typically include a full body harness, positioning lanyard, and a back-up personal fall arrest system. For work positioning applications, connect the work positioning subsystem (example: lanyard, Y-lanyard, etc.) to the lower (hip level) side or belt mounted work positioning attachment anchorage elements (D-rings). Never use these connection points for fall arrest.



- C. **LADDER CLIMBING:** The full body harness is used as a component of a climbing system to prevent the user from falling when climbing a ladder or other climbing structure. Climbing systems typically include a full body harness, vertical cable or rail attached to the structure, and climbing sleeve. For ladder climbing applications, harnesses equipped with a frontal D-ring in the sternal location may be used for fall arrest on fixed ladder climbing systems. These are defined in Z259.2.1 in Canada and ANSI A14.3 in the United States.
- D. **RESCUE:** The full body harness is used as a component of a rescue system. Rescue systems are configured depending on the type of rescue. For limited access (confined space) applications, harnesses equipped with D-rings on the shoulders may be used for entry and egress into confined spaces where worker profile is an issue.
- E. **CONTROLLED DESCENT:** For controlled descent applications, harnesses equipped with a single sternal level D-ring, one or two frontal mounted D-rings, or a pair of connectors originating below the waist (such as a seat sling) may be used for connection to a descender or evacuation system (reference in Z259.10-06 in Canada).
- F. **RESTRAINT:** The full body harness is used as a component of a restraint system to prevent the user from reaching a fall hazard. Restraint systems typically include a full body harness and a lanyard or restraint line.

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

- A. **CAPACITY:** These full body harnesses are designed for use by persons with a combined weight (clothing, tools, etc.) of no more than 420 lbs. Make sure all of the components in your system are rated to a capacity appropriate to your application
- B. **FREE FALL:** Personal fall arrest systems used with this equipment must be rigged to limit the free fall to 6 feet (1.8 M) (ANSI Z359.1). Restraint systems must be rigged so that no vertical free fall is possible. Work positioning systems must be rigged so that free fall is limited to 2 feet (.6 m) or less. Personnel

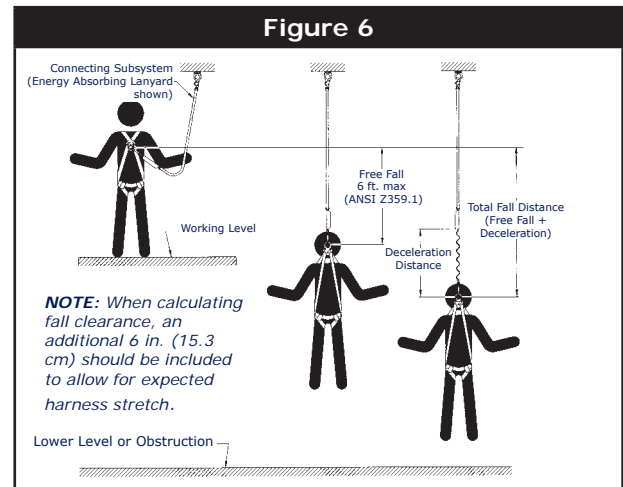
riding systems must be rigged so that no vertical free fall is possible. Climbing systems must be rigged so that free fall is limited to 18 in. (.46 cm) or less. Rescue systems must be rigged so that no vertical free fall is possible. See subsystem manufacturer's instructions for more information.

- C. **FALL CLEARANCE:** See Figure 6. There must be sufficient clearance below the user to arrest a fall before the user strikes the ground or other obstruction. The clearance required is dependent on the following factors:

- Elevation of anchorage
- Connecting subsystem length
- Deceleration distance
- Free fall distance
- Worker height
- Movement of harness attachment element

See subsystem manufacturer's instructions for more information.

- D. **SWING FALLS:** See Figure 7. 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 or death. Minimize swing falls by working as close to the anchorage point as possible. Do not permit a swing fall if injury could occur. Swing falls will significantly increase the clearance required when a self-retracting lifeline or other variable length connecting subsystem is used.



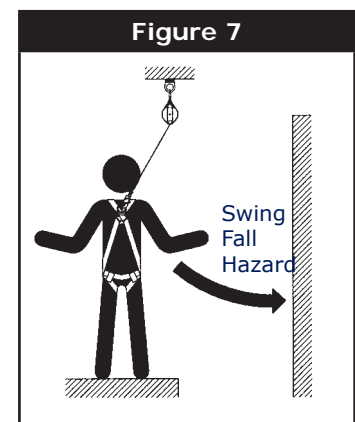
- E. **EXTENDED SUSPENSION:** A full body harness is not intended for use in extended suspension applications. If the user is going to be suspended for an extended length of time it is recommended that some form of seat support be used. DBI-SALA recommends a seat board, suspension workseat, seat sling, or a boatswain chair. Contact DBI-SALA for more information on these items.

- F. **ENVIRONMENTAL HAZARDS:** Use of this equipment in areas with environmental hazards may require additional precautions to prevent injury to the user or damage to the equipment. Hazards may include, but are not limited to; heat, chemicals, corrosive environments, high voltage power lines, gases, moving machinery, and sharp edges.

- G. **HARNESSES FOR HIGH TEMPERATURE ENVIRONMENTS:** Harnesses with Kevlar webbing are designed for use in high temperature environments, with limitations: Kevlar webbing begins to char at 800° to 900° Fahrenheit. Kevlar webbing can withstand limited contact exposure to temperatures up to 1,000° F. Polyester webbing loses strength at 300° to 400° F. PVC coating on hardware has a melting point of approximately 350° F.

**IMPORTANT:** When working with tools, materials, or in high temperature environments, ensure that associated fall protection equipment can withstand high temperatures, or provide protection for those items.

**IMPORTANT:** Although PVC coated, cadmium, or zinc plated hardware exhibit excellent corrosion resistance in chemical, acidic, alkaline, and atmospheric conditions, frequent inspections may be required. Consult with Capital Safety if you question the use of this equipment in hazardous environments.



- H. **TRAINING:** This equipment must be installed and used by persons trained in its correct application and use. See section 4.0.

- 1.3 **APPLICABLE STANDARDS:** Refer to national standards, including ANSI Z359 (.0, .1, .2, .3, and .4) family of standards on fall protection, ANSI A10.32, CSA Z259.10-06, and applicable local, state and federal (OSHA) requirements governing occupational safety for more information about work positioning systems.

**IMPORTANT:** Harnesses with Kevlar webbing do not meet ANSI Z359.1. Kevlar does not have equivalent abrasion resistance of polyamides. Kevlar harnesses meet all other requirements of this standard.



## 2.0 SYSTEM REQUIREMENTS

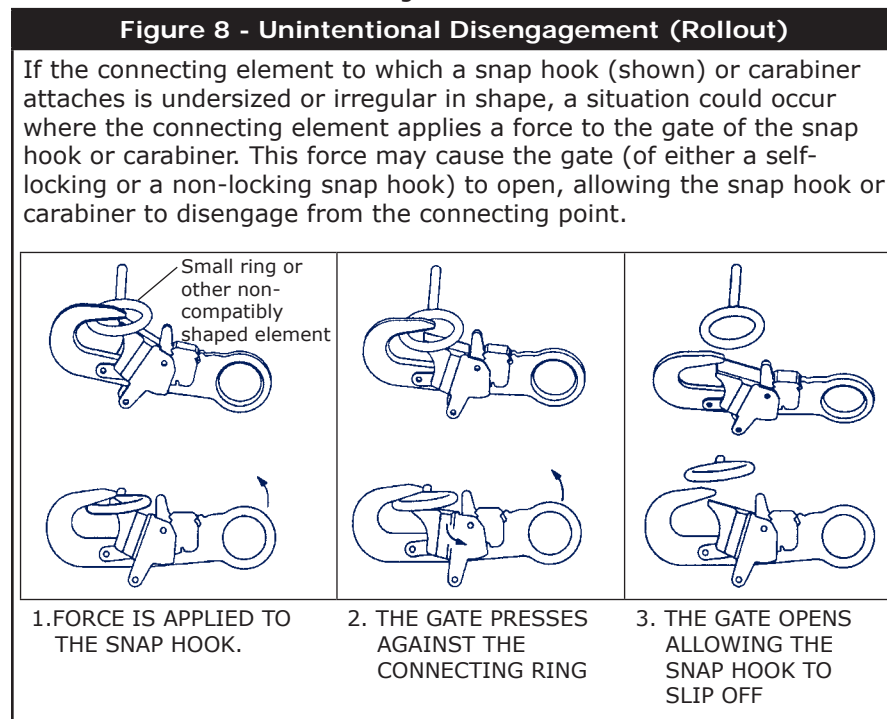
- 2.1 COMPATIBILITY OF COMPONENTS:** Capital Safety equipment is designed for use with Capital Safety approved components and subsystems only. Substitutions or replacements made with non-approved components or subsystems may jeopardize compatibility of equipment and may effect the safety and reliability of the complete system.
- 2.2 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. Contact Capital Safety if you have any questions about compatibility.

Connectors (hooks, carabiners, and D-rings) must be capable of supporting at least 5,000 lbs. (22.2 kN). 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. See Figure 8. Connectors must be compatible in size, shape, and strength. Self- locking snap hooks and carabiners are required by ANSI Z359.1 and OSHA.

- 2.3 MAKING CONNECTIONS:** Use only self-locking snap hooks and carabiners with this equipment. Use only 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.

Capital Safety connectors (snap hooks and carabiners) are designed to be used only as specified in each product's user's instructions. See Figure 9 for inappropriate connections. Capital Safety snap hooks and carabiners should not be connected:

- A. To a D-ring to which another connector is attached.
- B. In a manner that would result in a load on the gate.

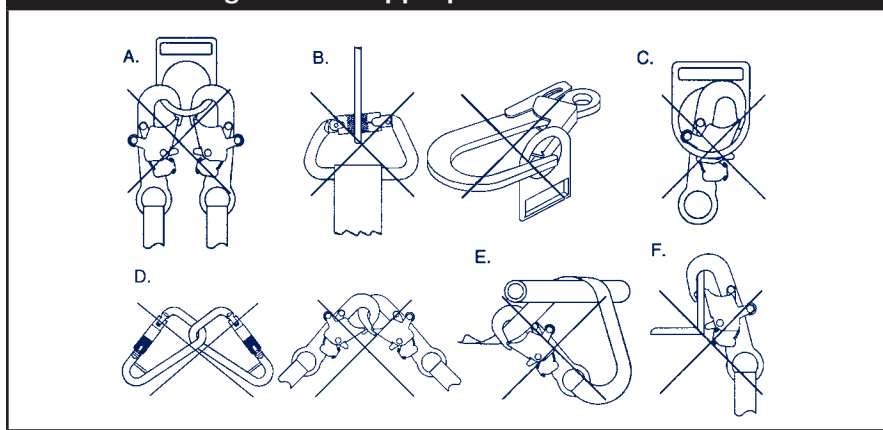


**NOTE:** Large throat snap hooks should not be connected to standard size D-rings or similar objects which will result in a load on the gate if the hook or D-ring twists or rotates, unless the snap hook complies with ANSI Z359.1-2007 and is equipped with a 3,600 lb gate. Check the marking on your snap hook to verify that it is appropriate for your application.

- C. In a false engagement, where features that protrude from the snap hook or carabiner catch on the anchor, and without visual confirmation seems to be fully engaged to the anchor point.



**Figure 9 - Inappropriate Connections**



- D. To each other.
- E. Directly to webbing or rope lanyard or tie-back (unless the manufacturer's instructions for both the lanyard and connector specifically allows such a connection).
- F. To any object which is shaped or dimensioned such that the snap hook or carabiner will not close and lock, or that roll-out could occur.

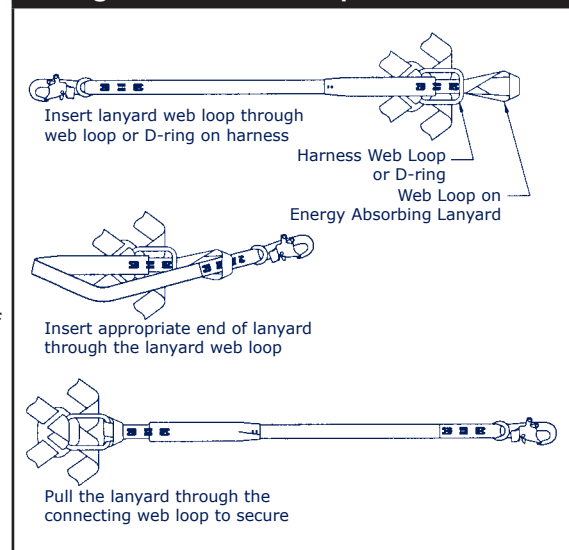
**2.4 CONNECTING SUBSYSTEMS:** Connecting subsystems (self-retracting lifeline, lanyard, rope grab and lifeline, cable sleeve) must be suitable for your application. See section 1.1. See subsystem manufacturer's instructions for more information. Some harness models have web loop connection points. Do not use snap hooks to connect to web loops. Use a self-locking carabiner to connect to a web loop. Ensure the carabiner cannot cross-gate load (load against the gate rather than along the backbone of the carabiner). Some lanyards are designed to choke onto a web loop to provide a compatible connection. See Figure 10. Lanyards may be sewn directly to the web loop forming a permanent connection. Do not make multiple connections onto one web loop, unless choking two lanyards onto a properly sized web loop.

**2.5 ANCHORAGE STRENGTH:** The anchorage strength required is dependent on the application type. The following are the requirements of ANSI 359.1 for these application types:

- A. FALL ARREST:** Anchorages selected for fall arrest systems shall have a strength capable of sustaining static loads applied in the directions permitted by the system of at least:
  1. 5,000 lbs. (22.2 kN) for non-certified anchorages, or
  2. Two times the maximum arresting force for certified anchorages. When more than one fall arrest system is attached to an anchorage, the strengths set forth in (1) and (2) above shall be multiplied by the number of systems attached to the anchorage.
- B. RESTRAINT:** Anchorages selected for restraint and travel restraint systems shall have a strength capable of sustaining static loads applied in the directions permitted by the system of at least:
  1. 1,000 lbs. (4.5 kN) for non-certified anchorages, or
  2. Two times the foreseeable force for certified anchorages. When more than one restraint and travel restraint system is attached to an anchorage, the strengths set forth in (1) and (2) above shall be multiplied by the number of systems attached to the anchorage.
- C. WORKING POSITIONING:** Anchorages selected for work positioning systems shall have a strength capable of sustaining static loads applied in the directions permitted by the system of at least:
  1. 3,000 lbs. (13.3 kN) for non-certified anchorages, or
  2. Two times the foreseeable force for certified anchorages.

When more than one work positioning system is attached to an anchorage, the strengths set forth in (1) and (2) above shall be multiplied by the number of systems attached to the anchorage.
- D. RESCUE:** Anchorages selected for rescue systems shall have a strength capable of sustaining static loads applied in the directions permitted by the system of at least:

**Figure 10 - Web Loop Connection**



1. 3,000 lbs. (13.3 kN) for non-certified anchorages, or
2. Five times the foreseeable force for certified anchorages. When more than one rescue system is attached to an anchorage, the strengths set forth in (1) and (2) above shall be multiplied by the number of systems attached to the anchorage.

- E. CLIMBING: The structure to which a climbing system is attached must sustain the loads required by that particular system. See instructions for climbing system for requirements.

### 3.0 DONNING AND USE

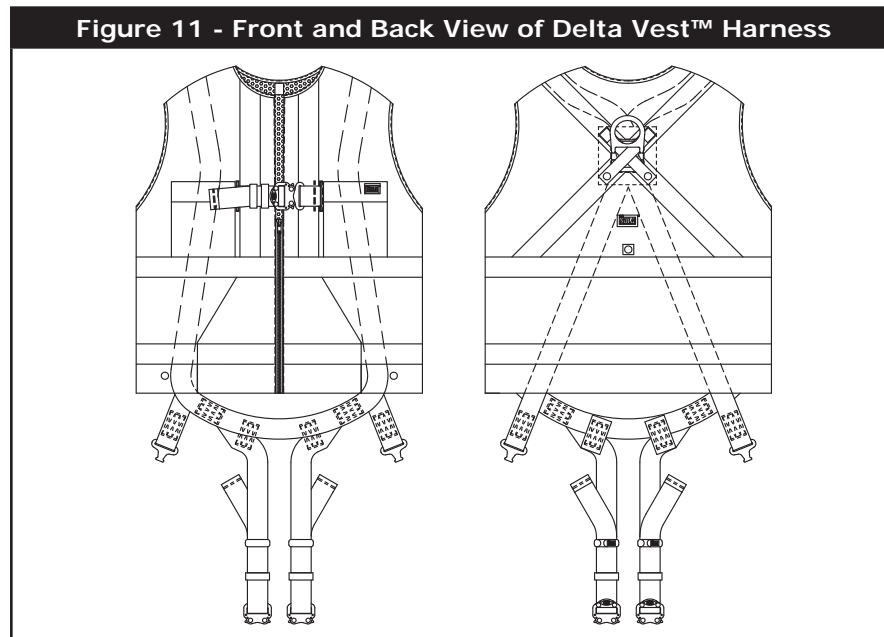
**WARNING:** Do not alter or intentionally misuse this equipment. Consult DBI-SALA when using this equipment in combination with components or subsystems other than those described in this manual. Some subsystem and component combinations may interfere with the operation of this equipment. Use caution when using this equipment around moving machinery, electrical and chemical hazards, and sharp edges.

**WARNING:** Consult your doctor if there is reason to doubt your fitness to safely absorb the shock from a fall arrest. Age and fitness seriously affect a worker's ability to withstand falls. Pregnant women or minors must not use any DBI-SALA full body harness.

- 3.1 **BEFORE EACH USE** of this equipment inspect it according to section 5.0 of this manual.
- 3.2 **PLAN** your system before use. Consider all factors that will affect your safety during use of this equipment. The following list gives important points to consider when planning your system:
- A. ANCHORAGE: Select an anchorage that meets the requirements specified in sections 1.2 and 2.5.
  - B. SHARP EDGES: Avoid working where system components may be in contact with, or abrade against, unprotected sharp edges.
  - C. AFTER A FALL: Components which have been subjected to the forces of arresting a fall must be removed from service and destroyed.
  - D. RESCUE: The employer must have a rescue plan when using this equipment. The employer must have the ability to perform a rescue quickly and safely.

### 3.3 DONNING AND FITTING THE HARNESS:

- A. Delta Vest™ Harness: See Figure 11 for front and back views of the Delta Vest™ harness. Don the Delta Vest™ full body harness by following these steps (see Figures 12 and 13).



- Step 1.** Lift harness by the back D-ring and untangle straps. Allow leg straps to hang free.
- Step 2.** Don the Vest Harness as you would a jacket. Do not zip the vest at this time.
- Step 3.** Connect chest strap by passing male buckle through female buckle. Pass excess webbing through loop keepers.

- Step 4.** Reach between legs and grasp the leg strap on your left side. Bring the strap up between your legs and connect to buckle attached to yellow strap (orange on high visibility models, black on flame resistant models) as shown in Figures 12 and 13. Connect right leg strap.
- Step 5.** Reach inside the vest and adjust shoulder straps to a snug fit. Left and right shoulder straps should be adjusted to the same length. Readjust leg straps, chest strap, and shoulder straps as necessary to a snug fit.
- Step 6.** Zip the vest.

**Figure 12 - Donning the Delta Vest™ Harness**



**Figure 13A - Delta Vest™ Harness Buckle Connections**



**Chest Strap:** Pass male buckle through female buckle and pull free end of webbing to tighten.



**Tongue Buckle:** Pass webbing through buckle and insert tongue through grommet.



**Pass Buckle:** Pass male buckle through female buckle and pull free end of webbing to tighten.



**Quick Connect Buckle:** Insert the tab of the buckle into the receptor of the quick connect buckle until a click is heard.

- B. Vest Style Harness:** If your harness incorporates loops for a removable waist belt, the belt should be installed through the four loops in the harness as shown in Figure 14. The hip pad, if used, is secured to the belt by passing the belt through the hip pad loops. Don the vest style full body harness by following these steps (see Figures 14-16B):

**NOTE:** Vest Style harnesses contain different harness buckle connections. See Figure 13A for the style that applies to your harness.

- Step 1.** Locate back D-ring held in position by the D-ring pad; lift up harness and hold by this D-ring. Ensure the straps are not twisted.
- Step 2.** Grasp the shoulder straps and slip harness onto one arm. D-ring will be located on your back side. Ensure straps are not tangled and hang freely. Slip free arm into harness and position shoulder straps on top of shoulder. Chest strap buckle will be positioned on front side when worn properly. Pass excess strap through the loop keepers.
- Step 3.** Reach between your legs and grasp the leg strap on your left side. Bring the strap up between your legs and connect it as shown in Figure 16A. Pull the free end of the strap away from the buckle to make a snug fit on each leg strap. To loosen the leg strap, grasp the buckle and pull away from your leg to allow the strap to pull through the buckle. A plastic end keeper on the end of the strap will stop it from pulling completely out of the buckle. To release the buckle. Repeat this procedure for the right side.
- Step 4.** Adjust the waist belt by inserting the buckle tongue into the grommet on the left side as shown in Figure 16A.
- Step 5.** Attach the chest strap by connecting the buckle. See Figure 16A. Chest strap should be six inches down from the top of shoulders. Pass excess strap through the loop keepers. The strap may be tightened to a snug fit by pulling the free strap end to the left (away from the buckle). To loosen

**Figure 13B - Revolver™ Vertical Torso Adjusters**

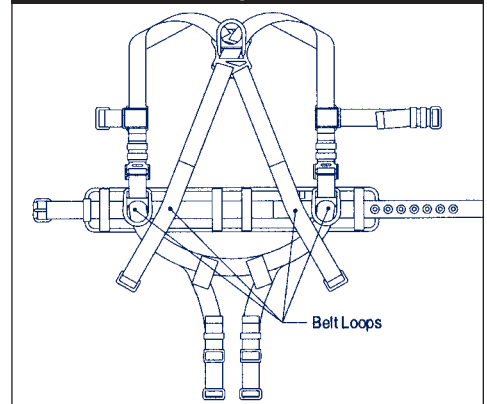


**To Tighten:** Turn Ratchet Knob clockwise.

**To Loosen:** Pull Ratchet Knob out and turn counterclockwise while pulling strap.

**NOTE:** After adjustment, ensure that the ramped teeth on the adjuster are engaged in the ratchet slots.

**Figure 14 - Removable Waist Belt & Hip Pad**

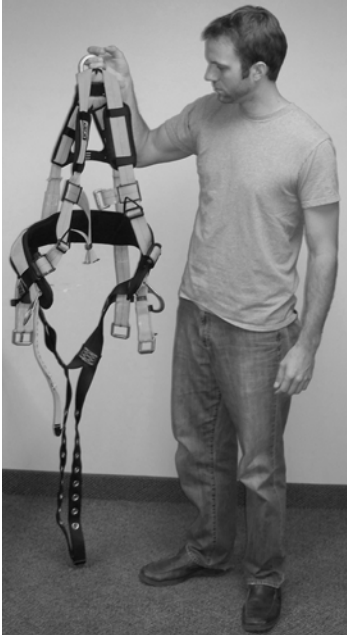




the chest strap, grasp the buckle and pull away from the body to allow the strap to pull through the buckle. A plastic end keeper on the end of the strap will stop it from pulling completely out of the buckle.

