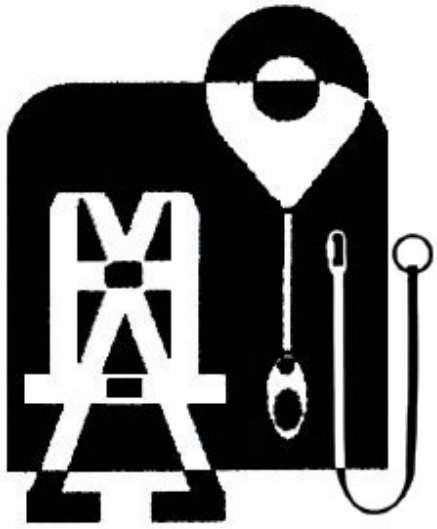
Fall Protection



Training Guide

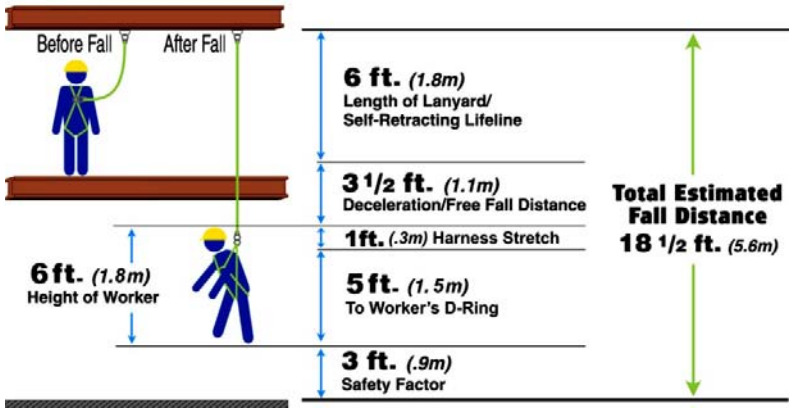
206 Bones in the human body = 206 Reasons for fall protection

Occupational Safety and Health Administration (OSHA) Regulations

Effective January 1, 1998 body belts are not acceptable as a part of a fall arrest system. The use of a body belt in a positioning device is acceptable. A fall creating an impact of 1,800 lbs. or greater will require a shock absorbing device. (Lanyards shall have and attached energy absorbing device with a maximum arrest force not exceeding 900 lbs.) Standard lanyards shall be used for positioning or restraint only.

Belts and Harness: Side D-rings are used for positioning only and are NOT to be used for fall arrest.
Shoulder D-rings are used for retrieval only and are NOT to be used for fall arrest.

Lanyards: For fall arrest, OSHA requires that the free-fall distance must never exceed 6 feet (1.8 meters)



What can be done to reduce falls?

OSHA requires that fall protection be provided at elevations of;
four feet in general industry workplaces,
five feet in shipyards,
six feet in the construction industry and
eight feet in longshoring operations.

To prevent employees from being injured from falls, employers must:

- Guard every floor hole into which a worker can accidentally walk (using a railing and toe-board or a floor hole cover)
- Provide a guard rail and toe-board around every elevated open sided platform, floor or runway
- Regardless of height, if a worker can fall into or onto dangerous machines or equipment (such as a vat or acid or a conveyor belt) employers must provide guardrails and toe-boards to prevent workers from falling and getting injured
- Other means of fall protection that may be required on certain jobs include safety and harness and line, safety nets, stair railings and hand rails

OSHA requires employers to:

- Provide working conditions that are free of known dangers
- Keep floors in work areas in a clean and, so far as possible, a dry condition
- Select and provide required personal protective equipment at no cost to workers
- Train workers about job hazards in a language that they can understand

Fall Protection Categories

All fall protection products fit into four functional categories. 1. Fall Arrest; 2. Positioning; 3. Suspension; 4. Retrieval.