- Step 7.** Adjust shoulder straps to a snug fit (Figure 16B). Left and right sides of shoulder straps should be adjusted to the same length and the chest strap should be centered on your lower chest, six inches down from shoulder. The front D-ring on vest style harness is moved up or down by adjusting the shoulder straps and leg straps. Center the back D-ring between shoulder blades. Adjust leg straps to a snug fit. At least three inches of webbing must extend past buckle on leg straps. Adjust the waist belt (if present). Center retrieval D-rings (if present) on top of each shoulder.

**Figure 15 - Donning Vest Style Harness**



**Step 1**



**Step 2**



**Step 3**



**Step 4**



**Step 5**



**Step 6**

**Figure 16A - Vest Style Harness Buckle Connections**



**Chest Strap:** Pass male buckle through female buckle and pull free end of webbing to tighten.



**Chest Strap:** Attach chest strap by inserting the tab of the buckle into the receptor of the quick connect buckle until a click is heard.



**Tongue Buckle:** Pass webbing through buckle and insert tongue through grommet.



**Pass Buckle:** Pass male buckle through female buckle and pull free end of webbing to tighten.



**Quick Connect Buckle:** Insert the tab of the buckle into the receptor of the quick connect buckle until a click is heard.

- C. CROSS-OVER STYLE HARNESS:** If your harness incorporates loops for a removable waist belt, the belt should be installed through the four loops in the harness as shown in Figure 17. The hip pad, if used, is secured to the belt by passing the belt through the hip pad loops. Don the cross-over style full body harness by following these steps (see Figures 17-19B):

**NOTE:** Cross-Over Style harnesses contain different harness buckle connections. See Figure 16A for the style that applies to your harness.

- Step 1.** Locate back D-ring held in position by the D-ring pad; lift up harness and hold by this D-ring. Ensure the straps are not twisted.
- Step 2.** Grasp shoulder straps between back and front D-ring and slip harness over your head from the left side. Position shoulder straps on top of shoulder. Ensure straps are not tangled and hang freely. The D-ring will be positioned on your back when worn properly.
- Step 3.** Grasp the buckle below the front D-ring and connect (Figure 19A). Ensure straps are not tangled or crossed.
- Step 4.** Reach between legs and grasp blue leg strap on your left side. Bring strap up between legs and connect to buckle. Connect right leg strap (Figure 19A).
- Step 5.** Adjust shoulder straps to a snug fit (Figure 19B). Left and right sides of shoulder straps should be adjusted to the same length and the front D-ring should be centered on your lower chest. The back D-ring should be centered between your shoulder blades. Adjust leg straps to a snug fit. Adjust the waist belt (if present). Center retrieval D-rings (if present) on top of each shoulder.

**Figure 16B - Revolver™ Vertical Torso Adjusters**

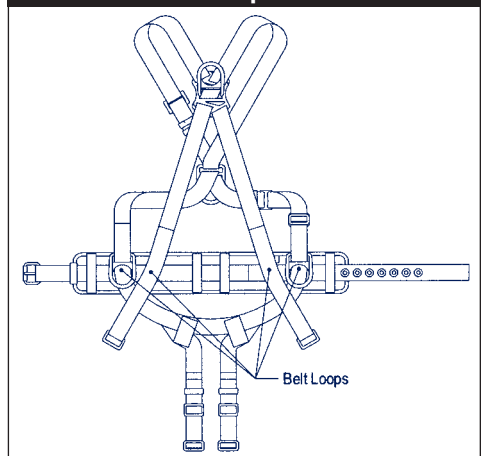


**To Tighten:** Turn Ratchet Knob clockwise.

**To Loosen:** Pull Ratchet Knob out and turn counterclockwise while pulling strap.

**NOTE:** After adjustment, ensure that the ramped teeth on the adjuster are engaged in the ratchet slots.

**Figure 17 - Removable Waist Belt and Hip Pad**



**Figure 18 - Donning Cross-over Style Harness**



**Step 1**



**Step 2**



**Step 3**



**Step 4**



**Step 5**

**Figure 19A - Cross-over Style Harness Buckle Connections**



**Tongue Buckle:** Pass webbing through buckle and insert tongue through grommet.



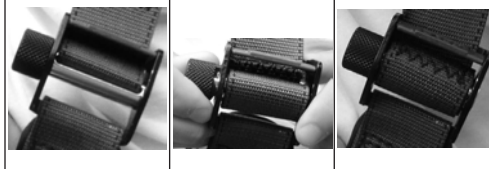
**Pass Buckle:** Pass male buckle through female buckle and pull free end of webbing to tighten.



**Quick Connect Buckle:** Insert the tab of the buckle into the receptor of the quick connect buckle until a click is heard.



**Figure 19B - Revolver™ Vertical Torso Adjusters**



**To Tighten:** Turn Ratchet Knob clockwise.

**To Loosen:** Pull Ratchet Knob out and turn counterclockwise while pulling strap.

**NOTE:** After adjustment, ensure that the ramped teeth on the adjuster are engaged in the ratchet slots.

- 3.4 USE OF FALL ARREST D-RING OR ATTACHMENT ELEMENT:** For fall protection applications connect to the D-ring or attachment element on your back, between your shoulder blades. Side D-rings, if present, are for positioning or restraint applications only. Shoulder retrieval D-rings are for rescue or retrieval applications only. Front D-ring is for ladder climbing or positioning. D-rings on seat sling are for suspension or positioning applications only.
- 3.5 MAKING CONNECTIONS:** When using a hook to connect to an anchorage or when coupling components of the system together, ensure roll-out cannot occur. Roll-out occurs when interference between the hook and mating connector causes the hook gate to unintentionally open and release. Self-locking snap hooks and carabiners should be used to reduce the possibility of roll-out. Do not use hooks or connectors that will not completely close over the attachment object. See subsystem manufacturer's instructions for more information on making connections.
- 3.6 CONNECTING SYSTEM COMPONENTS:** After fitting the full body harness the user may then connect to other system components. Follow the guidelines in section 3.4 on selecting the correct attachment element.

## **4.0 TRAINING**

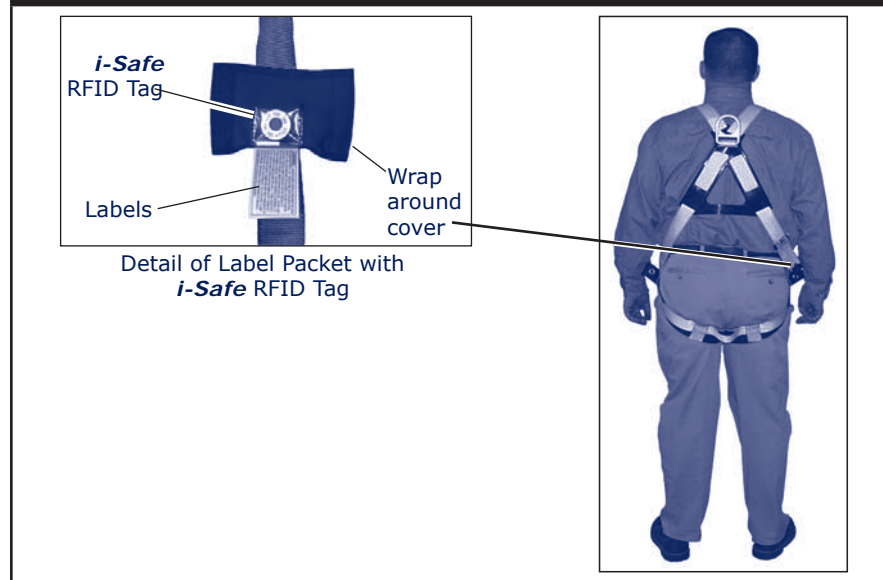
- 4.1** It is the responsibility of the user and the purchaser of this equipment to assure that they are familiar with these instructions, trained in the correct care and use of, and are aware of the operating characteristics, application limits, and the consequences of improper use of this equipment.

**IMPORTANT:** Training must be conducted without exposing the user to a fall hazard. Training should be repeated on a periodic basis.

## **5.0 INSPECTION**

- 5.1** The i-Safe™ RFID tag on this harness can be used in conjunction with the i-Safe handheld reading device and the web based portal to simplify inspection and inventory control and provide records for your fall protection equipment See Figure 22.
- 5.2 FREQUENCY:** Before each use inspect the full body harness according to sections 5.3 and 5.4. The harness must be inspected by a competent person, other than the user, at least annually. Record the results of each formal inspection in the inspection and maintenance log in section 9.0, or use the i-Safe™ inspection web portal to maintain your inspection records. If you are a first-time user, contact a Customer Service representative in the US at 800-328-6146 or in Canada at 800-387-7484 or if you have already registered, go to: [www.capitalsafety.com/isafe.html](http://www.capitalsafety.com/isafe.html). Follow instructions provided with your i-Safe handheld reader or on the web portal to transfer your data to your web log.

**Figure 20 - i-Safe™ RFID Tag**



**IMPORTANT:** If the full body harness has been subjected to fall arrest or impact forces it must be immediately removed from service and destroyed.

**IMPORTANT:** Extreme working conditions (harsh environments, prolonged use, etc.) may require increasing the frequency of inspections.

### 5.3 INSPECTION STEPS:

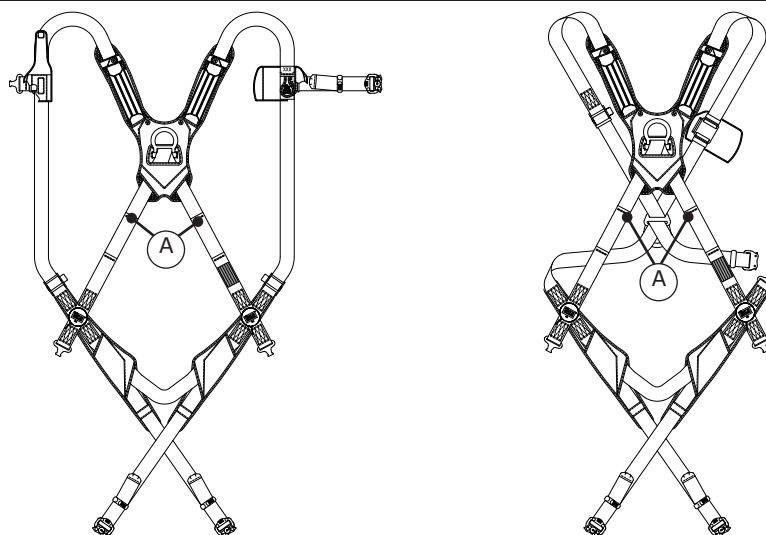
- Step 1.** Inspect harness hardware (buckles, D-rings, back pad, loop keepers); These items must not be damaged, broken, distorted, and must be free of sharp edges, burrs, cracks, worn parts, or corrosion. PVC coated hardware must be free of cuts, rips, tears, holes, etc. in the coating to ensure non-conductivity. Ensure buckles work smoothly. If present, inspect the quick connect buckles by ensuring that the release tabs work freely and that a click is heard when the buckle engages. Inspect parachute buckle spring.
- Step 2.** Inspect webbing; material must be free of frayed, cut, or broken fibers. Check for tears, abrasions, mold, burns, or discoloration. Inspect stitching; Check for pulled or cut stitches. Broken stitches may be an indication that the harness has been impact loaded and must be removed from service.

**IMPORTANT:** On Delta Vest™ harnesses, inspection should include the webbing inside the vest.

- Step 3.** Inspect labels; All labels should be present and fully legible. See section 8.0.
- Step 4.** Inspect each system component or subsystem according to manufacturer's instructions.
- Step 5.** Inspect the Stitched Impact Indicator: The stitched impact indicator is a section of webbing that is lapped back on itself and secured with a specific stitch pattern holding the lap (see 22). The stitch pattern is designed to release when the harness arrests a fall or has been subjected to an equivalent force. If the impact indicator has been activated the harness must be removed from service and destroyed.

**Figure 21 - Stitched Impact Indicator**

A. Stitched Impact Indicator



**Step 6.** Record the inspection date and results in the inspection and maintenance log in section 9.0, or use the i-Safe™ inspection web portal.

**NOTE:** Some harnesses are equipped with a "stand up D-ring" in the dorsal (back) D-ring location. If the spring in the D-ring is damaged or lost and the D-ring no longer stands up, this does not compromise the harness integrity. As long as the D-ring passes inspection criteria in Step 1, it is safe to use.

**5.4** If inspection reveals a defective condition, remove unit from service immediately and destroy.

**NOTE:** Only DBI-SALA or parties authorized in writing may make repairs to this equipment.

**5.5 PRODUCT LIFE:** The functional life of DBI-SALA harnesses is determined by work conditions and maintenance. As long as the product passes inspection criteria, it may remain in service.

## **6.0 MAINTENANCE, SERVICING, STORAGE**

### **6.1 WASHING INSTRUCTIONS:**

A. Full body harness: Clean full body harness with water and a mild soap solution. Do not use bleach or bleach solutions. Wipe off hardware with a clean, dry cloth, and hang to air dry. Do not force dry with heat. An excessive buildup of dirt, paint, etc. may prevent the full body harness from working properly, and in severe cases degrade the webbing to a point where it weakens and should be removed from service. More information on cleaning is available from DBI-SALA. If you have questions concerning the condition of your harness, or have any doubt about putting it into service contact DBI-SALA.

B. Fire Resistant Padding:

- Remove pads from harness for laundering. Place the harness in the supplied laundry bag. The bag is designed to prevent entanglement of harness and to protect the washing machine from damage. Use of the laundry bag to wash the pads is optional.
- Launder flame resistant pads separately from harness or other non-flame resistant garments. Lint from other garments may affect flame resistance.
- Use a bleach-free detergent when washing both the harness and the pads. Do not use soap; soap may leave a residue which could affect flame resistance.
- Do not use chlorine bleach. Bleach may weaken fabric and reduce product life.
- Oily or greasy stains may be pre-treated and washed in hot water 140°F max (60°C max).
- Use delicate, permanent press, or cotton sturdy wash cycle with cold or warm water. Hot water can be used on heavily soiled items as long as it does not exceed 140°F (60°C). Use extra rinse cycle to be sure all residual wash chemicals are removed.
- Air dry or tumble dry using permanent press cycle and low heat. Drying temp should not exceed 200°F (93°C). These fabrics dry quickly, for lowest shrinkage, do not over dry.

**6.2** Additional maintenance and servicing procedures must be completed by a factory authorized service center. Authorization must be in writing. Do not attempt to disassemble the unit.

**6.3** Store full body harnesses in a cool, dry, clean environment out of direct sunlight. Avoid areas where

## 7.0 SPECIFICATIONS

## 8.0 LABELING

ANSI	CSA
<div> <p><b>WARNING</b> MANUFACTURER'S INSTRUCTIONS MUST BE READ AND UNDERSTOOD PRIOR TO USE. INSTRUCTIONS SUPPLIED WITH THIS PRODUCT AT TIME OF SHIPMENT MUST BE FOLLOWED. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH. CONTACT DBI-SALA IF INSTRUCTION SHEET IS NEEDED. INSPECT BEFORE EACH USE. DO NOT USE IF WEAR OR DAMAGE IS PRESENT. THIS BODY HARNESS IS INTENDED TO BE USED TO ARREST THE MOST SEVERE FREE FALLS. ITEMS SUBJECTED TO FALL ARREST OR IMPACT FORCES MUST BE IMMEDIATELY REMOVED FROM SERVICE AND DESTROYED. CONNECTING SNAP AND D-RING MUST BE COMPATIBLE IN SIZE, SHAPE, AND STRENGTH. THIS ITEM IS NOT FLAME OR HEAT RESISTANT. REPAIRS ONLY TO BE PERFORMED BY DBI-SALA. EQUIPMENT MODIFICATION OR MISUSE, VOIDS WARRANTY.</p> </div> <div> <p><b>DBI-SALA</b> BODY HARNESS. CAPACITY: 310 LBS. NYLON WEB</p> <p>DBI-SALA 3965 PEPIN AVENUE RED WING, MN 55066 (800) 328-6146</p> <p>DO NOT REMOVE THIS LABEL MADE IN THE U.S.A.</p> </div>	<div> <p><b>WARNING/AVERTISSEMENT !</b></p> <p>Any unit which has seen a fall arresting service should not be used after such service. Before use, read and comply with all labels and separate instructions. Failure to do so could result in serious injury or death. Contact Capital Safety if written instruction sheet is needed. Inspect before each use. If wear damage exists, do not use. This body harness is intended to be used to arrest the most severe fall. Connecting snap and D-ring must be compatible in size, shape and strength. Repairs only to be performed by Capital Safety Group. Equipment modification or misuse voids warranty. On ne doit pas utiliser un dispositif après qu'il a servi à arrêter une chute. Avant de l'utiliser, on doit lire et observer les instructions sur toutes les étiquettes et dans les autres documents. Vérifier ce le fait peut causer des blessures graves, voire mortelles. Communiquer avec Capital Safety si on a besoin d'une fiche d'instructions. Inspecter avant chaque utilisation. Si il y a des dommages dus à l'usure, ne pas utiliser. Ce harnais de sécurité est destiné à être utilisé pour arrêter les chutes libres. Les réparations doivent être effectuées uniquement par le Capital Safety Group. Une modification ou un usage abusif de l'équipement annule la garantie.</p> </div> <div> <p><b>DBI-SALA</b> BODY HARNESS/Harnais de sécurité NYLON WEB/Sangle: Nylon SIZE/GRANDUR: SEE LABEL DO NOT REMOVE THIS LABEL/ Ne pas enlever cette étiquette MEETS ASTM F887-05</p> <p>www.capitalsafety.com (800) 328-6146 MADE IN CANADA</p> <p>HARNESS CLASSIFICATION/ Classe de Harnais</p> <p>CSA STANDARD Z259.10-06</p> </div>
<p>Warning Label Used on Nylon ASTM F887-2004 Compliant Harnesses</p>	<p>Étiquette de mise en garde du harnais de nylon</p>
<div> <p><b>WARNING</b> MANUFACTURER'S INSTRUCTIONS MUST BE READ AND UNDERSTOOD PRIOR TO USE. INSTRUCTIONS SUPPLIED WITH THIS PRODUCT AT TIME OF SHIPMENT MUST BE FOLLOWED. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH. CONTACT DBI-SALA IF INSTRUCTION SHEET IS NEEDED. INSPECT BEFORE EACH USE. DO NOT USE IF WEAR OR DAMAGE IS PRESENT. THIS BODY HARNESS IS INTENDED TO BE USED TO ARREST THE MOST SEVERE FREE FALLS. ITEMS SUBJECTED TO FALL ARREST OR IMPACT FORCES MUST BE IMMEDIATELY REMOVED FROM SERVICE AND DESTROYED. CONNECTING SNAP AND D-RING MUST BE COMPATIBLE IN SIZE, SHAPE AND STRENGTH. REPAIRS ONLY TO BE PERFORMED BY DBI-SALA. EQUIPMENT MODIFICATION OR MISUSE, VOIDS WARRANTY.</p> </div> <div> <p><b>DBI-SALA</b> BODY HARNESS. CAPACITY: 310 LBS. NOMEX/KEVLAR WEB</p> <p>www.capitalsafety.com (800) 328-6146</p> <p>DO NOT REMOVE THIS LABEL MADE IN THE U.S.A.</p> </div>	<div> <p><b>WARNING/AVERTISSEMENT !</b></p> <p>Any unit which has seen a fall arresting service should not be used after such service. Manufacturer's instructions must be read and understood prior to use. Instructions supplied at time of shipment must be followed. Failure to do so could result in serious injury or death. Contact DBI-SALA if instruction sheet is needed. Inspect before each use. Do not use if wear or damage is present. This body harness is intended to be used to arrest the most severe falls. Connecting snap and D-ring must be compatible in size, shape and strength. Repairs only to be performed by DBI-SALA. Equipment modification or misuse voids warranty. On ne doit pas utiliser un dispositif après qu'il a servi à arrêter une chute. On doit lire et comprendre les instructions du fabricant avant d'utiliser le produit. On doit observer les instructions fournies au moment de l'expédition. Vérifier que le fait peut causer des blessures graves, voire mortelles. Communiquer avec DBI-SALA si on a besoin d'une fiche d'instructions. Inspecter avant chaque utilisation. Ne pas utiliser s'il y a de l'usure ou des dommages. Ce harnais de sécurité est destiné à être utilisé pour arrêter les chutes libres. Les réparations doivent être effectuées uniquement par DBI-SALA. Une modification ou un usage abusif de l'équipement annule la garantie.</p> </div> <div> <p><b>DBI-SALA</b> Full Body Harness Harnais de sécurité Nomex/Kevlar web Sangle en Nomex/Kevlar Size: See label Grandeur: Voir étiquette Do not remove label Ne pas enlever cette étiquette Made in Canada Fabriqué au Canada Harness Classification: Classe de harnais</p> <p>www.capitalsafety.com USA: (800) 328-6146 Canada: (800) 387-7484</p> <p>CSA STANDARD Z259.10</p> </div>
<p>Warning Label Used on Nomex/Kevlar ASTM F887-2004 Compliant Harnesses</p>	<p>Étiquette de mise en garde du harnais Nomex ou Kevlar</p>
<div> <p><b>WARNING</b> MANUFACTURER'S INSTRUCTIONS MUST BE READ AND UNDERSTOOD PRIOR TO USE. INSTRUCTIONS SUPPLIED WITH THIS PRODUCT AT TIME OF SHIPMENT MUST BE FOLLOWED. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH. CONTACT DBI-SALA IF INSTRUCTION SHEET IS NEEDED. INSPECT BEFORE EACH USE. DO NOT USE IF WEAR OR DAMAGE IS PRESENT. THIS BODY HARNESS IS INTENDED TO BE USED TO ARREST THE MOST SEVERE FREE FALLS. ITEMS SUBJECTED TO FALL ARREST OR IMPACT FORCES MUST BE IMMEDIATELY REMOVED FROM SERVICE AND DESTROYED. CONNECTING SNAP AND D-RING MUST BE COMPATIBLE IN SIZE, SHAPE, AND STRENGTH. THIS ITEM IS NOT FLAME OR HEAT RESISTANT. REPAIRS ONLY TO BE PERFORMED BY DBI-SALA. EQUIPMENT MODIFICATION OR MISUSE, VOIDS WARRANTY.</p> </div> <div> <p><b>DBI-SALA</b> BODY HARNESS POLYESTER WEB CAPACITY: 420 LBS.</p> <p><b>WARNING</b> DO NOT EXCEED CAPACITY OF THIS OR OTHER SYSTEM COMPONENTS. CAPACITY IS THE COMBINED WEIGHT FOR WHICH THE COMPONENT IS DESIGNED TO BE USED. COMBINED WEIGHT INCLUDES THE USER'S BODY WEIGHT, CLOTHING, TOOLS, AND ANY OBJECTS CARRIED. CONTACT DBI-SALA FOR MORE INFORMATION.</p> </div>	<div> <p><b>WARNING</b> MANUFACTURER'S INSTRUCTIONS MUST BE READ AND UNDERSTOOD PRIOR TO USE. INSTRUCTIONS SUPPLIED WITH THIS PRODUCT AT TIME OF SHIPMENT MUST BE FOLLOWED. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH. CONTACT CAPITAL SAFETY IF INSTRUCTION SHEET IS NEEDED. INSPECT BEFORE EACH USE. REMOVE FROM SERVICE AFTER FALL ARREST. REMOVE FROM SERVICE IF WEAR DAMAGE IS PRESENT DURING INSPECTION. MAKE ONLY COMPATIBLE CONNECTIONS. DO NOT ALTER OR REPAIR HARNESS.</p> <p><b>AVERTISSEMENTS</b> LES INSTRUCTIONS DU FABRICANT DOIVENT ÊTRE LUES ET COMPRIS PRÉALABLEMENT À L'UTILISATION. LES INSTRUCTIONS FOURNIES AVEC CE PRODUIT AU MOMENT DE L'EXPÉDITION DOIVENT ÊTRE SUIVIES. NE PAS MODIFIER LES RECOMMANDATIONS PEUT ENTRAÎNER DES BLESSURES GRAVES, VOIRE MORTELLES. CONTACTER CAPITAL SAFETY EN CAS DE BESOIN DE NOTICE. INSPECTER AVANT CHAQUE UTILISATION. METTRE HORS SERVICE APRÈS L'ARRÊT D'UNE CHUTE. METTRE HORS SERVICE SI L'INSPECTION RÉVÈLE DES DOMMAGES DUS À L'USURE. EFFECTUER SEULEMENT DES RÉPARATIONS COMPATIBLES. NE PAS MODIFIER OU RÉPARER LE HARNAIS.</p> </div> <div> <p><b>DBI-SALA</b> BODY HARNESS/Harnais de sécurité POLYESTER WEB/Sangle: polyester SIZE/GRANDUR: SEE LABEL DO NOT REMOVE THIS LABEL/ Ne pas enlever cette étiquette MEETS ASTM F887-05</p> <p>www.capitalsafety.com (800) 328-6146 MADE IN CANADA.</p> <p>HARNESS CLASSIFICATION/ Classe de Harnais</p> <p>CSA STANDARD Z259.10-06</p> </div>
<p>Warning Label</p>	<p>Vignette de mise en garde</p>

ANSI

CSA

USER IDENTIFICATION  
MARK LABEL WITH  
PERMANENT MARKER

9502071 REV B  
U.S. PATENT NO. 6,668,434

A - BACK D-RING IS FOR FALL  
ARREST AND RESCUE.

B - FRONT D-RING (IF PRESENT)  
IS FOR POSITIONING, LADDER  
CLIMBING, OR FALL ARREST  
(2 FT MAXIMUM FREEFALL).  
USE SELF-LOCKING SNAPS ONLY.

C - SIDE D-RINGS (IF PRESENT)  
ARE FOR POSITIONING.

D - SHOULDER D-RINGS (IF  
PRESENT) ARE FOR RESCUE  
ONLY. DO NOT USE FOR  
OTHER PURPOSES. USE  
SELF-LOCKING SNAPS ONLY.

SEE INSTRUCTIONS FOR  
MORE DETAILS.

Instruction Label (Vest Style)

USER IDENTIFICATION  
MARK LABEL WITH  
PERMANENT MARKER

9502007 REV B

A - FRONT D-RING (IF PRESENT)  
IS FOR POSITIONING, LADDER  
CLIMBING, OR FALL ARREST  
(2 FT. MAXIMUM FREEFALL).

B - BACK D-RING IS FOR FALL  
ARREST AND RESCUE.

C - SIDE D-RINGS  
(IF PRESENT) ARE  
FOR POSITIONING.

SEE INSTRUCTIONS FOR  
MORE DETAILS.

U.S. PAT. NO. RE35,028  
CAN. PAT. NO. 2080643.

Instruction Label (Cross-Over Style)

9502020 REV A

**PRODUCT COMPLIANCE**  
THIS PRODUCT COMPLIES WITH THE FOLLOWING STANDARDS  
ONLY IF MARKED WITH THE CORRESPONDING LETTER CODE  
UNDER "STD'S" SECTION BELOW.

A = ANSI Z359.1 B = OSHA  
C = ANSI A10.32-2004 D = ASTM F887-2005  
E = ANSI Z359.3 F = ANSI Z359.4

MFRD.(YRMO): LOT: MODEL NO: STD'S:

SERIAL NO.: SEE RFID TAG IN CLEAR POUCH

DATE INITIAL


INSPECTION LOG DO NOT REMOVE THIS LABEL

Inspection Label

9502020 REV C

1 FALL ARREST, CLASS A, NO RESCUE/LIMIT RES D-RINGS  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)

2 FALL ARREST WITH RESCUE, CLASS A, NO RESCUE/LIMIT RES D-RINGS  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)

3 POSITIONING, CLASS A, NO RESCUE/LIMIT RES D-RINGS  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)

4 LADDER CLIMBING, CLASS A, NO RESCUE/LIMIT RES D-RINGS  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)

5 RESCUE, CLASS A, NO RESCUE/LIMIT RES D-RINGS  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)  
(2 MAXIMUM CLASS A AND ZERO B)

SEE INSTRUCTIONS  
FOR MORE DETAILS/  
VOIR LES  
RECOMMANDATIONS  
POUR PLUS DE DÉTAILS

USER IDENTIFICATION/  
MARK LABEL WITH PERMANENT  
MARKER/IDENTIFIER PERMANENT  
Avec un marqueur permanent.

Étiquette couverture

9502005 REV A

**INSPECTION LOG**  
RELEVÉ D'INSPECTION

SERIAL NO./NUMÉRO DE SÉRIE:  
SEE RFID TAG IN CLEAR POUCH  
VÉRIF. L'ÉTIQUETTE DE SÉRIE  
DANS LA POUCHE TRANSPARENTE

DATE INITIAL


MFRD./LOT/FABR. LOT:  
(YRMO) (AAAMM) MODEL NO./MODÈLE

Vignette d'inspection

9507096 Rev F

Fall arrest or restraint system connecting web loop/  
Boucle de raccordement de toile de système de retenue ou d'arrêt de chute

Harness, D-ring or Web Loop/  
Boucle en "D" de harnais ou boucle de toile.

**⚠ WARNING/AVERTISSEMENT!**

Only compatible connections may be made with web loops. Snap hooks (both self locking and non-locking types) connected into web loops may result in inadvertent disengagement. Refer to separate instructions for further details. Failure to follow these instructions may result in serious injury or death. Do not remove label.

Seuls des connexions compatibles doivent être faites avec les boucles de toile. Un masquage (de type avec ou sans verrou) raccordé à une boucle de toile pourrait se désengager par inadvertance. Pour plus de détails, référez vous aux instructions. Ne pas vous conformer à ces instructions pourrait causer des blessures graves ou la mort. Ne pas retirer l'étiquette.

Web Loop Harness Label

9507096 Rev F

Fall arrest or restraint system connecting web loop/  
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Étiquette de harnais de boucle de Web

This instruction applies to the following models:

1100092	1101241	1101474	1101783	1101859	6116607
1100181	1101250	1101511	1101784	1101860	6116609
1100195	1101251	1101512	1101785	1101861	6116610
1100230	2104180	1101513	1101786	1101862	1102025
1100231	1101252	1101514	1101787	1101863	1102026
1100232	1101252H	1101515	1101789	1101864	1102027
1100233	1101253	1101516	1101790	1101866	1102028
1100245	1101253H	1101611	1101791	1101867	1102029
1100246	1101254	1101625	1101792	1101869	1102030
1100247	1101254H	1101626	1101793	1101870	1102031
1100299	1101255	1101627	1101794	1101871	1102032
1100406	1101255H	1101628	1101795	1101872	1102033
1100482	1101256	1101629	1101796	1101873	1102034
1100520	1101257	1101630	1101797	1101874	1102035
1100521	1101258	1101631	1101798	1101890	1102036
1100522	1101259	1101632	1101800	1101891	1102037
1100540	1101260	1101633	1101801	1101892	1102038
1100541	1101261	1101634	1101802	1101893	1102039
1100542	1101262	1101635	1101803	1101909	1102040
1100543	1101266	1101636	1101804	1101910	1102041
1100550	1101267	1101637	1101805	1101911	1102042
1100675	1101268	1101638	1101806	1101912	1102043
1100676	1101269	1101639	1101807	1101913	1102082
1100700	1101270	1101640	1101808	1101977	1102083
1100701	1101271	1101641	1101809	1101978	1102084
1100702	1160008	1101642	1101810	1101979	1102086
1100703	1101272	1101643	1101812	1101980	1102090
1100726	1101273	1101644	1101813	1101981	1102132
1100727	1101274	1101645	1101814	1102000	1102133
1100750	1101340	1101646	1101815	1160002	1102134
1100756	1101341	1101647	1101816	1170002	1102135
1100762	1101420	1101649	1101817	1170003	1102200
1100767	1101421	1101650	1101818	2104177	1102201
1100768	1101422	1101651	1101819	2104181	1102205
1100769	1101423	1101653	1101820	2104182	1102206
1100775	1101424	1101654	1101821	1102000H	1102207
1100776	1101436	1101654H	1101822	1102001	1102257
1100777	1101437	1101655	1101823	1160000	1102270
1100778	1101438	1101655H	1101824	1102002	1102271
1100779	1101439	1101656	1101826	1102003	1102286
1100780	1101440	1101656H	1101827	1102004	1102525
1100781	1101441	1101657	1101828	1102005	1102526
1100840	1101450	1101658	1101829	1102008	1102526H
1100841	1101451	1101659	1101830	1102009	1102527
1100842	1101452	1101660	1101831	1102010	1102528
1100925	1101453	1101661	1101832	1170002	1102529
1100926	1101455	1101662	1101833	1170003	1102529H
1100927	1101456	1101663	1101834	6100771	1102530
1100928	1101457	1101664	1101835	6100772	1102531
1100929	1101458	1101665	1101836	6100776	1102532
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1101116	1101461	1101668	1101839	6116605	1102536
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1101118	1101463	1101670	1101841	1102010ALT1	1102538
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1101120	1101465	1101672	1101843	1170002	1102540
1101121	1101466	1101673	1101844	1170003	1102541
1101214	1101467	1101776	1101845	6100771	1102542
1101215	1101468	1101777	1101851	6100772	1102543
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1101218	1101471	1101780	1101856	6116604	1102548
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1102557	1160001	1103826	1104782	1104955	1105725
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1102564	1103355	1103852	1104806	1105300	1105734
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1102879	1103376	1103876	1104857	1105331	1105801
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1102908	1103386	1103885	1104871	1105379C	1105826
1102911	1103393	1103886	1104872	1105382	1102351
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1102972	2104176	1104732	1104903	1105483	1105852
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1106030	1106208	1106450	1107126	1107453C	1107806
1106031	1106209	1106450H	1107127	1107454	1107806H
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1106104	1106369	1106755	1107408C	1107579	1107952
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1108125	1109142	1110576	1110820	1111592
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1108309	1109558	1110751	1111275	3103452
1108310	1109559	1150054	1111276	3103453
1108311	1109560	1110752	1111277	3103471
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1108376	1109575	1110753	1111279	3103520
1108377	1109651	1110754	1111280	3103521
1108378	1109652	1110755	1111325	3103522
1108379	1109653	1110760	1111326	3103523
1108380	1109654	1110761	1111327	3103524
1108400	1109675	1110762	1111330	3103543
1109000	1109676	1110770	1111331	3103544
1109002	1109677	1110771	1111332	3103547
1109062	1109678	1110772	1111500H	3103549
1109075	1109850	1110773	1111501H	
1109076	1109851	1110774	1111502H	
1109077	1109852	1110780	1111503H	
1109078	1109853	1110781	1111504H	
1109079	1109854	1110782	1111505H	
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1109102	1109885	1110784	1111507H	
1109105	1109886	1110785	1111508H	
1109106	1109975	1110786	1111509H	
1109107	1109976	1110787	1111575	

INSPECTION DATE	INSPECTION ITEMS NOTED	CORRECTIVE ACTION	MAINTENANCE PERFORMED
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
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Approved By:			
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Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			

## LIMITED LIFETIME WARRANTY

**Warranty to End User:** D B Industries, Inc., dba CAPITAL SAFETY USA ("CAPITAL SAFETY") warrants to the original end user ("End User") that its products are free from defects in materials and workmanship under normal use and service. This warranty extends for the lifetime of the product from the date the product is purchased by the End User, in new and unused condition, from a CAPITAL SAFETY authorized distributor. CAPITAL SAFETY'S entire liability to End User and End User's exclusive remedy under this warranty is limited to the repair or replacement in kind of any defective product within its lifetime (as CAPITAL SAFETY in its sole discretion determines and deems appropriate). No oral or written information or advice given by CAPITAL SAFETY, its distributors, directors, officers, agents or employees shall create any different or additional warranties or in any way increase the scope of this warranty. CAPITAL SAFETY will not accept liability for defects that are the result of product abuse, misuse, alteration or modification, or for defects that are due to a failure to install, maintain, or use the product in accordance with the manufacturer's instructions.

CAPITAL SAFETY'S WARRANTY APPLIES ONLY TO THE END USER. THIS WARRANTY IS THE ONLY WARRANTY APPLICABLE TO OUR PRODUCTS AND IS IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, EXPRESSED OR IMPLIED. CAPITAL SAFETY EXPRESSLY EXCLUDES AND DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND SHALL NOT BE LIABLE FOR INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES OF ANY NATURE, INCLUDING WITHOUT LIMITATION, LOST PROFITS, REVENUES, OR PRODUCTIVITY, OR FOR BODILY INJURY OR DEATH OR LOSS OR DAMAGE TO PROPERTY, UNDER ANY THEORY OF LIABILITY, INCLUDING WITHOUT LIMITATION, CONTRACT, WARRANTY, STRICT LIABILITY, TORT (INCLUDING NEGLIGENCE) OR OTHER LEGAL OR EQUITABLE THEORY.



A Capital Safety Company

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Toll-Free: 800.387.7484  
Fax: 888.387.7484  
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Runcorn  
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Fax: + 44 (0)1928 571325  
csgne@capitalsafety.com

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Carros  
Le Broc Cedex  
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Fax: +86 21 62539060

[www.capitalsafety.com](http://www.capitalsafety.com)



Certificate No. FM 39709



## ® User Instruction Manual Tripod Anchorage Connectors

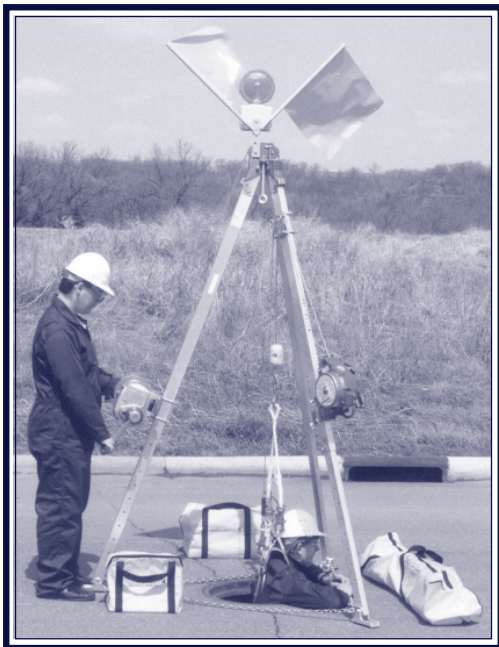
*This manual is intended to meet the Manufacturer's Instructions as required by ANSI Z359.1 and ANSI A10.14, and should be used as part of an employee training program as required by OSHA.*

**WARNING:** This product is part of a personal fall arrest, work positioning, personnel riding, material handling, or rescue and evacuation system. The user must read and follow the manufacturer's instructions for each component or part of the complete system. These instructions must be provided to the user of this equipment. The user must read and understand these instructions or have them explained to them before using this equipment. Manufacturer's instructions must be followed for proper use and maintenance of this product. Alterations or misuse of this product or failure to follow instructions may result in serious injury or death.

**IMPORTANT:** If you have any questions on the use, care, application, or suitability for use of this safety equipment, contact DBI/SALA immediately.

**IMPORTANT:** Before using this equipment, record the product identification information found on the ID label of the tripod on the inspection and maintenance log in section 9.0 of this manual.

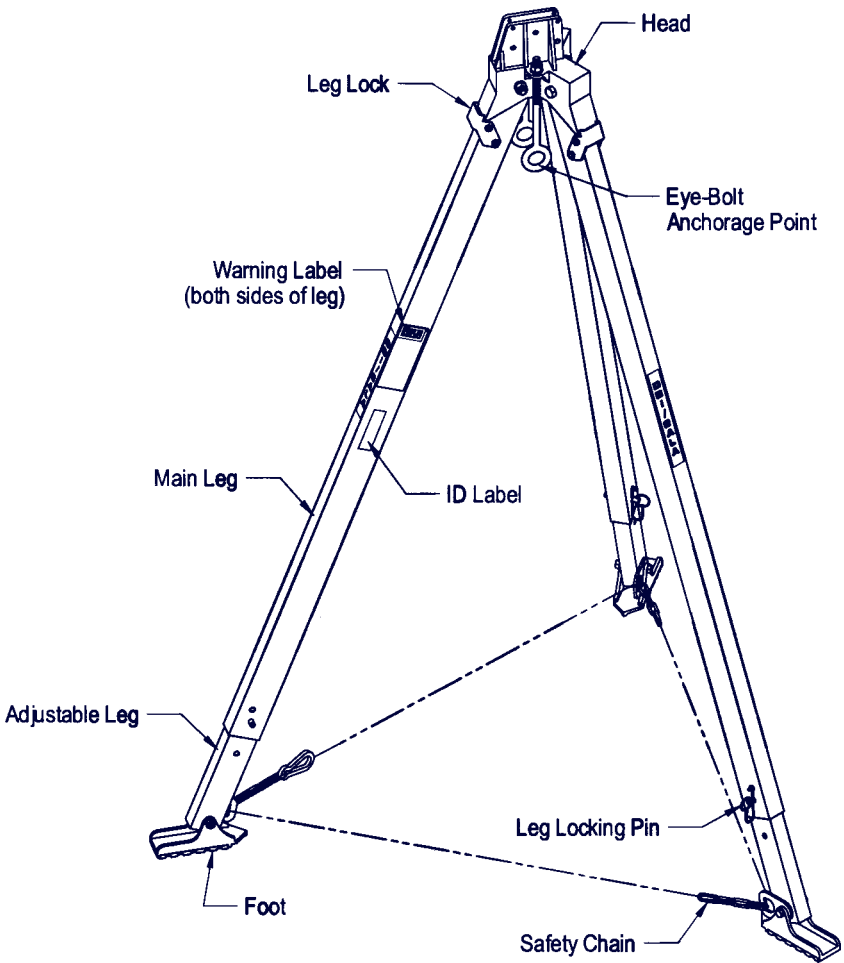
\* If additional information on this product is necessary, supplemental instructions will be included.





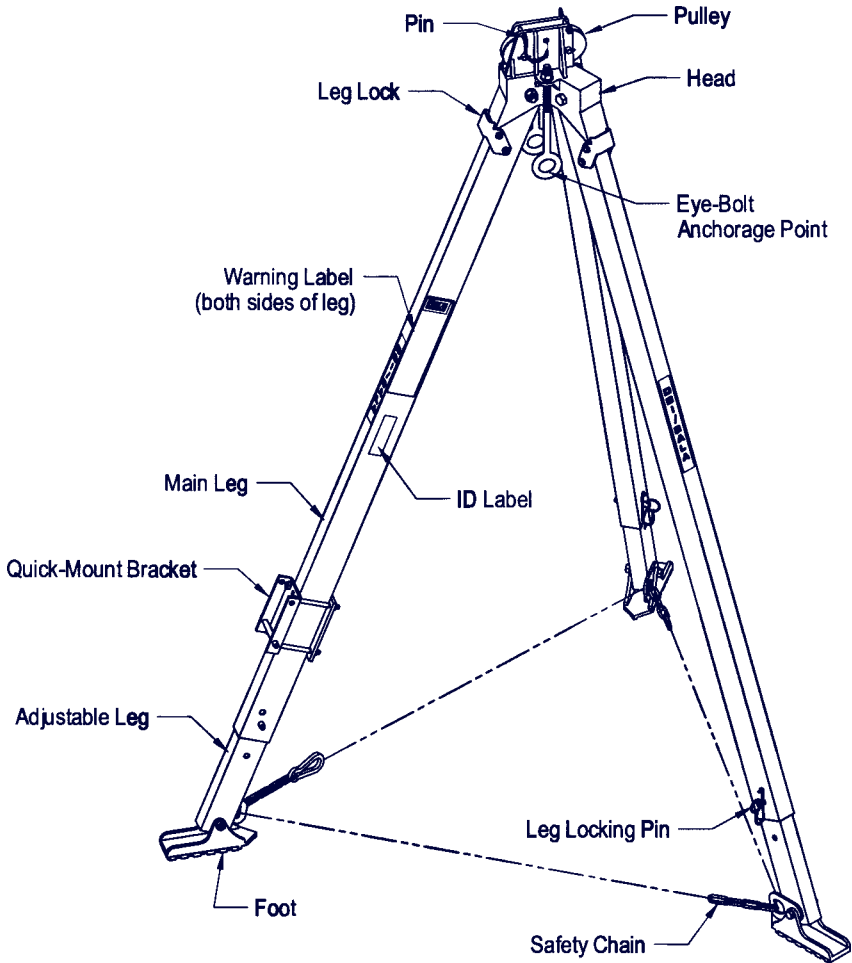


**Figure 1**



**8001717 and 8001718 Parts Identification**

**Figure 2**



**8000000 and 8000010 Parts Identification**

## DESCRIPTIONS

**8001717 Tripod:** 7 ft. maximum height to eye bolt, 5 ft. minimum. Aluminum construction with adjustable locking legs and safety chains. Fitted rubber safety shoes with spiked edges.

**8001718 Tripod:** 9 ft. maximum height to eye bolt, 7 ft. minimum. Aluminum construction with adjustable locking legs and safety chains. Fitted rubber safety shoes with spiked edges.

**8000000 Tripod:** 7 ft. maximum height to eye bolt, 5 ft. minimum. Aluminum construction with adjustable locking legs and safety chains. Fitted rubber safety shoes with spiked edges. Includes head mount pulley assembly and mounting bracket for DBI/SALA Salalift® Winch or Self Retracting Lifeline.

**8000010 Tripod:** 9 ft. maximum height to eye bolt, 7 ft. minimum. Aluminum construction with adjustable locking legs and safety chains. Fitted rubber safety shoes with spiked edges. Includes head mount pulley assembly and mounting bracket for DBI/SALA Salalift® Winch or Self Retracting Lifeline.

**IMPORTANT:** *For special (custom) versions of this product, follow the instructions herein. If enclosed, see attached supplement for additional instructions to be followed when using a custom product.*

## 1.0 APPLICATIONS

- 1.1 PURPOSE:** DBI/SALA tripods are to be used as part of a work positioning, personnel riding, personal fall arrest, material handling, or rescue and evacuation system. The tripod is a support structure or anchorage for these systems.
- 1.2 LIMITATIONS:** The following application limitations must be considered before using this product. Failure to observe product limitations could result in serious injury or death.
  - A. INSTALLATION:** The tripod must be properly installed in accordance with the requirements stated in section 3.0 of this manual.
  - B. CAPACITY:** The maximum working load for this product is 350 lbs. (160 kg).
  - C. PERSONAL FALL ARREST SYSTEMS:** Personal fall arrest systems used in combination with the tripod must meet applicable state and federal regulations and the requirements in section 3.3.

**D. PHYSICAL AND ENVIRONMENTAL HAZARDS:** Use of this equipment in areas containing physical or environmental hazards may require that additional precautions be taken to reduce the possibility of damage to this equipment or injury to the user. Hazards may include, but are not limited to; high heat (welding metal cutting); strong or caustic chemicals; corrosive environments (seawater); high voltage power lines; explosive or toxic gases; moving machinery; or sharp edges. Contact DBI/SALA if you have any questions about the application of this equipment in areas where physical or environmental hazards are present.