Fall Arrest: A fall arrest system is required if any risk exists that a worker may fall from an elevated position, as a general rule, the fall arrest system should be used anytime a working height of six feet or more is reached. Working height is the distance from the walking/working surface to a grade or lower level. A fall arrest system will only come into service should a fall occur. A full-body harness with a shock-absorbing lanyard or a retractable lifeline is the only product recommended. A full-body harness distributes the forces throughout the body, and the shock-absorbing lanyard decreases the total fall arresting forces.

Positioning: This system holds the worker in place while keeping his/her hands free to work. Whenever the worker leans back, the system is activated. However, the personal positioning system is not specifically designed for fall arrest purposes.

Suspension: This equipment lowers and supports the worker while allowing a hands-free work environment, and is widely used in window washing and painting industries. This suspension system components are not designed to arrest a free fall, a backup fall arrest system should be used in conjunction with the suspension system.

Retrieval: Preplanning for retrieval in the event of a fall should be taken into consideration when developing a proactive fall management program.

Fall Protection Systems

Class 1: Body belts (single or double D-ring) are designed to restrain a person in a hazardous work position and to reduce the possibility of falls. They should not be used when fall potential exists; positioning only.

Class 2: Chest harnesses are used when there are only limited fall hazards (no vertical free fall hazard), or for retrieving persons such as removal of persons from a tank or a bin.

Class 3: Full body harnesses are designed to arrest the most severe free falls.

Class 4: Suspension belts are independent work supports used to suspend a worker, such as boatswain's chairs or raising or lowering harnesses.

Rope Lanyard: Offers some elastic properties for all arrest; used for restraint purpose.

Web Lanyard: Ideal for restraint purposes where fall hazards are less than 2 feet.

Cable Positioning Lanyards: Designed for corrosive or excess heat environments and must be used in conjunction with shock absorbing devices.

Shock Absorbers: When used, the fall arresting force will be greatly reduced if a fall occurs.

Rope Grabs: A deceleration device which travels on a lifeline, used to safely ascend or descend ladders or sloped surfaces and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee.

Retractable Lifeline Systems: Gives fall protection and mobility to the user when working at height or in areas where there is a danger of falling.

Safety Nets: Can be used to lesson the fall exposure when working where temporary floors and scaffolds are not used and the fall distance exceeds 25 feet.

Rail Systems: When climbing a ladder, rail systems can be used on any fixed ladder as well as curved surfaces as a reliable method of fall prevention.

Personal Fall Arrest Systems

*Limit maximum arresting force on an employee to 900 lbs.(4 kiloNewtons) when use with a body belt
*Limit maximum arresting force on an employee to 1,800 lbs.(8 kiloNewtons) when use with a body harness
*Be rigged so that an employee can neither free fall more than 6 feet (1.8 meters) nor contact any lower level
*Bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet (1.07 meters)
*Have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet (1.8 meters)

Personal fall arrest systems must be inspected prior to each use for wear damage, and other deterioration. Defective components must be removed from service. D-rings and snaphooks must have a minimum tensile strength of 5,000lbs. (22.2 kiloNewtons) D-rings and snaphooks shall be proof-tested to a minimum tensile load of 3,600lbs. (16 kiloNewtons) without cracking, breaking or suffering permanent deformation.

Self-retracting lifelines and lanyards that automatically limit free fall distance to 2 feet (0.61 meters) or less shall be capable of sustaining a minimum tensile load of 3,000lbs. (13.3 kiloNewtons) applied to the device with the lifeline or lanyard in the fully extended position.

Self-retracting lifelines and lanyards that do not limit free fall distance to 2 feet (0.61 meters) or less, ripstitch lanyards and tearing and deforming lanyards shall be capable of sustaining a minimum tensile load of 5,000lbs. (22.2 kiloNewtons) applied to the device with the lifeline or lanyard in the fully extended position.

All personal fall arrest systems must have anchorages that have static load strength of at least 3,600 pounds when certification exists. If no certification exists, static load strength of 5,000 pounds is required. Anchorages must not be attached to any structure used to support or suspend work platforms.