**E. TRAINING:** This equipment is to be installed and used by persons who have been trained in its correct application and use.

- 1.3** Refer to national standards, including; ANSI Z359.1, ANSI A10.14, ANSI Z117.1, and applicable local, state, and federal (OSHA) requirements, including 29 CFR 1910.146, for more information on the application of this and associated equipment.

## **2.0 SYSTEM REQUIREMENTS**

- 2.1 COMPATIBILITY OF COMPONENTS:** DBI/SALA equipment is designed for use with DBI/SALA approved components and subsystems only. Substitutions or replacements made with non-approved components or subsystems may jeopardize compatibility of equipment and may effect the safety and reliability of the complete system.

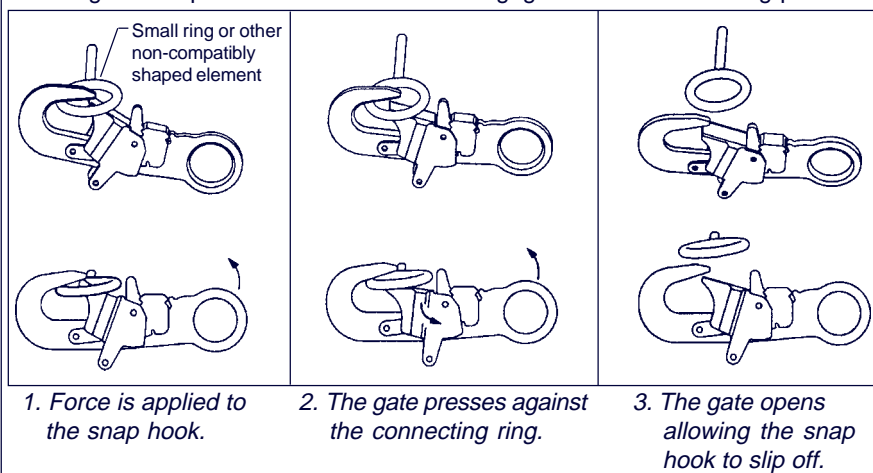
- 2.2 COMPATIBILITY OF CONNECTORS:** Connectors are considered to be compatible with connecting elements when they have been designed to work together in such a way that their sizes and shapes do not cause their gate mechanisms to inadvertently open regardless of how they become oriented. Contact DBI/SALA if you have any questions about compatibility.

Connectors (hooks, carabiners, 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. See Figure 3. Connectors must be compatible in size, shape, and strength. Self locking snap hooks and carabiners are required by ANSI Z359.1 and OSHA.

- 2.3 MAKING CONNECTIONS:** Only use self-locking snap hooks and carabiners with this equipment. Only use connectors that are suitable to each application. Ensure all connections are compatible in size,

### Figure 3 - Unintentional Disengagement (Roll-out)

If the connecting element that a snap hook (shown) or carabiner 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.



shape and strength. Do not use equipment that is not compatible. Ensure all connectors are fully closed and locked.

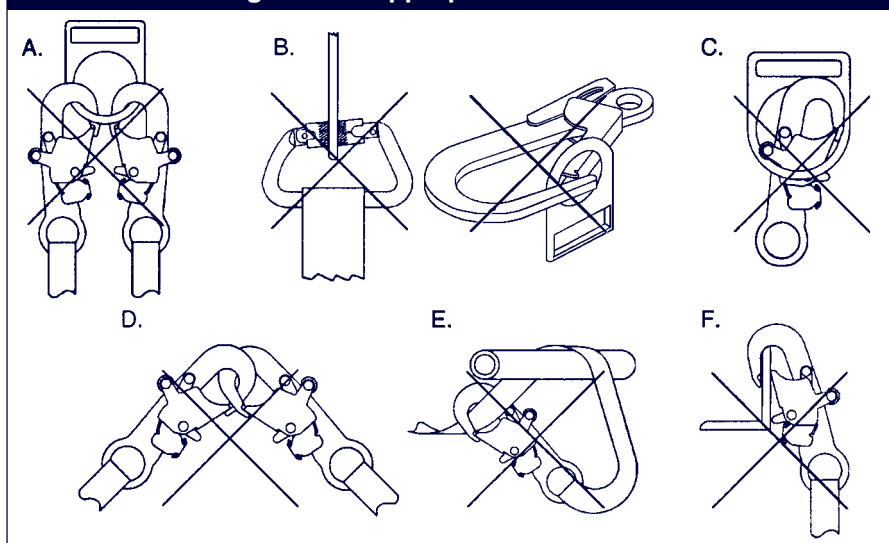
DBI/SALA connectors (snap hooks and carabiners) are designed to be used only as specified in each product's user's instructions. See Figure 4 for inappropriate connections. DBI/SALA snap hooks and carabiners should not be connected:

- A. To a D-ring to which another connector is attached.
- B. In a manner that would result in a load on the gate.

**NOTE:** Large throat opening snap hooks should not be connected to standard size D-rings or similar objects which 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 fixed structural elements such as rebar or cross members that are not shaped in a way that can capture the gate of the hook.

- C. In a false engagement, where features that protrude from the snap hook or carabiner catch on the anchor and without visual confirmation seems to be fully engaged to the anchor point.
- D. To each other.
- E. Directly to webbing or rope lanyard or tie-back (unless the

**Figure 4 - Inappropriate Connections**



manufacturer's instructions for both the lanyard and connector specifically allows such a connection).

- F. To any object which is shaped or dimensioned such that the snap hook or carabiner will not close and lock, or that roll-out could occur.

**2.4 STRUCTURAL STRENGTH:** The structure (mounting surface) onto which the tripod is erected (floor, tank top, roof, etc.) must meet minimum strengths given below for the applications selected:

**Fall Arrest:** From ANSI Z359.1; "The structure (mounting surface) selected for personal fall arrest systems (PFAS) shall have a strength capable of sustaining static loads in the direction(s) permitted by the PFAS when in use of at least (A) 3,600 lbs. (16kN) when certification exists (see ANSI Z359.1 for certification definition), or (B) 5,000 lbs. (22.2kN) in absence of certification. When more than one tripod is installed on a structure for fall arrest, and the systems will be used simultaneously, the strengths set forth in (A) and (B) above shall be multiplied by the number of systems attached to the structure." From OSHA 1926.500 and 1910.66; "Anchorages (mounting surface) used for attachment of personal fall arrest systems (PFAS) shall be independent of any anchorage being used to support or suspend platforms, and capable of supporting at least 5,000 lbs. (22.2kN) per user attached, or be designed, installed, and used as part of a complete PFAS which maintains a safety factor of at least two and is under the supervision of a qualified person."

**Work Positioning:** The structure (mounting surface) selected for work positioning applications must sustain a static load of at least 5,000 lbs. applied in the directions permitted by the work positioning system when in use. Each tripod installation must independently sustain this load.

**Personnel Riding:** The structure (mounting surface) selected for personnel riding applications must sustain a static load of at least 2,500 lbs. applied in the directions permitted by the personnel riding system when in use. Each tripod installation must independently sustain this load.

**Material Handling:** The structure (mounting surface) selected for material handling applications must sustain a static load of at least 2,500 lbs. applied in the directions permitted by the material handling system when in use. Each tripod installation must independently sustain this load.

**Rescue:** The structure (mounting surface) selected for rescue applications must be capable of sustaining a static load of at least 2,500 lbs. applied in the directions permitted by the rescue system when in use. Each tripod installation must independently sustain this load.

### **3.0 OPERATION AND USE**

***WARNING:*** Do not alter or intentionally misuse this equipment. Consult DBI/SALA when using this equipment in combination with components or subsystems other than those described in this manual. Some subsystem and component combinations may interfere with the operation of this equipment. Use caution when using this equipment around moving machinery, electrical hazards, chemical hazards, and sharp edges.

***WARNING:*** Consult your doctor if there is reason to doubt your fitness to safely absorb the shock from a fall arrest. Age and fitness seriously affect a worker's ability to withstand falls. Pregnant women or minors must not use the DBI/SALA tripods except for emergency situations.

- 3.1 BEFORE EACH USE:** Before each use of this equipment carefully inspect it to ensure that it is in good working condition. Check for worn or damaged parts. Ensure all parts (nuts, bolts, etc.) are present and secure. Check legs to ensure they are straight, free of cracks, dents, etc. Ensure pulleys rotate freely and entire system is free of corrosion. Refer to section 5.0 for further inspection details. Do not use if inspection reveals an unsafe condition.



**3.2 PLANNING:** Plan your work positioning, personnel riding, personal fall arrest, material handling, or rescue and evacuation system before starting your work. Consider all factors that affect your safety at any time during use. Some important points to consider when planning your system are:

- A. HAZARD EVALUATION:** An evaluation of job site hazards is necessary prior to starting work. Consult applicable OSHA and industry standards for guidelines and regulatory requirements on issues such as confined space entry, personal fall arrest systems, single point adjustable suspended scaffolds, etc.
- B. WORK SITE GEOMETRY:** The installation and use of the tripod must be consistent with the geometric requirements given in section 3.4 or 3.5. When suspending working lines from the tripod check for obstructions or sharp edges in the work path. Avoid working where the user may swing and hit an object or where lines may cross or tangle with that of another worker in the area.
- C. SECONDARY OR BACK-UP FALL ARREST SYSTEM:** When using the tripod as a support for suspending a worker at a work level, or for personnel riding applications, a secondary or back-up fall arrest system is required. See OSHA 29 CFR 1910.28 and 1926.451. The tripod has provisions for connection of a secondary or back-up personal fall arrest system. See sections 3.3 and 3.5.
- D. RESCUE:** In the event of an accident with injuries or other medical emergency, it is critical that a means of dealing with such a situation has been planned in advance. Response time often plays an important role in the survival of an injured worker. Users of this equipment must be trained in emergency procedures.

**3.3 REQUIREMENTS FOR PERSONAL FALL ARREST SYSTEMS:**

Personal fall arrest systems used with this tripod must meet applicable OSHA requirements. When in use, the PFAS should be rigged to minimize any potential free fall and never allow a free fall greater than six feet. It is recommended that the PFAS used with this equipment include a full body harness as the body support component. PFAS's that incorporate full body harnesses must maintain fall arrest forces below 1,800 lbs. and arrest the fall within 42 inches. Body belts, unless incorporated into a full body harness, not recommended for use with this equipment. A typical PFAS includes a full body harness, a connecting subsystem or component (self retracting lifeline or a lifeline and rope grab) and the connectors to couple the system together.

**WARNING:** Follow the manufacturer's instructions for the personal fall arrest equipment selected for use with the tripod.

**IMPORTANT:** For free fall and rescue applications, body belts are not recommended for use. Body belts increase the risk of injury during fall arrest in comparison to a full body harness and drastically reduce the tolerable suspension time compared to a full body harness. Limited suspension time, increased risk of injury, and the potential for improperly wearing a body belt, may result in added danger to the user. DBI/SALA recommends using a full body harness for fall arrest and rescue applications.

### 3.4 INSTALLATION REQUIREMENTS OF TRIPOD

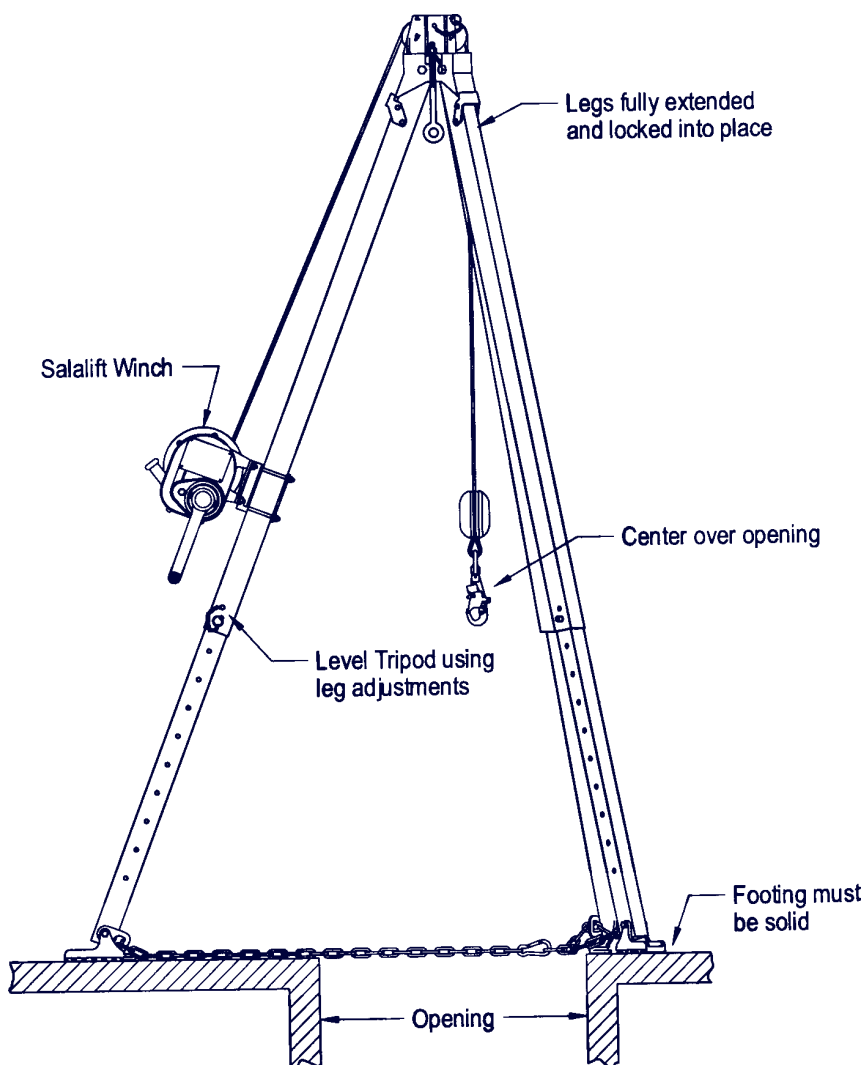
- A. LOAD REQUIREMENTS:** Depending on the application, the strength requirements for the supporting structure onto which the tripod is erected vary. See section 2.4 for application types and the supporting structure load requirements. If an installation will be used for more than one type of application, always select the loading for the application with the greater load requirements.
- B. GEOMETRIC REQUIREMENTS:** The tripod must be mounted where it can be leveled using the leg adjustments. The footing must be solid under each leg, and support the intended loading. Position the tripod such that the lifeline will be directly over the intended work area when installed. Do not position the tripod where the worker will have to swing under the tripod to reach the work area. Avoid positioning the tripod where the working line may abrade against sharp edges. See Figure 5.

**WARNING:** Never allow the working line to extend outside the legs of the tripod. Tipping of the tripod could occur.

- C. TO ERECT TRIPOD:** The tripod is shipped with the legs set at full retraction. Erect as follows, see Figure 5: 1) Lay the tripod on the working surface; 2) Adjust legs to required working height; 3) Tilt the tripod into an upright position; 4) Fully spread the legs, ensure legs are against bearing surface on head. The legs will automatically lock in place. To collapse tripod, pull leg down to disengage leg lock and swing leg in; 5) Position tripod over opening so working line will be located approximately in the center of the opening. Ensure footing is solid under each leg and can support the intended loads. Level the tripod by adjusting the leg height; 6) Adjust the leg chain by removing excess slack.

**WARNING:** Except for emergency situations where leg chains may interfere with rescue, the tripod must never be used without the leg chains in place.

Figure 5

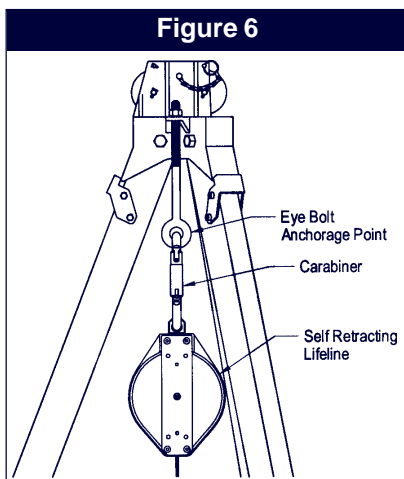


**IMPORTANT:** The tripod must be positioned so the working line will be directly over the intended work area. It must be positioned to ensure a safe working area for the operator.

**WARNING:** Do not use the tripod if one or more of the legs are not locked into the erect position (completely spread out).

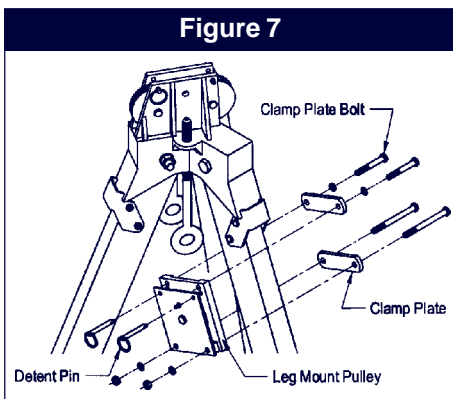
**3.5 CONNECTING EQUIPMENT TO THE TRIPOD:** The tripod has been designed for multi-purpose applications that may involve the use of one or more systems attached to the tripod. The following details the connection of equipment to DBI/SALA tripods. See associated equipment instructions for further information:

**A. EYE-BOLT:** A component (self retracting lifeline, rope grab/lifeline system) can be attached to either one of the eye-bolt anchorage points. See Figure 6. Connect equipment to the eye bolt anchorage point by using a clevis and pin (minimum breaking strength of 5,000 lbs.), self locking carabiners or self locking snap hooks.

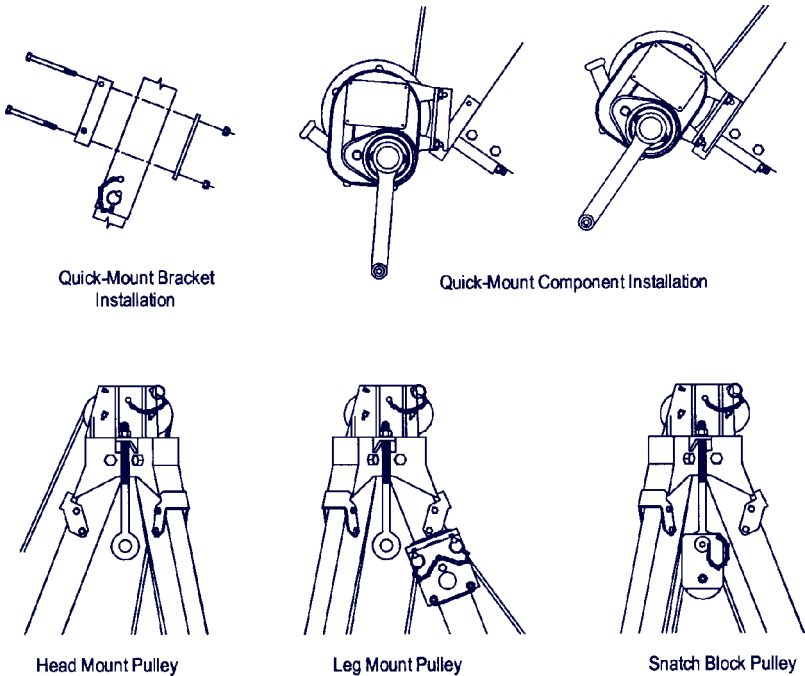


**B. LEG MOUNT PULLEY:**

Figures 7 and 8 shows the optional leg mount pulley model 8003238. This pulley is used when more than one device is mounted to the tripod leg requiring a directional pulley. The leg mount pulley will accommodate up to 1/4 inch diameter line. Install the leg mount pulley on the desired tripod leg as shown in Figure 7. Position the leg mount pulley directly under the leg lock near the top of the tripod. The pulley may be positioned on either side of the tripod leg. It may be necessary to remove one of the eye bolts to gain clearance for the lifeline. Tighten the clamp plate bolts to 15 ft.-lbs. Do not use or install more than one system on a single tripod leg.



**Figure 8**



**C. QUICK-MOUNT BRACKET:** Figure 8 shows the tripod quick-mount leg bracket 8005048 (optional on 8001717 and 8001718 models). To install the quick-mount bracket to the tripod leg, assemble as shown in Figure 8. Adjust bracket to desired position on the leg and tighten bolts to 15 ft.-lbs. Do not over tighten. Do not install quick-mount bracket onto the lower (telescoping) leg. The quick-mount bracket must be used for connection of the Salalift® winch (8101000 series), the Work Winch (8103000 series) and for leg mounting of DBI/SALA Self Retracting Lifelines.

**D. HEAD MOUNT PULLEYS:** The 8000000 and 8000010 model tripods come equipped with head mounted pulleys. These pulleys should be used for mounting the line of the primary use system over the tripod head when used in the leg mounted position. The head mount pulleys will accommodate up to a 1/4 inch diameter line. See Figure 8, 9, and 10.

**E. SNATCH BLOCK PULLEY:** Figures 8 and 10 show the optional snatch block pulley assembly model 8003205. The snatch block is used when more than one device is mounted to the tripod requiring a directional pulley. The snatch block is attached to one of the unused eye-bolts and will accommodate up to 1/4 inch diameter line. Do not use the Salalift winch with the snatch block

pulley because of possible cable rubbing on the tripod leg, and uneven winding of the cable onto the winch drum.

- F. SALALIFT® WINCH:** When using the Salalift winch (8101000 series) with the tripod, the winch must be mounted to the leg in-line with the head mount pulleys. Route the winch line over the head mount pulleys as instructed in the Salalift® winch user instruction manual. Do not use winch with snatch block pulley (see section 3.5.E).

**WARNING:** *Multiple systems may be attached to the tripod (primary support lifeline and back-up lifeline), but the tripod is for one person use only. Exception: Emergency rescue applications only. A maximum of one system can be attached to any one tripod leg. A maximum of two systems should be attached to one tripod, except back-up lifelines (fall arrest) which are limited to one system.*

**IMPORTANT:** *Knots must not be used for load-bearing end terminations (see ANSI Z359.1). Some knots reduce the strength of the lifeline by 50 percent or more.*

## **4.0 TRAINING**

- 4.1** 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.

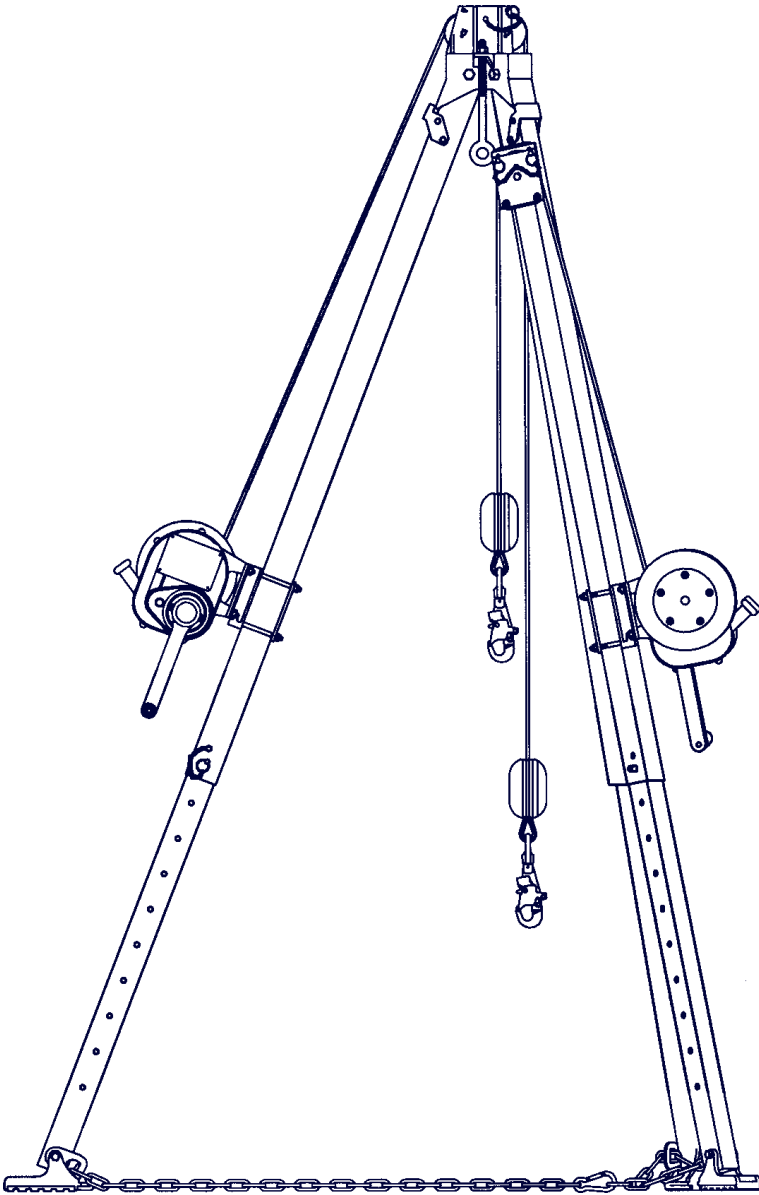
**IMPORTANT:** *Training must be conducted without exposing the trainee to a fall hazard. Training should be repeated on a periodic basis.*

## **5.0 INSPECTION**

### **5.1 FREQUENCY:**

- **Before Each Use:** Visually inspect per steps listed in sections 5.2 and 5.3.
- **Monthly:** A formal inspection of the tripod should be done by a competent person other than the user. See sections 5.2 and 5.3 for guidelines. Record results in the inspection and maintenance log in section 9.0.
- **After Fall Arrest:** Inspect entire tripod and base per section 5.2.

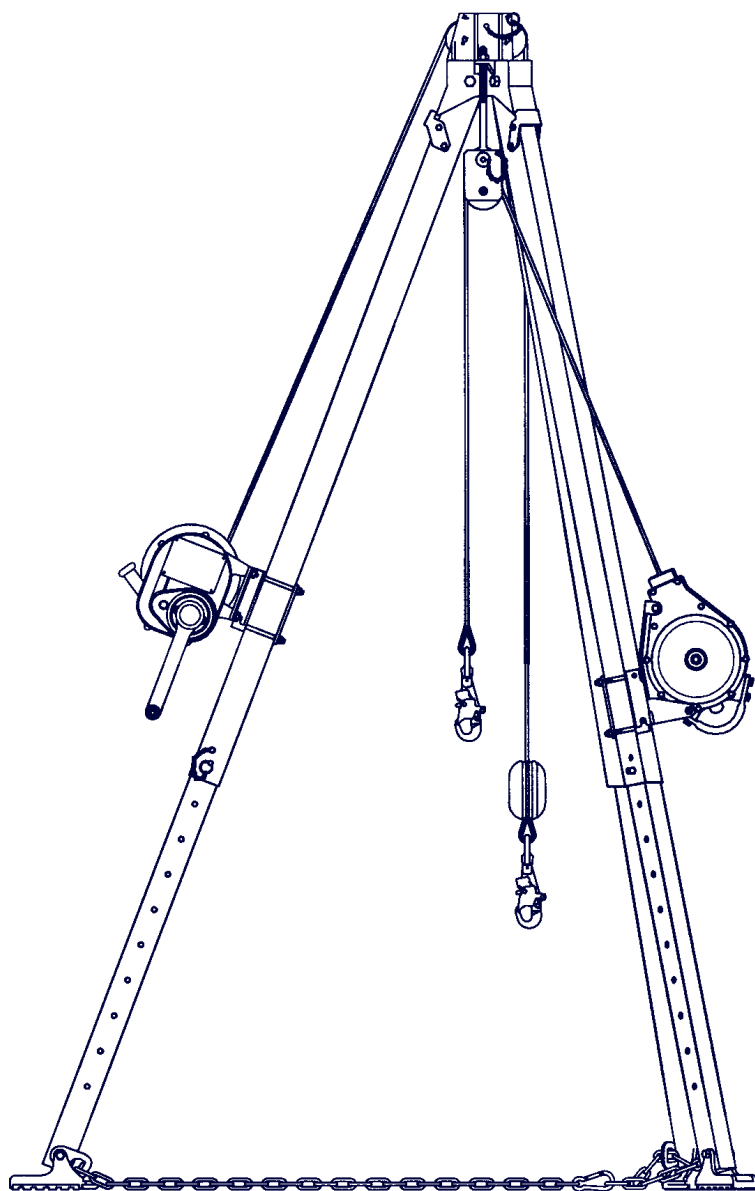
**Figure 9**



**Two Salalift® Winches Mounted to Tripod**  
Lifelines routed through Head Mount Pulley and Leg Mount Pulley



**Figure 10**



**Salalift® Winch and Self Retracting Lifeline Mounted to Tripod**  
Lifelines routed through Head Mount Pulley and Snatch Block Pulley

***WARNING:*** If the tripod has been subjected to fall arrest or impact forces, it must be immediately removed from service and inspected. If the tripod fails to pass the inspection, do not use; the equipment must be destroyed or sent to DBI/SALA for possible repair.

***IMPORTANT:*** Extreme working conditions (harsh environment, prolonged use, etc.) may require increasing the frequency of inspections.

## 5.2 INSPECTION STEPS FOR TRIPOD

- Step 1.** All bolts and nuts must be securely attached. Check for missing, altered, or substituted bolts, nuts, locking detent pins or other parts. Inspect the tripod for signs of corrosion which may weaken or affect parts in their function.
- Step 2.** Check each leg to see that it can be telescoped in and out freely. Inspect legs for straightness. Ensure legs lock into place when tripod is erect.
- Step 3.** Check the feet on each leg; ensure they pivot and the rubber pad is in place.
- Step 4.** Check leg chain and connections; Ensure they are tight and undamaged, chain must be free of defects and hook must be in place and work properly.
- Step 5.** Check the head. Ensure the eye-bolt anchorage points are in place and are free from damage. Ensure the cable pulleys are clean and rotate freely (8000000 and 8000010 models only).
- Step 6.** Inspect the labels. Ensure all labels are present and fully legible. See section 8.0.
- Step 7.** Record the results of inspection in the inspection and maintenance log in section 9.0 of this manual.
- Step 8.** Inspect each system component according to manufacturer's instructions.

- 5.3** If inspection or operation reveals a defective condition, remove the tripod from service immediately and contact an authorized service center for repair.

***NOTE:*** Only DBI/SALA or parties authorized in writing may make repairs to this equipment.

## 6.0 MAINTENANCE, SERVICING, STORAGE

- 6.1** Periodically clean the exterior of the tripod using water and a mild detergent solution. Clean labels as required.
- 6.2** Replacement parts and additional maintenance and servicing procedures must be completed by a factory authorized service center. An authorization and a return number must be issued by DBI/SALA.
- 6.3** Clean and store the body support and associated system components according to separate instructions provided with that equipment.
- 6.4** Store this equipment in a cool, dry, clean environment out of direct sunlight. Avoid areas where chemical vapors may exist. Inspect after any period of extended storage.

## 7.0 SPECIFICATIONS

Model	Weight	Rated Working Load	Material
8001717	37 lbs.	350 lbs. for work positioning or personnel riding applications, 310 lbs. for fall arrest applications	Predominantly aluminum and zinc plated steel
8001718	46 lbs.		
8000000	47 lbs.		
8000010	56 lbs.		

Dimensions (see Figure 11)	7 ft. Models		9 ft. Models	
	Minimum Height inch (mm)	Maximum Height inch (mm)	Minimum Height inch (mm)	Maximum Height inch (mm)
Storage Length	70 (1,778)	----	102 (2,591)	----
*Hole diameter spanned "A"	23 (584)	32 (813)	33 (838)	44 (1,118)
Overall height "B"	68 (1,727)	93 (2,362)	95 (2,413)	120 (3,048)
Available lift height "C"	49 (1,245)	74 (1,880)	76 (1,930)	101 (2,565)
Height increments	3 (76)	----	3 (76)	----
Spread of legs "D" Inside of shoe	44 (1,118)	63 (1,600)	65 (1,651)	84 (2,134)
Spread of legs "E" Outside of shoe	58 (1,473)	77 (1,956)	79 (2,007)	99 (2,515)

See Figure 11.

- \* Note: Tripods will span a larger opening; the leg chains will cross over a portion of the opening.
- These tripods meet ANSI Z359.1, ANSI A10.14, and OSHA requirements.

## 8.0 LABELING

### 8.1 The following labels must be present and fully legible:


**▲WARNING**

Manufacturer's instructions supplied with this product at time of shipment must be followed for proper use, maintenance, and inspection. Alteration or misuse of this product, or failure to follow instructions may result in serious injury or death. Make only compatible connections.

**INSPECTION:** Before each use inspect tripod to determine if it is in good condition and working properly. At least monthly, tripod should be inspected by a competent person in accordance with the User Manual. Do not use if inspection reveals an unsafe or defective condition. Not user repairable.

**USE:** To erect tripod, pull leg downward as shown and swing leg fully outward. Check to see that lock has engaged. To collapse, pull leg downward and swing leg in. Adjust tripod height and level tripod head by adjusting telescopic lower leg(s). Tripod must be generally level and on solid footing for safe use. Adjust tripod leg chains to remove excess slack. To prevent tipping, load must remain inside chain perimeter. If required (See user manual) connect backup fall arrest system to eye bolt located under tripod head. Make only compatible connections. See user manual for details on making connections. Do not allow fall arrest, rescue, or personal riding systems to contact sharp edges or abrasive surfaces during use. Use caution applying this equipment near hazardous thermal, electrical, or chemical sources. Refer to User manual for additional information.

9502044 Rev K




**Warning Label**

**DBI**  
**SALA**

www.capitalsafety.com  
USA: (800) 328-6146  
Canada: (800) 387-7484

**SPECIFICATIONS:**

Working load: 350 lbs (159kg) maximum  
Capacity: ANSI Z359.1, ANSI Z359.4  
130-310 lbs (59-140kg)  
Materials: Aluminum and zinc plated steel  
Model: 8000000 (7 foot)  
8000010 (9 foot)  
Standards: Meets ANSI Z359.1, ANSI Z359.4, OSHA 2117.1, and OSHA requirements.

 This product is i-Safe enabled and contains an electronic tag that can be read by compatible readers - providing inspection logs, inventory management and other safety information.

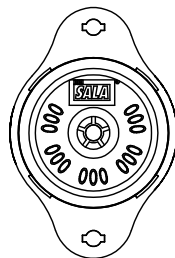
MFG / LOT NO: MODEL NO:

9502040 Rev. L

### Specification Label Models 8001717 and 8001718

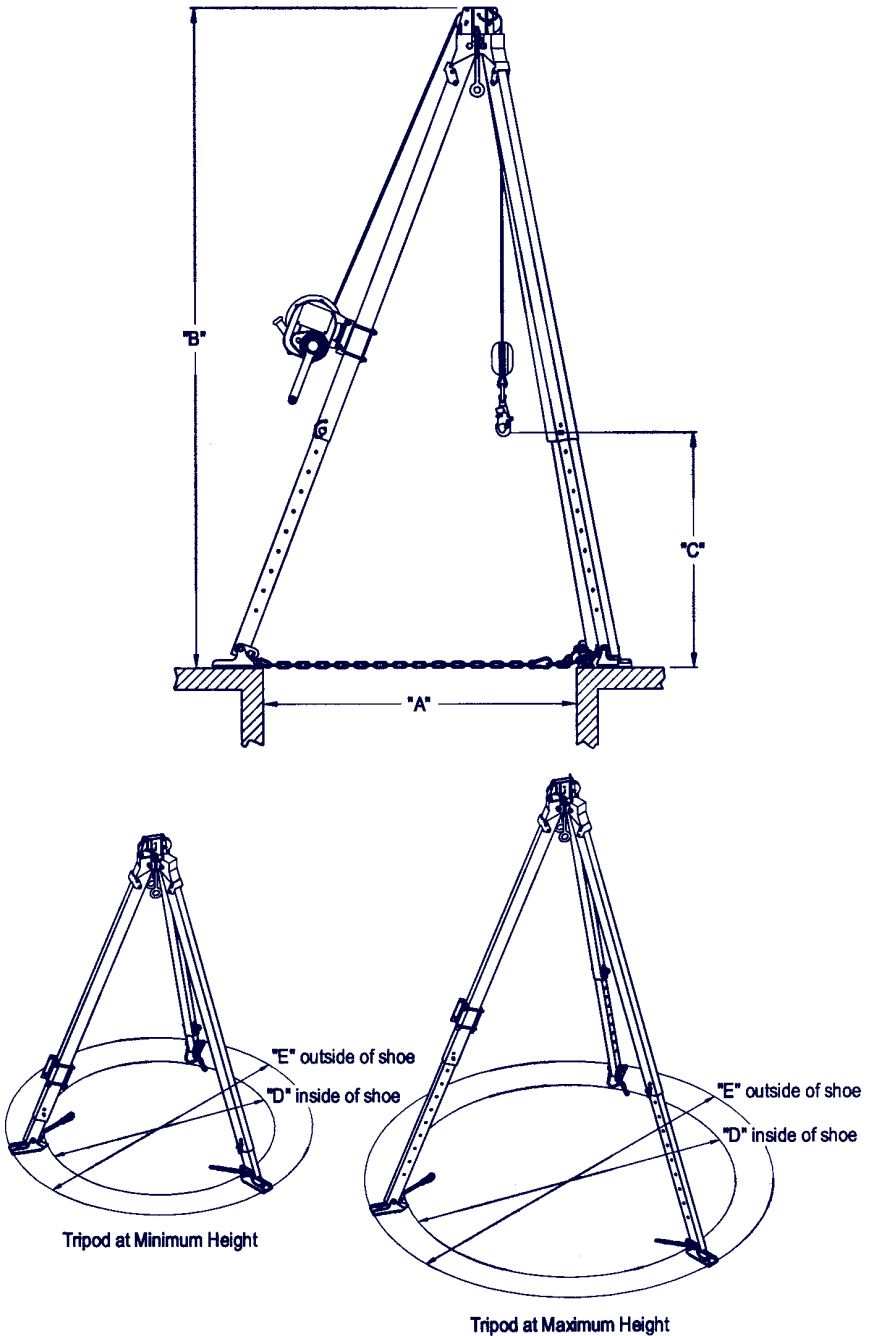
**IMPORTANT**  
DO NOT TIGHTEN CLAMP  
PLATE BOLTS TO MORE  
THAN 15 FT-LB. OVER  
TIGHTENING CAN DAMAGE  
TRIPOD LEG. 9503052 REV E

### Overtighten Label Model 1001190



**i-Safe**

Figure 11



Geometric Requirements

9.0 INSPECTION AND MAINTENANCE LOG

SERIAL NUMBER: \_\_\_\_\_

MODEL NUMBER: \_\_\_\_\_

DATE PURCHASED: \_\_\_\_\_ DATE FIRST USED: \_\_\_\_\_

INSPECTION DATE	INSPECTION ITEMS NOTED	CORRECTIVE ACTION	MAINTENANCE PERFORMED
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			





## LIMITED LIFETIME WARRANTY

**Warranty to End User:** D B Industries, Inc., dba CAPITAL SAFETY USA ("CAPITAL SAFETY") warrants to the original end user ("End User") that its products are free from defects in materials and workmanship under normal use and service. This warranty extends for the lifetime of the product from the date the product is purchased by the End User, in new and unused condition, from a CAPITAL SAFETY authorized distributor. CAPITAL SAFETY'S entire liability to End User and End User's exclusive remedy under this warranty is limited to the repair or replacement in kind of any defective product within its lifetime (as CAPITAL SAFETY in its sole discretion determines and deems appropriate). No oral or written information or advice given by CAPITAL SAFETY, its distributors, directors, officers, agents or employees shall create any different or additional warranties or in any way increase the scope of this warranty. CAPITAL SAFETY will not accept liability for defects that are the result of product abuse, misuse, alteration or modification, or for defects that are due to a failure to install, maintain, or use the product in accordance with the manufacturer's instructions.

CAPITAL SAFETY'S WARRANTY APPLIES ONLY TO THE END USER. THIS WARRANTY IS THE ONLY WARRANTY APPLICABLE TO OUR PRODUCTS AND IS IN LIEU OF ALL OTHER WARRANTIES AND LIABILITIES, EXPRESSED OR IMPLIED. CAPITAL SAFETY EXPRESSLY EXCLUDES AND DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND SHALL NOT BE LIABLE FOR INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES OF ANY NATURE, INCLUDING WITHOUT LIMITATION, LOST PROFITS, REVENUES, OR PRODUCTIVITY, OR FOR BODILY INJURY OR DEATH OR LOSS OR DAMAGE TO PROPERTY, UNDER ANY THEORY OF LIABILITY, INCLUDING WITHOUT LIMITATION, CONTRACT, WARRANTY, STRICT LIABILITY, TORT (INCLUDING NEGLIGENCE) OR OTHER LEGAL OR EQUITABLE THEORY.



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Certificate No. FM 39709



## Instructions for the following series products:

EZ Stop Lanyards  
ShockWave Lanyards  
EZ Stop Retrax Lanyards

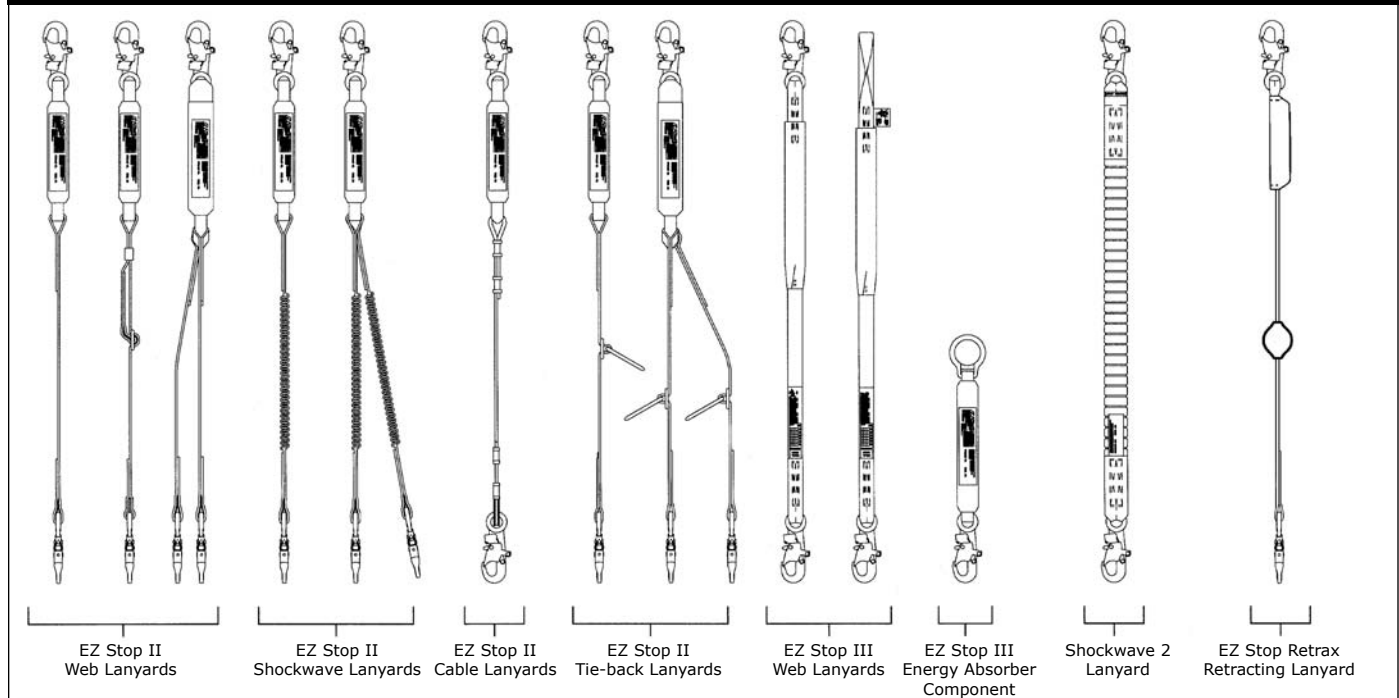
(See back pages for specific model numbers.)

### USER INSTRUCTION MANUAL

## LANYARDS WITH INTEGRAL ENERGY ABSORBERS AND ENERGY ABSORBER COMPONENTS USED IN PERSONAL FALL ARREST SYSTEMS (ANSI Z359.1)

This manual is intended to meet the Manufacturer's Instructions as required by ANSI Z359.1, and should be used as part of an employee training program as required by OSHA.

Figure 1 - EZ STOP® Lanyards



**WARNING:** This product is part of a personal restraint, work positioning, suspension, or rescue system. These instructions must be provided to the user and rescuer (see section 8 Terminology). The user must read and understand these instructions or have them explained to them before using this equipment. The user must read and follow the manufacturer's instructions for each component or part of the complete system. Manufacturer's instructions must be followed for proper use and maintenance of this product. Alterations or misuse of this product or failure to follow instructions may result in serious injury or death.

**IMPORTANT:** If you have any questions on the use, care, application, or suitability for use of this equipment, contact DBI-SALA.

**IMPORTANT:** Before using this equipment record the product identification information (found on the I.D. label) in the inspection and maintenance log in section 10.0 of this manual.

### DESCRIPTIONS

#### EZ STOP® II WEB LANYARDS

- 1-in. (2.5 cm) web, 9503175 hook each end.
- 1-in. (2.5 cm) web, 9503175 hook one end, 2007153 hook other end.
- 1-in. (2.5 cm) web, 9503175 hook one end, 1200049 wire pipe clamp other end.
- 1-in. (2.5 cm) web, 9503175 hook one end, 2000108 carabiner other end.
- 1-in. (2.5 cm) web, web loop one end, 2007153 hook other end.
- 1-in. (2.5 cm) web, web loop one end, 9503175 hook other end.
- 1-in. (2.5 cm) web, adjustable, 9503175 hook each end.
- 1-in. (2.5 cm) web, 100% tie-off, 9503175 hook center, 2007153 hook leg ends.
- 1-in. (2.5 cm) web, 100% tie-off, 9503175 hook center and leg ends.
- 1-in. (2.5 cm) web, 100% tie-off, 9503175 hook center, 2000108 carabiner leg ends.
- 1-in. (2.5 cm) web, 100% tie-off, web loop center, 2007153 hook leg ends.
- 1-in. (2.5 cm) web, 100% tie-off, web loop center, 9503175 hook leg ends.