A qualified person shall design fall arrest systems. When designing a fall arrest system, consideration must be given but not limited to the following requirements

- Prevent contact with any lower level, equipment or other obstruction.
- Limit free fall to a maximum of 6 feet (1.8 meters)
- Limit arresting force to a maximum of 1,800 [pounds (8kN)
- Limit maximum deceleration distance to 3.5 feet (1.1 meters)
- Ensure that the angle at rest after a fall would be no greater than 30 degrees
- Limit potential for pendulum swings
- Prior to use of this equipment, a rescue plan and the means to implement that plan, must be developed

Positioning Device Systems

These body belt or body harness systems are to be set up so that a worker can free fall no farther than 2 feet (0.6 meters) They shall be secured to an anchorage capable of supporting at lease twice the potential impact load of an employee's fall or 3,000lbs. (13.3 kiloNewtons) whichever is greater. Requirements for D-rings, snaphooks and other connectors used with positioning device systems must meet the same criteria as those for personal fall arrest systems.

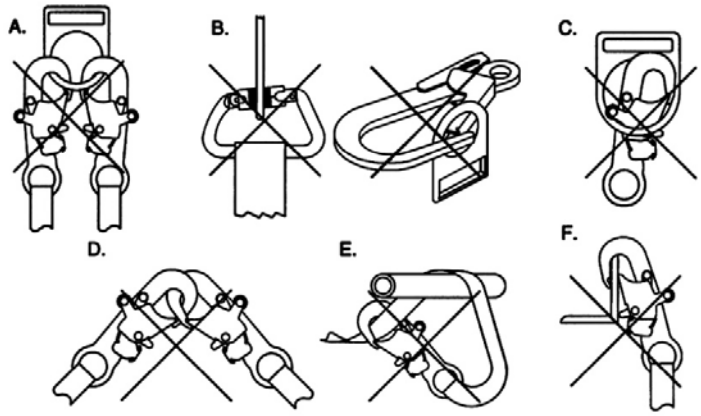
Safety Net Systems

Safety nets must be installed as close as practicable under the walking/working surface on which employees are working and never more than 30 feet (9.1 meters) below such level. Defective nets shall not be used. Safety nets shall be inspected at lease once a week for wear, damage and other deterioration. The maximum size of each safety net mesh opening shall not exceed 36 square inches (230 square centimeters) nor be longer than 6 inches (15 centimeters) on any side, and the openings, measured center-to-center, of mesh ropes or webbing, shall not exceed 6 inches (15 centimeters) All mesh crossings shall be secured to prevent enlargement of the mesh opening.

Requirements for Construction

There are three primary set of fall protection requirements for construction which are based on the heights and activities which employees are engaged in. The different heights at which fall protection is required are 6 feet, 10 feet and 15 or 30 feet. The height at which fall protection is required depends upon the type of surface/platform the employee is on or what type of activity in which they are engaged.

Example of improper connections



A. Do not attach two or more snap hooks or carabiners to a single D-ring
B. Do not load a carabiner or snap hook at the gate
C. Ensure that connections are compatible and secure
D. Do not attach two snap hooks or carabiners together
E. Do not tie back on a lanyard unless specifically designed to do so by the manufacturer
F. Ensure that snap hook is closed and locked

Inspection and Maintenance

To maintain their service life and high performance, all belts and harnesses should be inspected frequently. Visual inspection before each use should become routine, and also a routine inspection by a competent person. If any of the conditions listed below are found the equipment should be replaced before being used.

Harness Inspection

1. Belts and Rings: For harness inspections begin at one end, hold the body side of the belt toward you, grasping the belt with your hands six to eight inches apart. Bend the belt in an inverted "U" Watch for frayed edges, broken fibers, pulled stitches, cuts or chemical damage. Check D-rings and D-ring metal wear pads for distortion, cracks, breaks, and rough or sharp edges. The D-ring bar should be at a 90 degree angle with the long axis of the belt and should pivot freely.

Attachments of buckles and D-rings should be given special attention. Note any unusual wear, frayed or cut fibers, or distortion of the buckles. Rivets should be tight and unremovable with fingers. Body side rivet base and outside rivets should be flat against the material. Bent rivets will fail under stress.