## **EZ STOP® II SHOCKWAVE™ WEB LANYARDS**

- 1-in. (2.5 cm) elastic web, 9503175 hook each end.
- 1-in. (2.5 cm) elastic web, 9503175 hook one end, 2007153 hook other end.
- 1-in. (2.5 cm) elastic web, web loop one end, 2007153 hook other end.
- 1-in. (2.5 cm) elastic web, web loop one end, 9503175 hook other end.
- 1-in. (2.5 cm) elastic web, 100% tie-off, 9503175 hook center and both ends.
- 1-in. (2.5 cm) elastic web, 100% tie-off, 9503175 hook center, 2007153 hook leg ends.
- 1-in. (2.5 cm) elastic web, 100% tie-off, web loop center, 2007153 hook leg ends.
- 1-in. (2.5 cm) elastic web, 100% tie-off, web loop center, 9503175 hook leg ends.

## **EZ STOP® II CABLE LANYARDS**

- 7/32-in. (.6 cm) cable, 9503175 snap hook each end.
- 7/32-in. (.6 cm) cable, 9503175 snap hook one end, 2007153 snap hook other end.
- 7/32-in. (.6 cm) cable, 9503175 snap hook one end, 2000108 carabiner other end.

## **EZ STOP® II TIE-BACK LANYARDS**

- 1-in. (2.5 cm) web, 9503175 hook both ends, floating D-ring.
- 1-in. (2.5 cm) web, 100% tie-off, 9503175 hook center and leg ends, floating D-rings.

## **EZ STOP® III WEB LANYARDS**

- 1 3/8-in. (3.5 cm) web, 9503175 hook each end.
- 1 3/8-in. (3.5 cm) web, 9503175 hook one end, 2007153 hook other end.
- 1 3/8-in. (3.5 cm) web, 9503175 hook one end, 2000108 carabiner other end.
- 1 3/8-in. (3.5 cm) web, 9503175 hook one end, 1200049 wire pipe hook other end.
- 1 3/8-in. (3.5 cm) web, web loop one end, 2007153 hook other end.
- 1 3/8-in. (3.5 cm) web, web loop one end, 9503175 hook other end.

## **EZ STOP® II ENERGY ABSORBER COMPONENT**

9503175 hook one end, D-ring one end, 24-in. length.

## **SHOCKWAVE 2™ WEB LANYARD**

- 1 15/16-in. (4.9 cm) web, 9503175 hook each end.
- 1 7/8-in. (4.8 cm) web, 9502116 hook one end, 9500810 hook other end

## **EZ STOP® RETRAX™ RETRACTING WEB LANYARD**

- 1 3/8-in. (3.5 cm) web, 9503175 hook each end.
- 1 3/8-in. (3.5 cm) web, 9503175 hook one end, 9510057 hook other end.
- 1 3/8-in. (3.5 cm) web, 9503175 hook one end, 2007153 hook other end.
- 1 3/8-in. (3.5 cm) web, 100% tie-off, 9503175 hook each end.

Note: Other hook and lanyard options are available.

## **1.0 APPLICATIONS**

- 1.1 PURPOSE:** DBI-SALA Energy Absorbing Lanyards and Energy Absorbers are intended to be used as part of a personal fall arrest system. Applications for these products include inspection work, construction and demolition, maintenance, oil production, confined space rescue, and similar activities where there exists the possibility of a fall. This equipment is specially designed to dissipate fall energy and limit fall arrest forces transferred to the body.
- 1.2 LIMITATIONS:** The following application limitations must be considered before using this product:
  - A. CAPACITY:** This equipment is for use by persons with a combined weight (person, clothing, tools, etc.) of no more than 310 lbs. (140.6 kg). CSA models meet Z25911-05 E4 or E6 classifications. See back cover for associated capacities and model numbers.
  - B. PHYSICAL AND ENVIRONMENTAL HAZARDS:** Use of this equipment in areas containing physical or environmental hazards may require that additional precautions be taken to reduce the possibility of damage to this equipment or injury to the user. Hazards may include, but are not limited to: high heat, strong or caustic chemicals, corrosive environments, the possibility of electric current flowing through this equipment when working near high voltage power lines, explosive or toxic gases, moving machinery, severe cold, or sharp edges. Contact DBI-SALA if you have any questions about the application of this equipment in areas where physical or environmental hazards are present.
  - C. TRAINING:** This equipment is intended to be installed and used by persons who have been properly trained in its correct application and use.
- 1.3** Refer to national standards including ANSI Z359 (.0, .1, .2, .3, and .4), family of standards on fall protection, ANSI A10.32, and applicable local, state, and federal (OSHA) requirements governing occupational safety for more information on Energy Absorbing Lanyards, Energy Absorbers and associated components. In Canada, see the Z259 group of CSA Standards.

## 2.0 SYSTEM REQUIREMENTS

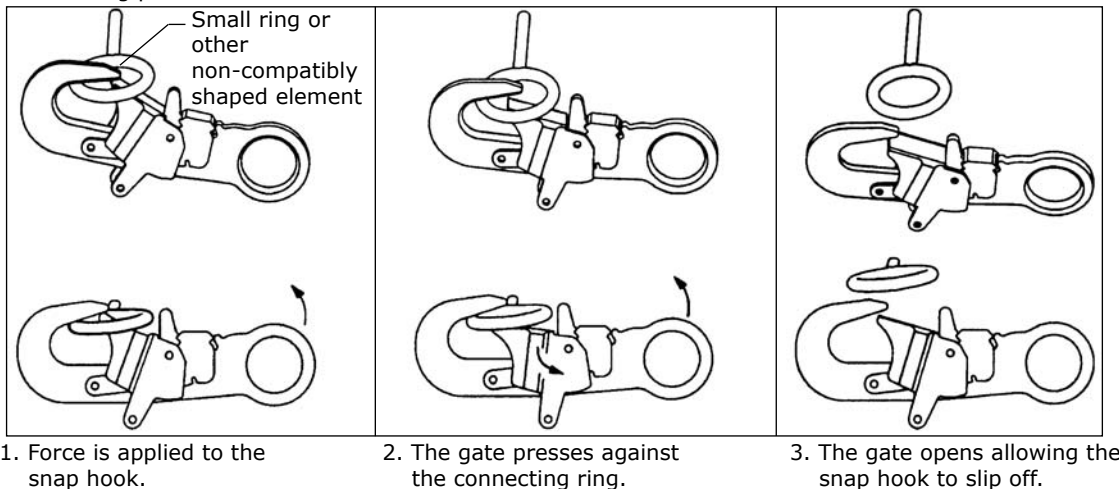
**2.1 COMPATIBILITY OF CONNECTORS:** DBI-SALA equipment is designed for use with DBI-SALA approved components and subsystems only. Substitutions or replacements made with non-approved components or subsystems may jeopardize compatibility of equipment and may effect the safety and reliability of the complete system.

**COMPATIBILITY:** 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. See Figure 2. Connectors must be compatible in size, shape, and strength regardless of orientation. Self-locking snap hooks and carabiners are required by ANSI Z359.1 and OSHA. Contact DBI-SALA if you have any questions about compatibility.

Connectors ( hooks, carabiners, and D-rings) must be capable of supporting a tensile load of at least 5,000 lbs. (22.2 kN). Per ANSI Z359.1, connector gates must be able to withstand a load of 3,600 lbs (16 kN): the face of the gate must withstand 3,600 lbs (16 kN); the side of the gate must withstand 3,600 lbs (16kN), and the minor axis of a snap hook or carabiner must withstand 3,600 lbs (16 kN), except for those with captive eyes.

**Figure 2 - Unintentional Disengagement (Roll-out)**

If the connecting element that a snap hook (shown) or carabiner 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.



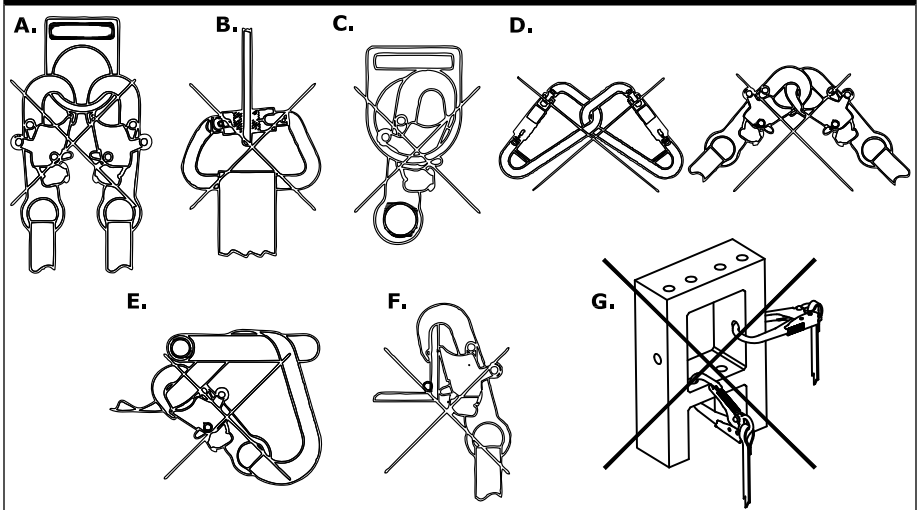
**2.2 MAKING CONNECTIONS:** Only use self-locking snap hooks and carabiners with this equipment. Only use connectors that are suitable to each application. Ensure all connections are compatible in size, shape and strength. Do not use equipment that is not compatible. Ensure all connectors are fully closed and locked.

DBI-SALA connectors (snap hooks and carabiners) are designed to be used only as specified in each product's user instructions. See Figure 3 for inappropriate connections. DBI-SALA snap hooks and carabiners should not be connected:

- A. To a D-ring to which another connector is attached.
- B. In a manner that would result in a load on the gate.

**NOTE:** Large throat-opening snap hooks should not be connected to standard size D-rings or similar objects which 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 fixed structural elements such as rebar or cross members that are not shaped in a way that can capture the gate of the hook.

**Figure 3 - Inappropriate Connections**



- C. In a false engagement, where features that protrude from the snap hook or carabiner catch on the anchor, and without visual confirmation seems to be fully engaged to the anchor point.
- D. To each other.
- E. Directly to webbing or rope lanyard or tie-back (unless the manufacturer's instructions for both the lanyard and connector specifically allows such a connection).
- F. To any object which is shaped or dimensioned such that the snap hook or carabiners will not close and lock, or that roll-out could occur.
- G. In a manner that does not allow the connector to align with the fall arrest device (i.e., lanyard) while under load.

**2.3 ANCHORAGE STRENGTH:** In accordance with ANSI Z359.1, anchorages selected for fall arrest systems shall have a strength capable of sustaining static loads applied in the directions permitted by the system of at least:

- A. 5,000 pounds (22.2kN) for non-certified anchorages, or
- B. Two times the maximum arresting force for certified anchorages.

When more than one fall arrest system is attached to an anchorage, the strengths set forth in (A) and (B) above shall be multiplied by the number of systems attached to the anchorage.

**WARNING:** Anchorages must be rigid. Large deformations of the anchorage will affect system performance, and may increase the required fall clearance below the system, which could result in serious injury or death.

From OSHA 1926.500 and 1910.66: Anchorages used for attachment of PFAS shall be independent of any anchorage being used to support or suspend platforms, and capable of supporting at least 5,000 lbs. (22.2 kN) per user attached, or be designed, installed, and used as part of a complete PFAS which maintains a safety factor of at least two, and is supervised by a qualified person. Anchorages selected for work positioning systems shall have a strength capable of sustaining static loads applied in the directions permitted by the system of at least:

- A. 3,000 pounds (13.3kN) for non-certified anchorages, or
- B. Two times the foreseeable force for certified anchorages.

When more than one work positioning system is attached to an anchorage, the strengths set forth in (A) and (B) above shall be multiplied by the number of systems attached to the anchorage.

### 3.0 OPERATION AND USE

**WARNING:** Do not alter or intentionally misuse this equipment. Consult DBI-SALA when using this equipment in combination with components or subsystems other than those described in this manual. Some subsystem and component combinations may interfere with the operation of this equipment. Use caution when using this equipment around moving machinery, electrical hazards, chemical hazards, and sharp edges. Do not loop the lanyard around small structural members.

**WARNING:** Working at height has inherent risks. Some risks are noted here but are not limited to the following: falling, suspension/prolonged suspension, striking objects, and unconsciousness. In the event of a fall arrest and/or subsequent rescue (emergency) situation, some personal medical conditions may affect your safety. Medical conditions identified as risky for this type of activity include but are not limited to the following: heart disease, high blood pressure, vertigo, epilepsy, drug or alcohol dependence, psychiatric illness, impaired limb function and balance issues. We recommend that your employer/physician determine if you are fit to handle normal and emergency use of this equipment

**3.1 BEFORE EACH USE** of this equipment, carefully inspect it to assure that it is in good working condition. Check for worn or damaged parts. Ensure all hardware is present and secure, and is not distorted or have any sharp edges, burrs, cracks, or corrosion. Ensure self-locking snap hooks or carabiners work properly. Inspect rope or webbing for wear, cuts, burns, frayed edges, breaks, or other damage. See section 5.0 for further inspection details. Do not use if inspection reveals an unsafe condition.

**3.2 PLAN** your fall protection system before starting your work. Take into consideration factors that affect your safety before, during, and after a fall. The following list gives some important points to consider when planning your system:

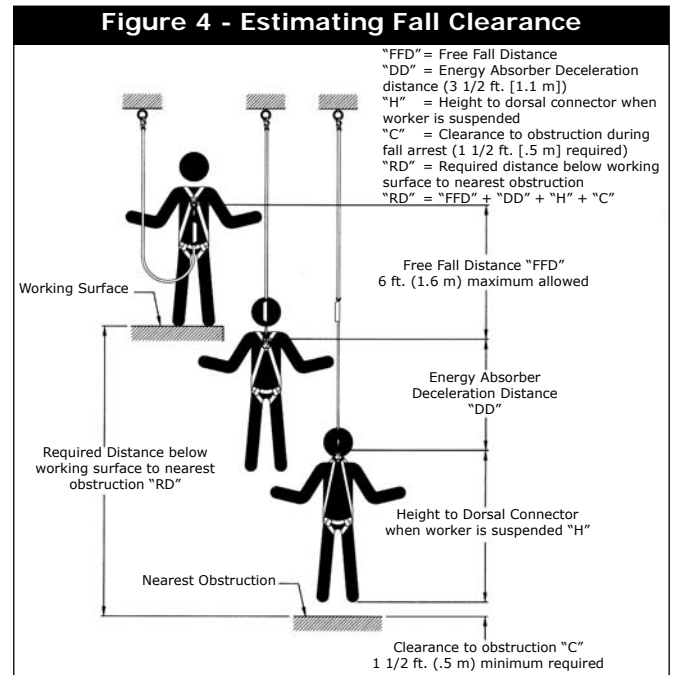
- A. **ANCHORAGE:** Select a rigid anchorage point that is capable of supporting the required loads. See section 2.3. The anchorage location must be carefully selected to reduce possible free fall and swing fall hazards and to avoid striking an object during a fall. The anchorage should be generally level (horizontal) to prevent the anchorage connector from sliding down an incline when in use, which could cause serious injury to the user.

- B. FREE FALL:** Personal fall arrest systems must be rigged such that the potential free fall is never greater than 6 ft. (1.8 m). Avoid working above your anchorage level to avoid an increased free fall distance.

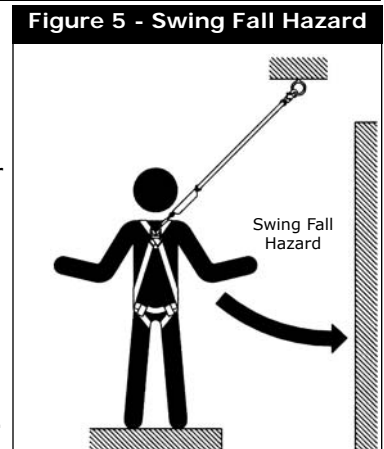
**IMPORTANT:** Some energy absorbing lanyards, such as EZ Stop® Retrax™ and the Shockwave lanyards, make use of retracting devices designed to shorten their free length. These devices do not decrease free fall distance

- C. FALL ARREST FORCES:** The assembled fall arrest system must keep fall arrest forces below 1,800 lbs. (8.0 kN) when used with a full body harness.

- D. FALL CLEARANCE:** Should a fall occur, there must be sufficient clearance in the fall area to arrest the fall before striking the ground or other object. Energy absorbers can extend the fall arrest distance by up to 42 inches (106.7 cm). Figure 4 shows how to estimate fall clearance distance when using an energy absorbing lanyard or energy absorber subsystem. Other factors may influence the required clearance distances. For example, using an energy absorbing lanyard or energy absorber with a rope grab (fall arrestor) may require additional clearance due to stretch in the lifeline or sliding of the rope grab on the lifeline during fall arrest. Some full body harness models incorporate a sliding (positional) D-ring in the back as the fall arrest attachment, movement of this D-ring during fall arrest can increase the fall clearance distance required. Use caution when assembling system components that could act to extend the fall arrest distance (and therefore fall clearance required). Refer to manufacturer's instructions for each part of the system for more information on fall clearance.



- E. SWING FALLS:** Swing falls occur when the anchorage point is not directly above the point where a fall occurs. The force of striking an object while swinging (horizontal speed of the user due to the pendulum affect) can be great and may cause serious injury. In a swing fall situation, the total vertical fall distance of the user will be greater than if the user had fallen vertically directly below the anchorage point. The user must therefore account for an increase in the total free fall distance and the area needed to safely arrest the fall. Swing falls can be minimized by working as directly below the anchorage point as possible. Never permit a swing fall if injury could occur. If a swing fall situation exists in your application contact DBI-SALA before proceeding. See Figure 5.



- F. SHARP EDGES:** Avoid working where the lanyard, subsystem, or other system components will be in contact with, or abrade against, unprotected sharp edges. Do not loop lanyard around small diameter structural members. If working with this equipment near sharp edges is unavoidable, protection against cutting must be provided by using a heavy pad or other means over the exposed sharp edge.
- G. RESCUE:** The user (employer) must have a rescue plan and the ability to implement it when using this equipment
- H. AFTER A FALL:** Lanyards with integral energy absorbers, or energy absorber components which have been subjected to the forces of arresting a fall must be removed from service and destroyed. See Figure 18.

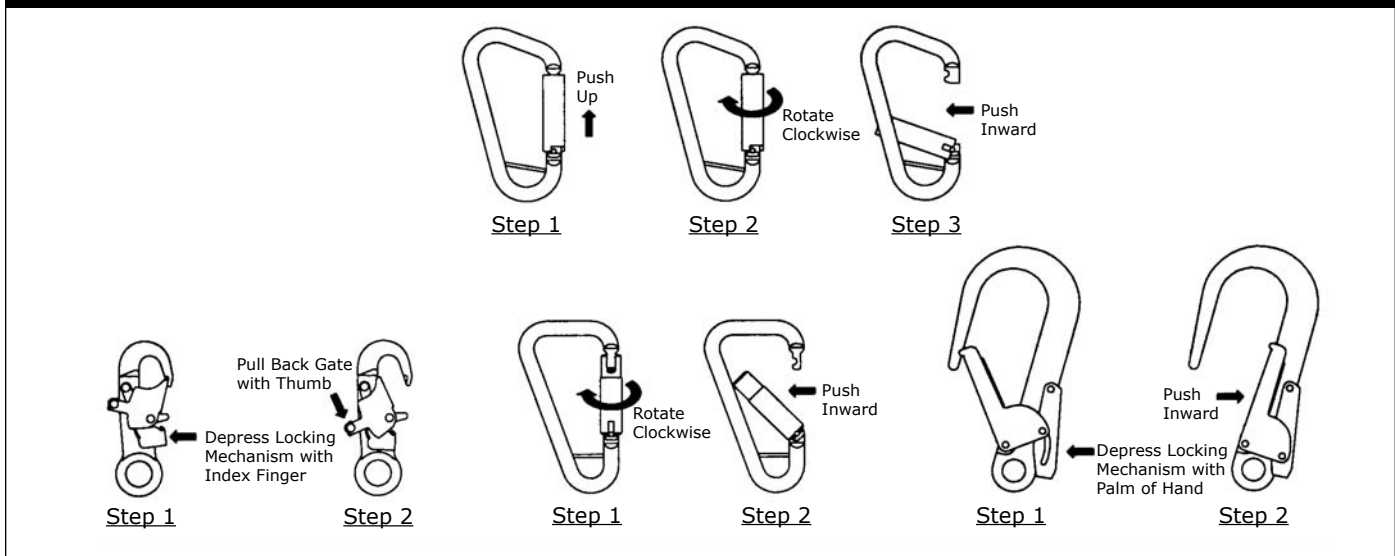
**WARNING:** Read and follow manufacturer's instructions for associated equipment (full body harness, rope grab, etc.) used in your fall protection system.

**IMPORTANT:** For special (custom) versions of this product, follow the instructions herein. If included, see supplement for additional instructions.

- 3.3 MAKING CONNECTIONS:** See Figure 6 for hook operation. When using a hook to connect to an anchorage, or when coupling components of the system together, ensure accidental disengagement (roll-out) cannot occur. Roll-out occurs when interference between a hook and the mating connector causes the hook's gate or keeper to accidentally open and release. Roll-out may occur when a hook is connected to an undersized ring such as an eye bolt or other non-compatible shaped connector. Self-locking snap hooks or self-locking and self-closing gate carabiners should be used to reduce the possibility of roll-out when making connections. Do not use hooks or connectors that will not completely close over the attachment object. For

these situations, use a tie-off adaptor or other anchorage connector to allow a compatible connection. Do not knot the lanyard in any manner, and do not hook the lanyard back into itself (choker style). Snap hooks and carabiners must not be connected to each other. Do not attach snap hooks to web loops.

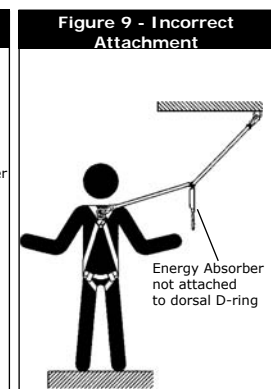
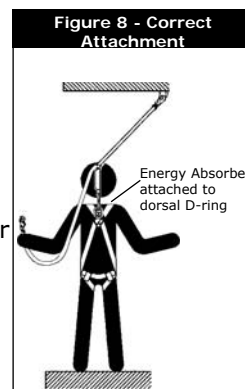
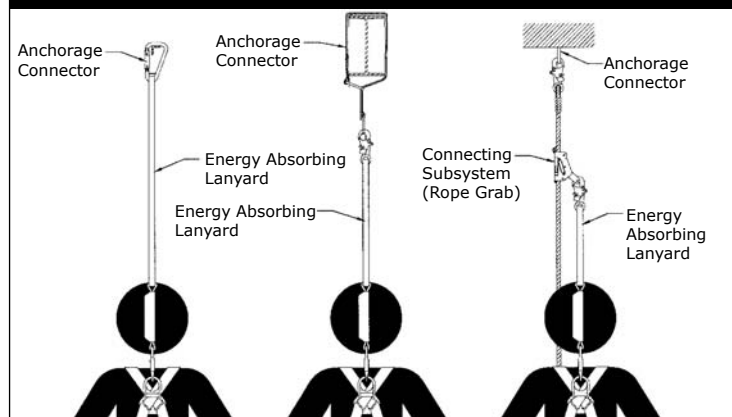
**Figure 6 - Making Connections**



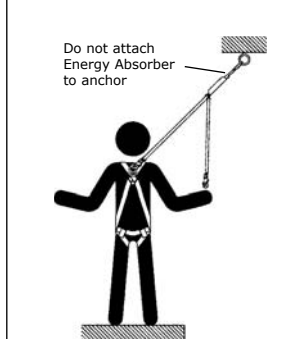
- A. CONNECTING TO ANCHORAGE OR ANCHORAGE CONNECTOR:** See Figure 7. Always connect the energy absorber end of the lanyard to the body support (harness). Connect the lanyard end to the anchorage or anchorage connector. Component style energy absorbers should be connected to the body support first, then coupled to the rest of the system. Some anchorage connector devices may be supplied with permanently attached energy absorber. Use of an additional energy absorber or energy absorbing lanyard with these types of subsystems is not recommended.