Inspect frayed or broken strands. Broken webbing strands generally appear as tufts on the webbing surface. Any broken, cut or burnt stitches will be readily seen.

2. Tongue Buckle: Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. Rollers should turn freely on the frame. Check for distortion or sharp edges.

3. Friction Buckle: Inspect the buckle for distortion. The outer bar or center bars must be straight. Pay special attention to corners and attachment points of the center bar.

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 detailed below.

Hardware

Snaps: Inspect closely for hook and eye distortion, cracks, corrosion, or pitted surfaces. The keeper or 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 rocks must provide the keeper from opening when the keeper closes.
Thimbles: The thimble (protective plastic sleeve) 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 should be free of sharp edges, distortion, or cracks.

Lanyards

Steel Lanyards: While rotating a steel lanyard, watch for cuts, frayed areas, or unusual wear patterns on the wire. The use of steel lanyards for fall protection without a shock-absorbing device is not recommended.
Web Lanyard: While bending webbing over a piece of pipe, observe each side of the webbed lanyard. This will reveal any cuts or breaks. Due to the limited elasticity of the web lanyard, fall protection without the use of a shock absorber is not recommended.
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. When a rope lanyard is used for fall protection, a shock-absorbing system should be included.
Shock-Absorbing Packs
The outer portion of the shock-absorbing pack should be examined for burn holes and tears. Stitching on areas where the pack is sewn to the D-ring, belt or lanyard should be examined for loose strands, rips and deterioration.

Visual Indication of Damage to Webbing and Rope Lanyards

Heat: In excessive heat, nylon becomes brittle and has a shriveled brownish appearance. Fibers will break when flexed and should not be used above 180 degrees Fahrenheit.
Chemical: Change in color usually appears as a brownish smear or smudge. Transverse cracks appear when belt is bent over tight. This causes a loss of elasticity in the belt.
Ultraviolet Rays: Do not store webbing and rope lanyards in direct sunlight, because ultraviolet rays can reduce the strength of some material.
Molten Metal or Flame: Webbing and rope strands may be fused together by molten metal or flame. Watch for hard, shiny spots or a hard and brittle feel. Webbing will not support combustion, nylon will.
Paint and Solvents: Paint will penetrate and dry, restricting movements of fibers. Drying agents and solvents in some paints will appear as chemical damage.

Cleaning of Equipment

Basic care for fall protection safety equipment will prolong and endure the life of the equipment and contribute toward the performance of its vital safety function. Proper storage and maintenance after use is as important as cleaning the equipment of dirt, corrosives or contaminants. The storage area should be clean, dry and free of exposure to fumes or corrosive elements.

Nylon and Polyester: 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 the belt dry with a clean cloth. Hang freely to dry but away from excessive heat.

Drying: Harness, belts and other equipment should be dried thoroughly without exposure to heat, steam or long periods of sunlight.

Understanding the ABCs (usually used to refer to the basics) of Fall Protection

A=Anchorage or Anchor point

Also known as the tie-off point, this is the point of attachment for the lanyard, the lifeline or the deceleration device. The anchor must support 5,000 lbs of pressure or twice the expected load.

Anchor points can be fixed point anchors or Mobile Anchorage Points.

B=Body Harness

The body harness is the combination of straps that distribute the fall arrest force over the chest, thighs, waist, pelvis and shoulders. Body harnesses come in a variety of styles and configurations with a corresponding range in pricing. Harnesses have buckles and adjustable straps for proper fitting. Make sure that it is properly tightened and fitted to your body. While a harness that is too tight is restricting and uncomfortable to work in, a loose fitting harness can be extremely dangerous, particularly in the pelvic region.

The connecting D-Ring in a properly fitted harness should be located right between the shoulder blades. Make sure that the harness you are using is approved for industrial work. Recreational harness (rock climbing harnesses) are not approved.
Belts can only be used for positioning or restraint, NEVER for fall arrest.