**100% Tie-off Lanyard Considerations:** Commonly known as 100% tie-off, "Y" type, twin leg, or double lanyards; these energy absorbing lanyards can be used to provide continuous fall protection while ascending, descending, or moving laterally. With one lanyard leg attached, the worker can move to a new location, attach unused lanyard leg, and disconnect attached leg. This procedure is repeated until a new location is reached. With the EZ Stop® II Shockwave 100% tie-off type lanyard, only one leg of the lanyard shall be attached to the anchorage or anchorage connector once a working location is reached. Other practices that must be followed in order to use a 100% tie-off type lanyard safely include:

**Figure 7 - Connecting to Anchorage**



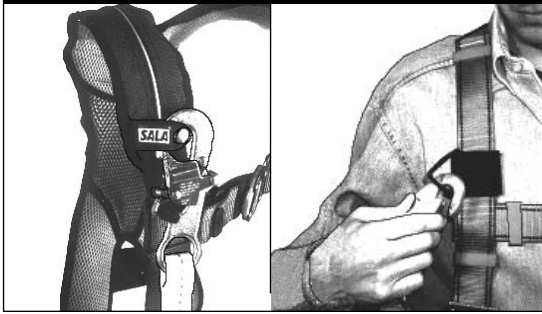
**Figure 10 - Incorrect Attachment**



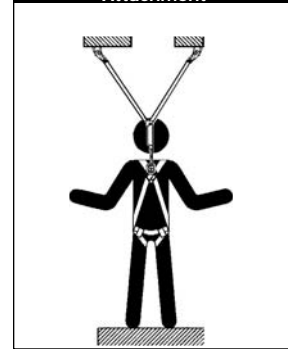
1. The energy absorber portion of the lanyard must be connected to the dorsal D-ring only. Use only the snap hook (or other connector provided) to attach the energy absorber portion directly to the harness dorsal D-ring. See Figures 8 and 9.
2. Do not connect the energy absorber to the anchorage. See Figure 10.
3. Do not attach the unused leg of the lanyard back to the harness at any location unless a specially designed lanyard retainer is provided for this purpose. See Figure 11.
4. Connection of both lanyard legs to separate anchorage points is acceptable. See Figure 12.



**Figure 11 - Acceptable Designed Retainers**

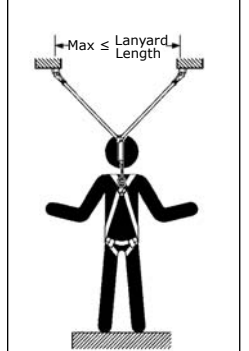


**Figure 12 - Acceptable Attachment**

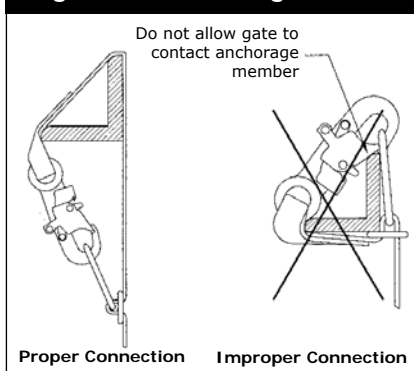


5. When leapfrogging from one anchorage point to the next (such as traversing a horizontal or vertical structure) do not connect to anchorage points that are further apart than the lanyard length (as marked on the lanyard label). See Figure 13.
6. Never connect more than one person to a "Y" type lanyard at a time.
7. Do not allow any lanyard to pass under arms or legs during use.

**Figure 13 - Max Lanyard Reach**



**Figure 14 - Attaching Tie-Back**



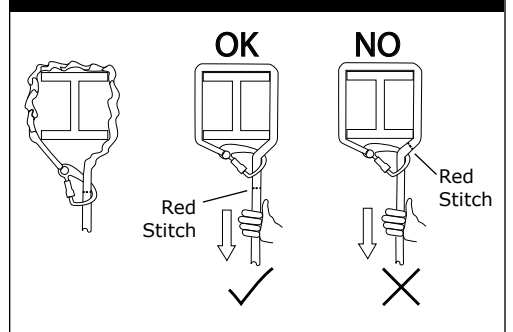
**Attaching a Tie-Back Lanyard:** See Figure 14. Place the tie-back lanyard over the anchoring structure. Ensure the lanyard is not twisted. Adjust the floating D-ring so it hangs below the anchoring structure. Attach the lanyard end hook to the floating D-ring.

#### **Attaching a Shockwave 2 Tie-Back Lanyard**

Shockwave 2 Tie-back lanyards (model no. 1244650 and 1244675) are the only Shockwave models suitable for tie back applications. Do not use regular Shockwave 2 models for tie back applications.

Tie back using the captive eye carabiner only. Do not tie back using the snap hook. The snap hook must be connected to the user's harness.

**Figure 15 - Shockwave 2 Tie-Back**



Anchorage size limit: The red stitching must be outside of the captive eye carabiner when the lanyard is tight around the anchorage (under hand tension). See figure 15.

**WARNING:** Tying back beyond the red stitching will limit the amount of energy absorption in the event of a fall and could result in serious injury or death

If the stitching is located outside of the carabiner, choose an anchorage of smaller size (in accordance with the requirements in section 2.3) to prevent tying back beyond the red stitching.

Ensure the lanyard is cinched tight around the anchorage during use.

**ATTACHING A LANYARD WITH WIRE FORM PIPE HOOK:** The wire form pipe hook is intended for use with pipes up to 3 inches (7.6 cm) in diameter.

The anchorage must be geometrically compatible in size and shape. See Figure 16 for examples of proper and improper connections and intended load directions. Do not side load the pipe hook. Do not allow the pipe hook to contact electrical sources. Squeeze the handle to open the hook. Place hook around the anchorage and release handle. Only use a carabiner as the connecting element when attaching a personal fall arrest system to a pipe hook. When connecting to an anchorage, ensure the hook fully closes and closure hooks engage eye loops on hook body.

- B. CONNECTING TO THE BODY SUPPORT:** Connect the energy absorbing lanyard or energy absorber to the D-ring on the back between the shoulders (dorsal D-ring) on a full body harness. Connect so the energy absorber portion of the lanyard is on the body support side. DBI-SALA does not recommend using a body belt for fall arrest applications. If using a body belt, connect the energy absorbing lanyard or energy absorber to the D-ring and position the belt so the D-ring is located on the back side of the body.

**ATTACHING A LANYARD WITH WEB LOOPS:** See Figure 17.

1. Insert the energy absorbing lanyard web loop through the harness web loop or D-ring.
2. Insert the opposite end of the energy absorbing lanyard through the connecting web loop.
3. Pull the attached energy absorbing lanyard through the connecting web loop to secure.

**C. CONNECTING TO A ROPE GRAB (FALL ARRESTOR):** It is recommended the lanyard end (vs. the energy absorber end) be attached to the rope grab. This recommendation is made to reduce possible interference with the operation of the rope grab by the energy absorber "pack". Attaching a component style energy absorber to a rope grab is not recommended, with the exception of a "direct-coupling" between a rope grab and a harness. Some rope grabs may be supplied with a permanently attached energy absorbing lanyard. For these cases, use of an additional energy absorber connected between the rope grab and the body support is not recommended. In some cases it may be permissible to couple an energy absorber component between the anchorage (or anchorage connector) and the rope grab lifeline. In all cases, ensure the length of the energy absorber or energy absorbing lanyard does not exceed the rope grab manufacturer's recommended maximum connection length (3 feet [.9 m] maximum per ANSI Z359.1).

**D. CONNECTING TO SELF RETRACTING LIFELINE:** DBI-SALA does not recommend connecting an energy absorbing lanyard or energy absorber component to a self retracting lifeline. Special applications do exist where it may be permissible. Contact DBI-SALA if considering connecting an energy absorbing lanyard to a self retracting lifeline.

**3.4 ADJUSTING THE RETRAX™ LANYARD:** The amount of the lanyard that is retracted into the Retrax housing can be adjusted by completely extending the lanyard from the housing, then sliding the housing up or down the lanyard. See Figure 18. Adjusting the length of lanyard that is retracted into the housing will not reduce the amount of fall clearance needed to arrest a fall. See section 3.2.

**WARNING:** The Retrax lanyard is designed to retract and store the lanyard strap. It is not designed to "lock" or limit the lanyard length in a fall.

**3.5** After use, return the lanyard for cleaning or storage as described in section 6.0

## 4.0 TRAINING

**4.1** It is the responsibility of all users of this equipment to understand these instructions, and to be trained in the correct installation, use, and maintenance of this equipment. These individuals must be aware of the consequences of improper installation or use of this equipment. This user manual is not a substitute for a comprehensive training program. Training must be provided on a periodic basis to ensure proficiency of the users.

**IMPORTANT:** Training must be conducted without exposing the trainee to a fall hazard. Training should be repeated on a periodic basis.

## 5.0 INSPECTION

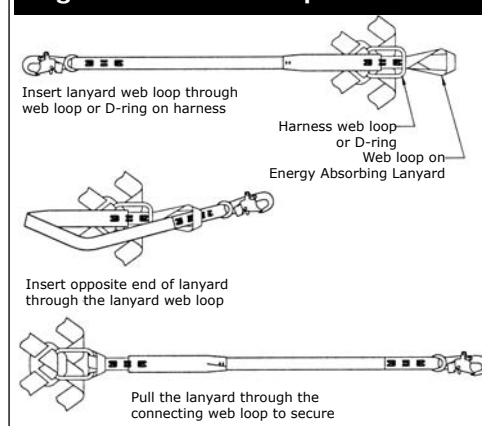
### 5.1 FREQUENCY

- Before each use visually inspect per steps listed in sections 5.2 and 5.3.
- Annually: The lanyard must be inspected by a competent person (see section 8 Terminology) other than the user at least annually. See sections 5.2 and 5.3 for guidelines. Record the results of each inspection in the inspection and maintenance log in section 9.0, or use the inspection web portal if an i-Safe™ RFID tag is present (see Figure 19). If you are registered i-Safe user, go to [www.capitalsafety.com/isafe](http://www.capitalsafety.com/isafe). For more information contact a Customer Service representative in the US at 1-800-328-6146 or in Canada at 1-800-387-7484.

**IMPORTANT:** If the energy absorbing lanyard or energy absorber component has been subjected to fall arrest or impact forces, the user, authorized person, or rescuer must remove it from service immediately and destroy it.

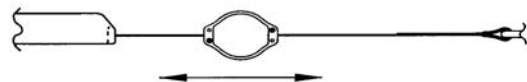
**IMPORTANT:** Extreme working conditions (harsh environment, prolonged use, etc.) may require increasing the frequency of inspections.

**Figure 17 - Web Loop Connection**

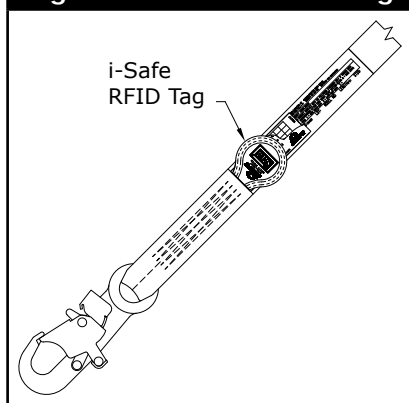


**Figure 18 - Adjusting the Retrax Lanyard Length**

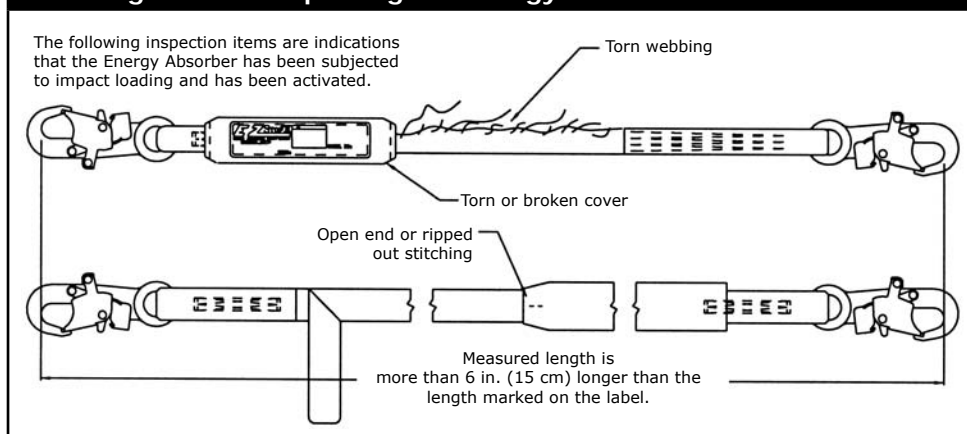
1. Fully extend the lanyard from the Retrax housing
2. Slide the Retrax housing away from the center of the lanyard



**Figure 19 - i-Safe RFID Tag**



**Figure 20 - Inspecting the Energy Absorber for Activation**



## 5.2 INSPECTION STEPS

**Step 1.** Inspect energy absorbing lanyard or energy absorber component hardware (snap hooks, adjusters, swages, thimbles, etc.). These items must not be damaged, broken, distorted, or have any sharp edges, burrs, cracks, worn parts, or corrosion. Ensure the connecting hooks work properly. Hook gates must move freely and lock upon closing. Ensure adjusters (if present) work properly.

**Step 2.** Inspect the energy absorbing lanyard or energy absorber component per the following as applicable:

**WEBBING AND STITCHING:** The webbing material must be free of frayed, cut, or broken fibers. Check for tears, abrasions, mold, burns, or discoloration, etc. The webbing must be free of knots, excessive soiling, heavy paint buildup, and rust staining. Check for chemical or heat damage indicated by brown, discolored, or brittle areas. Check for ultraviolet damage indicated by discoloration and the presence of splinters or slivers on the webbing surface. All of the above factors are known to reduce webbing strength. Damaged or questionable webbing should be replaced. Inspect stitching for pulled or cut stitches. Broken stitches may be an indication the energy absorbing lanyard or energy absorber component has been impact loaded and must be removed from service.

**WIRE ROPE:** Inspect entire length of the wire rope. Always wear protective gloves when inspecting wire rope. Inspect for broken wires by passing cable through gloved hands, flexing it every few inches to expose breaks. Broken wires can be removed by bending the wire back and forth parallel to the rope length. Do not attempt to pull wires out of rope. Remove the energy absorbing lanyard from service immediately and destroy 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 that it takes for a strand (the larger groups of wires) to complete one revolution or twist along the rope. Remove the energy absorbing lanyard from service immediately and destroy if there are any broken wires within 1 inch of the metal compression sleeves (swages) at either end of the assembly. The wire rope should be free of corrosion.

**Step 3. ENERGY ABSORBING COMPONENT:** Inspect energy absorber to determine if it has been activated. There should be no evidence of elongation. See Figure 20. Ensure energy absorber cover is secure and not torn or damaged. On the Shockwave 2™ Lanyard models, the lanyard webbing will tear out to reveal the warning on the impact indicator label. See section 8.2 for label illustration.

**Step 4.** All labels should be present and fully legible. See section 8.0.

**Step 5.** Inspect each system component or subsystem per associated manufacturer's instructions.

**Step 6.** Record the inspection date and results in the inspection log in section 9.0.

**5.3** If inspection reveals an unsafe condition, remove unit from service immediately and destroy, or contact an authorized service center for repair.

**NOTE:** Only DBI-SALA or parties authorized in writing may make repairs to this equipment.

## 6.0 MAINTENANCE, SERVICING, STORAGE

- 6.1** Clean lanyard with water and a mild detergent solution. Wipe off hardware with a clean, dry cloth, and hang to air dry. Do not force dry with heat. If you have any questions regarding cleaning of this equipment, or require more information, contact DBI-SALA. An excessive buildup of dirt, paint, etc., may prevent the lanyard from working properly, and in severe cases degrade the webbing or rope to a point where it has become weakened and should be removed from service. If you have any questions concerning the condition of your lanyard, or have any doubt about putting it into service, contact DBI-SALA.
- 6.2** Additional maintenance and servicing procedures (replacement parts) must be completed by a factory authorized service center. Authorization must be in writing. Do not disassemble the unit. See section 5.1 for inspection frequency.
- 6.3** Store the lanyard in a cool, dry, clean environment out of direct sunlight. Avoid areas where chemical vapors may exist. Thoroughly inspect the lanyard or energy absorber component after extended storage.

## 7.0 SPECIFICATIONS

- The maximum arresting force of DBI-SALA Energy Absorbing Lanyards and components when dynamically tested in accordance with ANSI Z359.1 is 900 lbs. (4 kN). (EZ STOP® III and ShockWave 2 models less than 6 ft. [1.8 m] in length, maximum arresting force is 1800 lbs. [8 kN], Shockwave 2 Tie-back, maximum arresting force is 1350 lbs [6 kN]).
- The maximum elongation of the Energy Absorbing Lanyard or Energy Absorber component when dynamically tested in accordance with ANSI Z359.1 is 42 in. (1 m).
- Maximum free fall distance must be no greater than 6 ft. (1.8 m) per federal law and ANSI Z359.1
- EZ STOP® II U.S. Patent Number 5,174,410
- 9503175 Self-closing and self-locking snap hook U.S. Patent Number 4,977,647, Can. 2,027,784.

Lanyard Model	Energy Absorber Specifications	Adjustable/ Fixed Length	Lanyard Specifications
Fixed Length EZ Stop II Web Lanyards	1 3/4 in. (4.4 cm) polyester web strength member, tubular nylon web wear pads both ends, nylon outer cover, polyester thread, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength.	Fixed	1 in. (2.5 cm) polyester web, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength
Adjustable Length EZ Stop II Web Lanyards	1 3/4 in. (4.4 cm) polyester web strength member, tubular nylon web wear pads both ends, nylon outer cover, polyester thread, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength.	Adjustable	1 in. (2.5 cm) polyester web, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength
100% Tie-off EZ Stop II Web Lanyards	1 3/4 in. (4.4 cm) polyester web strength member, tubular nylon web wear pads both ends, nylon outer cover, polyester thread, 8,800 <sup>^</sup> lb. (39.1 kN) tensile strength.	Fixed	1 in. (2.5 cm) polyester web, 100% tie-off, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength
EZ Stop II Energy Absorber Component	1 3/4 in. (4.4 cm) polyester web strength member, tubular nylon web wear pads both ends, nylon outer cover, polyester thread, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength.	Fixed	Not Applicable
EZ Stop II Cable Lanyards	1 3/4 in. (4.4 cm) polyester web strength member, nylon web wear pads both ends, nylon outer cover, polyester thread, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength.	Fixed	7/32 in. (.6 cm) 7x9 galvanized cable, vinyl covered. 5,600 lb. (24.9 kN) tensile strength
EZ Stop III Web Lanyards	1 3/8 in. (3.5 cm) tubular polyester web strength member, nylon web wear pads both ends, polyester thread, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength.	Fixed	1 3/8 in. (3.5 cm) tubular polyester web strength member, 6,000 lb. (26.7 kN) tensile strength
EZ Stop II Tie-back Web Lanyard	1 3/4 in. (4.4 cm) polyester web strength member, tubular nylon web wear pads both ends, nylon outer cover, polyester thread, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength.	Fixed	1 in. (2.5 cm) polyester web strength member, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength with 1 3/8 in. (3.5 cm) tubular polyester web cover
EZ Stop II Tie-back 100% Tie-off Web Lanyard	1 3/4 in. (4.4 cm) polyester web strength member, tubular nylon web wear pads both ends, nylon outer cover, polyester thread, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength.	Fixed	1 in. (2.5 cm) polyester web strength member, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength with 1 3/8 in. (3.5 cm) tubular polyester web cover
EZ Stop II Shockwave	1 3/4 in. (4.4 cm) polyester web strength member, tubular nylon web wear pads both ends, nylon outer cover, polyester thread, 8,800 <sup>^</sup> lb. (39.1 <sup>^</sup> kN) tensile strength.	Fixed	1 15/16 in. (4.9 cm) tubular polyester web strength member, 6,000 lb. (26.7 kN) tensile strength
Shockwave 2	1 15/16 in. (4.9 cm) polyester web strength member, nylon web wear pads both ends, polyester thread, 6,000 lb. (26.7 <sup>^</sup> kN) tensile strength.	Fixed	Lanyard and energy absorber are the same material.
Shockwave 2 Tie Back	1 7/8 in. (4.8 cm) polyester web strength member, nylon web wear pads both ends, polyester thread, 8,500 lb. (37.7 <sup>^</sup> kN) tensile strength.	Fixed	Lanyard and energy absorber are the same material.
EZ Stop II Retrax Web Lanyard	1 3/4 in. (4.4 cm) polyester web strength member, nylon web wear pads both ends, nylon outer cover, polyester thread, 6,000 lb. (26.7 kN) tensile strength.	Fixed	1 3/8 in. polyester web, 6,000 lb. (26.7 kN) tensile strength

## 8.0 TERMINOLOGY

Authorized Person: A person assigned by the employer to perform duties at a location where the person will be exposed to a fall hazard (otherwise referred to as "user" for the purpose of these instructions).

Rescuer: Person or persons other than the rescue subject acting to perform an assisted rescue by operation of a rescue system.

**Certified Anchorage:** An anchorage for fall arrest, positioning, restraint, or rescue systems that a qualified person certifies to be capable of supporting the potential fall forces that could be encountered during a fall or that meet the criteria for a certified anchorage prescribed in this standard.

**Qualified Person:** A person with a recognized degree or professional certificate and with extensive knowledge, training, and experience in the fall protection and rescue field who is capable of designing, analyzing, evaluating and specifying fall protection and rescue systems to the extent required by this standard.

**COMPETENT PERSON:** One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

## 9.0 LABELING

**9.1** This label must be attached to all lanyards and be fully legible.

[illegible]

## All Lanyards - Inspection Log

**9.2** These labels must be securely attached to all Shock Wave 2™ Lanyards and be fully legible.

**INSPECT IMPACT INDICATOR FOR IMPULSION OR YOUR RED STOPWATCH. IF STOPWATCH IS RUPTURED OR YOUR REDLINE FROM SERVICE. JACKET MATERIAL: NYLON**

**MAX. ELONGATION: 42 IN.**  
**MAX. ARRESTING FORCE:**  
**MODELS AT LEAST 8 FT.: 100 LBS.**  
**MODELS LESS THAN 8 FT.: 1000 LBS.**  
**MAX. FREE FALL: 8 FT.**  
**CAPACITY: 210 LBS.**  
**CORDE MATERIAL: POLYESTER**

**WARNING** MANUFACTURER'S INSTRUCTIONS MUST BE READ AND UNDERSTOOD PRIOR TO USE. INSTRUCTIONS SUPPLIED WITH THIS PRODUCT AT TIME OF SHIPMENT MUST BE FOLLOWED. AVOID CONTACT WITH SHARP AND ABRASIVE EDGES. MAKE ONLY COMPATIBLE CONNECTIONS. NOT FLAME OR HEAT RESISTANT. DO NOT REMOVE THIS LABEL. FAILURE TO HEED WARNINGS AND INSTRUCTIONS COULD RESULT IN SERIOUS INJURY OR DEATH. ANY UNIT WHICH HAS SEE FALL ARRESTING SERVICE SHOULD NOT BE USED AFTER SUCH SERVICE.

**PRODUCT COMPLIANCE**  
 THIS PRODUCT COMPLIES WITH THE FOLLOWING STANDARDS ONLY IF MARKED WITH THE CORRESPONDING LETTER CODE UNDER "STDS" SECTION BELOW  
**A = ANSI Z359.1-99 B = OSHA C = ANSI A10.32-2004 D = ASTM F887-2005**  
**E = ANSI Z359.3-07 F = ANSI Z359.4-07 G = ANSI Z359.1-07 H =**

**MFRD(TRAQO): LOT: MODEL NO: LENGTH(FT): STDS:**

## All ShockWave 2 Lanyards - I.D. / Warning Label

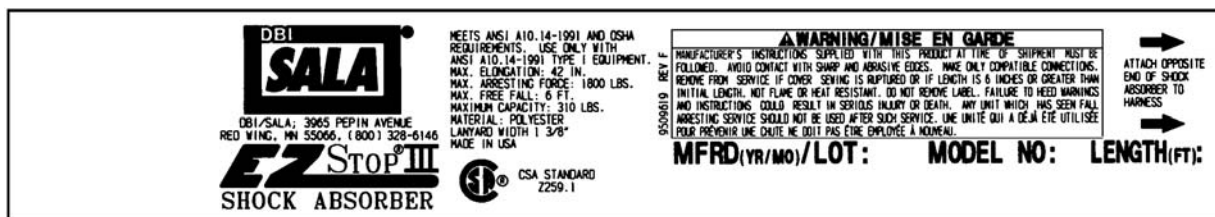
**9.3** These labels must be securely attached to the noted CSA approved lanyards and be fully legible.



## Warning Label - All CSA Approved Lanyards

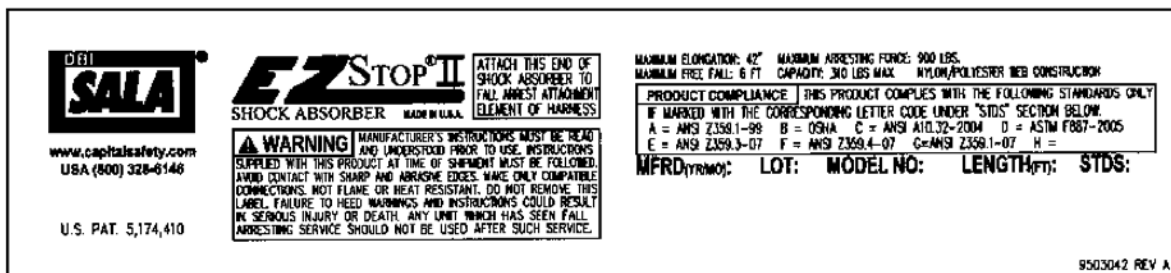


ID / Warning Label - CSA Approved EZ Stop® II Web Lanyards

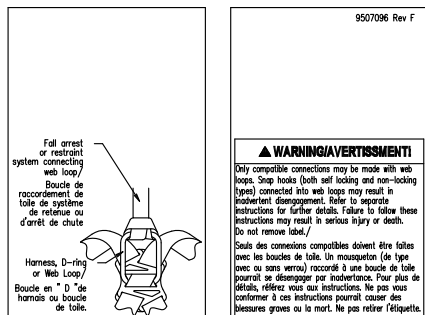


## ID Label - CSA Approved EZ Stop® III Web Lanyards

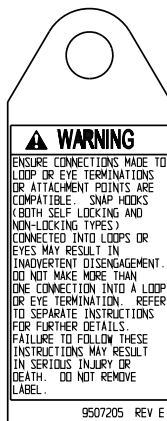
**9.4** These labels must be attached to the noted Energy Absorbing Lanyards or Energy Absorber components and be fully legible.



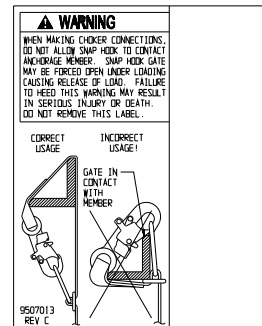
## ID Label - EZ Stop® II Web Lanyards



Warning Label - All Web Loop  
Energy Absorbing Lanyards Not  
Permanently Attached to Harness



Warning Label - All Web Loop  
Energy Absorbing Lanyards  
Permanently Attached to Harness



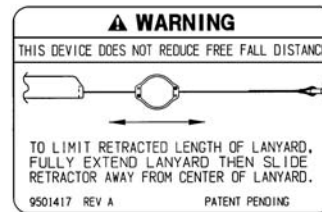
## Warning Label EZ Stop® II Tie-Back Lanyards

## 9.4 CONTINUED . . .

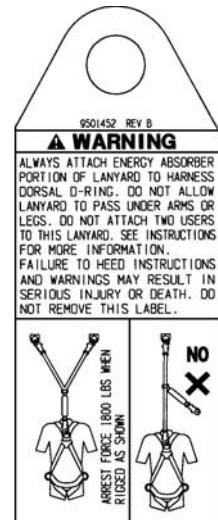
These labels must be attached to the noted Energy Absorbing Lanyards or Energy Absorber components and be fully legible.



Impact Indicator Label  
EZ Stop® Shock Wave 2 Tie-Back Lanyards  
And  
EZ Stop® Shock Wave III Lanyards



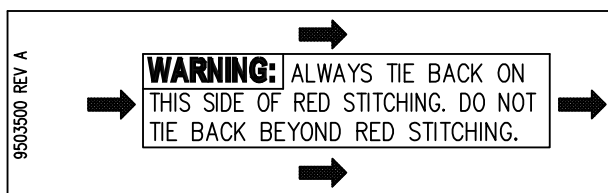
Retrax Warning Label



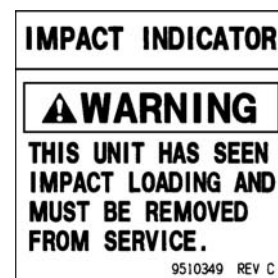
100% Tie-off Lanyard  
Warning Label



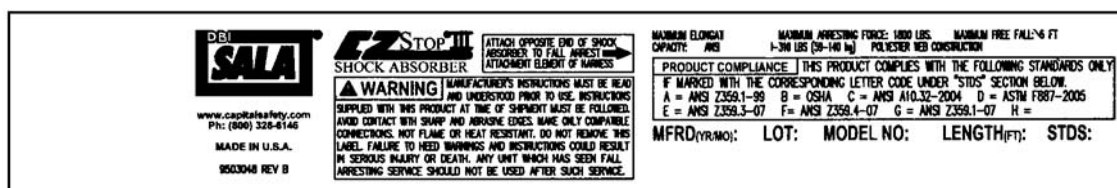
Shockwave 2 Tie Back Lanyards ID Label Front and Back



Shockwave 2 Tie  
Back Lanyards  
Warning Label



Shockwave 2 Tie Back Lanyards  
Impact Indicator Label



All EZ Stop III ANSI Approved Lanyards - I.D. / Warning Label



## 10.0 INSPECTION AND MAINTENANCE LOG

SERIAL NUMBER:			
MODEL NUMBER:			
DATE PURCHASED:		DATE OF FIRST USE:	

INSPECTION DATE	INSPECTION ITEMS NOTED	CORRECTIVE ACTION	MAINTENANCE PERFORMED
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
Approved By:			
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Approved By:			

## Models - ANSI:

1100456	1107951	1220262	1220680	1221115	1224349	1240068	1240277	1240620	1240880	1241465	1244351
1100750	1107952	1220265	1220681	1221116	1224350	1240071	1240278	1240626	1240901	1241480	1244353
1100756	1107958	1220267	1220682	1221117	1224354	1240074	1240279	1240627	1240902	1241481	1244354
1100762	1107959	1220268	1220701	1221119	1224355	1240077	1240280	1240680	1240903	1241482	1244355
1100767	1107962	1220269	1220704	1221120	1224356	1240080	1240281	1240681	1240904	1241483	1244356
1100768	1107991	1220271	1220705	1221205	1224402	1240082	1240282	1240682	1240905	1241701	1244357
1100769	1107992	1220272	1220706	1221206	1224404	1240083	1240291	1240683	1240906	1241702	1244358
1101240	1108033	1220274	1220707	1221209	1224405	1240084	1240292	1240702	1240907	1241751	1244359
1101241	1108034	1220275	1220708	1221210	1224406	1240086	1240294	1240703	1240909	1241752	1244360
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1101646	1110793	1220291	1220724	1221327	1224416	1240097	1240362	1240711	1240916	1244001	1244411
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1104744	1220030	1220409	1220809	1224007	1224444	1240127	1240433	1240732	1241009	1244028	1244443
1104745	1220033	1220411	1220845	1224008	1224445	1240128	1240436	1240733	1241010	1244029	1244444
1104746	1220034	1220412	1220846	1224009	1224447	1240129	1240440	1240734	1241013	1244030	1244445
1104747	1220035	1220413	1220847	1224011	1224455	1240130	1240441	1240735	1241014	1244031	1244446
1104748	1220037	1220414	1220848	1224012	1224456	1240131	1240445	1240736	1241016	1244032	1244448
1104912	1220038	1220416	1220849	1224013	1224457	1240132	1240446	1240737	1241018	1244033	1244455
1104918	1220040	1220417	1220850	1224014	1224458	1240135	1240447	1240738	1241020	1244034	1244456
1104924	1220043	1220419	1220852	1224016	1224475	1240136	1240448	1240739	1241022	1244035	1244457
1105376	1220045	1220421	1220854	1224018	1224476	1240137	1240452	1240740	1241023	1244036	1244458
1105491	1220046	1220424	1220855	1224023	1224510	1240139	1240453	1240741	1241024	1244037	1244475
1106002	1220048	1220427	1220856	1224024	1224610	1240140	1240458	1240742	1241025	1244038	1244476
1106003	1220053	1220428	1220857	1224026	1224611	1240141	1240460	1240743	1241029	1244039	1244510
1106005	1220066	1220433	1220859	1224027	1224612	1240142	1240462	1240744	1241030	1244040	1244601
1106007	1220067	1220436	1220860	1224029	1224613	1240143	1240463	1240745	1241031	1244041	1244610
1106008	1220068	1220437	1220861	1224031	1224630	1240144	1240464	1240746	1241032	1244043	1244611
1106016	1220070	1220446	1220862	1224034	1224631	1240147	1240465	1240748	1241033	1244047	1244612
1106017	1220071	1220447	1220863	1224036	1224632	1240150	1240466	1240749	1241101	1244101	1244613
1106033	1220074	1220448	1220865	1224038	1224633	1240153	1240467	1240750	1241102	1244102	1244614
1106040	1220077	1220452	1220870	1224041	1224634	1240154	1240469	1240752	1241103	1244103	1244630
1106041	1220078	1220453	1220871	1224043	1226000	1240155	1240470	1240753	1241105	1244104	1244631
1106058	1220079	1220462	1220872	1224047	1226001	1240156	1240471	1240754	1241106	1244106	1244632
1106059	1220081	1220463	1220873	1224101	1226003	1240157	1240472	1240755	1241108	1244107	1244633
1106063	1220083	1220464	1220874	1224102	1229000	1240158	1240473	1240756	1241109	1244112	1244634
1106064	1220086	1220465	1220880	1224103	1240004	1240168	1240474	1240757	1241110	1244205	1244650
1106074	1220087	1220466	1220902	1224107	1240005	1240170	1240475	1240801	1241111	1244213	1244675
1106150	1220091	1220467	1220903	1224110	1240006	1240175	1240476	1240802	1241112	1244251	1244676
1106151	1220098	1220469	1220905	1224111	1240007	1240178	1240477	1240803	1241113	1244252	1244700
1106152	1220103	1220471	1220906	1224252	1240011	1240179	1240505	1240804	1241114	1244253	1244725
1106203	1220105	1220472	1220909	1224253	1240012	1240186	1240506	1240805	1241117	1244254	1244750
1106211	1220108	1220473	1220914	1224301	1240013	1240188	1240508	1240806	1241118	1244301	1244751
1106212	1220111	1220474	1220915	1224302	1240016	1240193	1240509	1240807	1241120	1244302	1246001
1106325	1220115	1220475	1220917	1224305	1240017	1240194	1240510	1240808	1241122	1244303	1246002
1106326	1220120	1220509	1220922	1224306	1240018	1240197	1240511	1240809	1241124	1244304	1330025
1106327	1220123	1220510	1220925	1224307	1240019	1240200	1240525	1240845	1241125	1244305	1330035
1106328	1220124	1220511	1220929	1224308	1240020	1240201	1240526	1240846	1241201	1244306	1330055
1106329	1220127	1220525	1220932	1224309	1240023	1240202	1240535	1240847	1241204	1244307	1330065
1106330	1220132	1220526	1220975	1224310	1240024	1240205	1240536	1240848	1241205	1244308	1330100
1106331	1220135	1220535	1221001	1224311	1240027	1240208	1240537	1240849	1241206	1244309	5002040
1106332	1220140	1220536	1221002	1224312	1240028	1240209	1240538	1240850	1241207	1244310	5002041
1106333	1220146	1220537	1221003	1224313	1240029	1240210	1240540	1240852	1241210	1244311	5002042
1106334	1220148	1220538	1221004	1224314	1240030	1240211	1240551	1240854	1241211	1244312	5002050
1106679	1220153	1220540	1221005	1224319	1240034	1240251	1240552	1240855	1241213	1244313	5900876
1106682	1220154	1220551	1221006	1224321	1240035	1240253	1240553	1240856	1241214	1244314	5900877
1106683	1220156	1220553	1221008	1224322	1240038	1240256	1240554	1240857	1241215	1244317	
1106684	1220157	1220557	1221009	1224323	1240039	1240257	1240555	1240859	1241216	1244318	
1106687	1220170	1220558	1221013	1224324	1240040	1240258	1240556	1240860	1241217	1244319	
1106900	1220175	1220559	1221016	1224325	1240041	1240259	1240557	1240861	1241218	1244321	
1106901	1220178	1220562	1221030	1224327	1240043	1240262	1240558	1240862	1241219	1244324	
1106902	1220186	1220563	1221031	1224329	1240046	1240263	1240560	1240863	1241220	1244325	

## Models - CSA:

CSA Class	Model Numbers									
<b>E4:</b>	<b>Max. Arresting Force</b>		<b>Max. Elongation</b>		<b>Min. Mass of Worker</b>		<b>Max. Mass of Worker</b>			
	900 lbf (4.0 kN)		3.9 ft (1.2 m)		100 lbs (45 kg)		254 lbs (115 kg)			
	1100320C	1101859C	1106062C	1108530C	1109433C	1220046C	1220296C	1220680C	1221425C	1224006C
	1100321C	1101871C	1106075C	1108534C	1109434C	1220048C	1220297C	1220681C	1221426	1224306C
	1100322C	1102319C	1106203C	1108539C	1109435C	1220054C	1220299C	1220850C	1221426C	1224341C
	1100323C	1102320C	1106684C	1108540C	1109436C	1220058C	1220300C	1220851C	1221460C	1224343C
	1100447C	1102321C	1106685C	1108541C	1109437C	1220068C	1220301C	1220852C	1221461C	1224348C
	1100448C	1102967C	1106689C	1108542C	1110310C	1220071C	1220359C	1220853C	1221480C	1224405C
	1100449C	1102968C	1106690C	1108603C	1110311C	1220074C	1220362C	1220857C	1221481C	1224406C
	1100450C	1102969C	1106698C	1108678C	1110312C	1220079C	1220364C	1220858C	1221484C	1224409C
	1100890C	1102970C	1106699C	1108679C	1110313C	1220080C	1220369C	1220861C	1221801C	1224427C
	1100891C	1102971C	1107160C	1108680C	1110612C	1220086C	1220406C	1220863C	1221802C	1224428C
	1100892C	1103266C	1107161C	1108684C	1110613C	1220091C	1220409C	1220864C	1221803C	1224431C
	1100893C	1103268C	1107162C	1108685C	1110614C	1220092C	1220450C	1220866C	1221804C	1224438C
	1100894C	1103269C	1107163C	1108686C	1110619C	1220093C	1220451C	1220870C	1221805C	1240210C
	1100980C	1103387C	1107164C	1108710C	1110705C	1220098C	1220455C	1220871C	1221806C	1240211C
	1100981C	1103388C	1107165C	1108711C	1110706C	1220105C	1220459C	1220873C	1221807C	1240256C
	1100982C	1103389C	1107837C	1108712C	1220006C	1220108C	1220461C	1220880C	1221808C	1240325C
	1100983C	1103390C	1107838C	1108713C	1220007C	1220115C	1220466C	1220906C	1221809C	1240477C
	1101166C	1103391C	1107839C	1108714C	1220012C	1220132C	1220468C	1220937C	1221810C	1240559
	1101167C	1103392C	1107840C	1108715C	1220016C	1220139C	1220526C	1220938C	1221811C	1244610C
	1101168C	1105855C	1107961C	1109025C	1220017C	1220180C	1220527C	1220939C	1221812C	1244611C
	1101169C	1106015C	1108028C	1109037C	1220024C	1220181C	1220535C	1220940C	1221813C	1244630C
	1101170C	1106040C	1108355C	1109038C	1220028C	1220182C	1220536C	1221001C	1221814C	1244631C
	1101535C	1106041C	1108356C	1109045C	1220030C	1220195C	1220539C	1221006C	1221815C	
	1101536C	1106042C	1108357C	1109057C	1220035C	1220204C	1220540C	1221028C	1221816C	
	1101537C	1106053C	1108358C	1109058C	1220038C	1220206C	1220553C	1221034C	1221851C	
	1101538C	1106054C	1108359C	1109061C	1220040C	1220256C	1220558C	1221104C	1221852C	
	1101540C	1106060C	1108528C	1109141C	1220042C	1220259C	1220572C	1221106C	1221853C	
	1101851C	1106061C	1108529C	1109432C	1220043C	1220269C	1220601C	1221206C	1221854C	
<b>E6:</b>	<b>Max. Arresting Force</b>		<b>Max. Elongation</b>		<b>Min. Mass of Worker</b>		<b>Max. Mass of Worker</b>			
	1,300 lbf (6.0 kN)		5.7 ft (1.75 m)		200 lbs (90 kg)		386 lbs (175 kg)			
	1242225C	1242227C	1242229C	1242250C	1242325C	1242350C				
	1242226C	1242228C	1242230C	1242275C	1242326C	1242375C				

Additional model numbers may appear on the next printing of these instructions.



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Certificate No. FM 39709

## **Appendix F**

### **Fall Protection Plan**

# CITY OF SAN CARLOS

## FALL PROTECTION WORK PLAN

### INSTRUCTIONS

A written fall protection work plan must be implemented by each employer on a job site where a fall hazard of \_\_\_\_\_ feet or greater exists, in accordance with CITY OF SAN CARLOS Fall Protection Policy and CAL/OSHA Section 1671.1 Fall Protection Plan. **The plan must be specific for each work site.**

**THIS WORK PLAN WILL BE AVAILABLE ON THE JOB SITE FOR INSPECTION.**

#### 1. FILL OUT THE SPECIFIC JOB INFORMATION.

Job Name:

Date:

Job Address:

City:

Job Foreman:

Jobsite Phone:

#### 2. FALL HAZARDS IN THE WORK AREA

INCLUDE LOCATIONS AND DIMENSIONS FOR HAZARDS

Roof Repair:

Stairwells:

Leading edge:

Wall opening:

Confined Space:

Elevated work platforms:

Perimeter edge:

Ladder use:

Other fall hazards in the work area:

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**3. METHOD OF FALL ARREST OR FALL RESTRAINT**

**(For fall protection equipment include details, such as manufacturer etc.)**

Full body harness:

\_\_\_\_\_

Lanyard:

\_\_\_\_\_

Lifeline:

\_\_\_\_\_

Horizontal lifeline:

\_\_\_\_\_

Deceleration device:

\_\_\_\_\_

Locking snap hooks:

\_\_\_\_\_

Guard rails:

\_\_\_\_\_

Catch platform:

\_\_\_\_\_

Roof anchor:

\_\_\_\_\_

Other:

Body belt (Restraint only):

\_\_\_\_\_

Drop line:

\_\_\_\_\_

Restraint line:

\_\_\_\_\_

Rope grab:

\_\_\_\_\_

Shock absorbing lanyard:

\_\_\_\_\_

Safety nets:

\_\_\_\_\_

Anchorage points:

\_\_\_\_\_

Scaffolding platform:

\_\_\_\_\_

Tripod System:

\_\_\_\_\_

**4. ASSEMBLY, MAINTENANCE, INSPECTION, DISASSEMBLY PROCEDURE**

Assembly and disassembly of all equipment will be done according to manufacturers' recommended procedures. (Include copies of manufacturer's data for each specific type of equipment used.)

Specific types of equipment on the job are:

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A visual inspection of all safety equipment will be done daily or before each use, as stated in the Employee Training Packet. Any defective equipment will be tagged and removed from use immediately. The manufacturer's recommendations for maintenance and inspection will be followed.

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**5. HANDLING, STORAGE & SECURING OF TOOLS AND MATERIAL**

Toe boards will be installed on all scaffolding to prevent tools and equipment from falling from scaffolding.

Other specific handling, storage and securing is as follows:

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**OVERHEAD PROTECTION**

Hard hats are required on all job sites with the exception of those that have no exposure to overhead hazards. Warning signs will be posted to caution of existing hazards whenever they are present. In some cases, debris nets may be used if a condition warrants additional protection.

Additional overhead protection will include:

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Toe boards (at least 4 inches in height) will be installed along the edge of scaffolding and walking surfaces for a distance sufficient to protect employees below. Where tools, equipment or materials are piled higher than the top of the toe board, paneling or screening will be erected to protect employees below.



## 6. INJURED WORKER REMOVAL

Normal first aid procedures should be performed as the situation arises. If the area is safe for entry, the first aid should be done by a foreman or other certified individual.

Initiate Emergency Services – Dial 911 (where available)

Phone location: \_\_\_\_\_

First aid location: \_\_\_\_\_

Elevator location: \_\_\_\_\_

Crane location: \_\_\_\_\_

Other: \_\_\_\_\_ Location: \_\_\_\_\_

Rescue considerations. When personal fall arrest systems are used, the employer must assure that employees can be promptly rescued or can rescue themselves should a fall occur. The availability of rescue personnel, ladders, or other rescue equipment should be evaluated. In some situations, equipment that allows employees to rescue themselves after the fall has been arrested may be desirable, such as devices that have descent capability.

Describe methods to be used for the removal of the injured worker(s):

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## 7. TRAINING AND INSTRUCTION PROGRAM

All new employees will be given instructions on the proper use of fall protection devices before they begin work. They will sign a form stating they have been given this information. This form becomes part of the employee's personnel file.

The written fall protection work plan will be reviewed before work begins on the job site. Those employees attending will sign below. The fall protection equipment use will be reviewed regularly at the weekly safety meetings.

Date: \_\_\_\_\_

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Supervisor: \_\_\_\_\_

Prior to permitting employees into areas where fall hazards exist, all employees must be trained regarding fall protection work plan requirements. Inspection of fall protection devices/systems must be made to ensure compliance with CAL/OSHA orders, and ANSI.