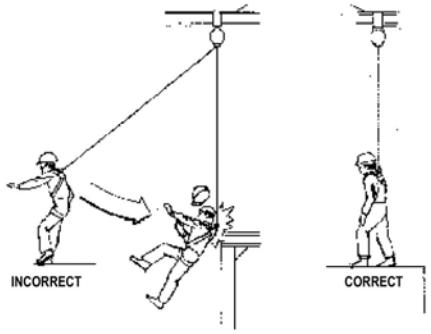
C=Connector

The connector refers to the device used to link the body harness to the anchor point. Lanyards, Self-Retracting Lifelines and Shock-Absorbing Lifelines are all different types of connectors.

D=Deceleration device

A deceleration device is a type of connector that is designed to limit the amount of force exerted on the body. The amount of force exerted cannot exceed 1800 lbs. Self-Retracting Lifelines work like a seatbelt in the car, by locking up as soon as the cable or webbing is rapidly pulled through as would be the case with a fall. Shock-Absorbing Lanyards work by "tearing out" in order to reduce the amount of force.

Swing falls can occur when the system is not anchored directly above the user. The force of striking an object in a pendular motion can cause serious injury. Always minimize swing falls by working as directly below the anchorage point as possible.



Selection of Personal Fall Protection Equipment - Summary Table

Task	Anchorage	Anchorage Connector	Body Support	Connection Means
General Fall Arrest	Support structure capable of supporting 5,000 lb per employee attached, or designed, installed and used under the supervision of a qualified person as part of a complete personal fall arrest system which maintains a safety factor of at least two	Anchor sling, I-beam trolley, or other anchorage connector	Full body harness	Energy-absorbing lanyard or self-retracting lanyard, and lifeline and fall arrester
Work Positioning	Support structure such as a ladder or vertical rods		Full body harness or body belt with D-rings for attachment of work positioning equipment	Anchor bolt, trolley, carabiner or rebar assembly
Restraint	Support structure	Anchor sling, roof anchor system	Full body harness or body belt with back-mounted D-ring	Positioning lanyard
Suspension/ Personnel Riding System	Support structure	Anchor sling, tripod or davit	Full body harness	Vertical lifeline ascender/ descender and backup vertical lifeline with rope grab
Retrieval/Rescue	Support structure	Tripod or davit	Full body harness	
Ladder Climbing – Permanent Fixed Ladders – Fixed Line Fall Arrest Systems	Permanent Ladder meeting the requirements of OSHA 29 CFR 1910.27	Fixed wire rope lifeline with intermediate supports and a mobile fall arrester	Full body harness equipped with front or hip D-rings for attachment to ladder climbing fall arrest system	Connecting hardware, such as a locking carabiner, compatible with the fall arrester and body support harness
Ladder Climbing – Permanent Fixed Ladders – Rigid Rail Fall Arrest Systems	Permanent ladder meeting the requirements of OSHA 29 CFR 1910.27	Rigid rail or track with mobile fall arrester	Full body harness equipped with front or hip D-rings for attachment to ladder climbing fall arrest system	Connecting hardware, such as a locking carabiner, compatible with the fall arrester and body support harness
Ladder Climbing – Temporary, Portable Ladders – Rope Grab Systems	Overhead structural member of suitable size, shape and strength to support the fall arrest system	Vertical lifeline, synthetic rope or wire type, with "rope grab" mobile fall arrester	Full body harness equipped with back mounted D-ring for fall arrest	Lanyard or energy-absorbing lanyard as specified by the manufacturer of the rope grab fall arrester
Evacuation/ Controlled Descent Systems	Support structure	Tie-off sling is an option	Full body harness with either front or shoulder mounted D-ring	Controlled descent device

ANSI Z359 Standard

ANSI Z359.0-2012: Definitions and Nomenclature Used for Fall Protection and Fall Arrest
Establishes the definitions and nomenclature used for the Z359 Fall Arrest Code..

ANSI Z359.1-2007: Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
Establishes requirements for the performance, design, marking, qualification, instruction, training, inspection, use, maintenance and removal from service of connectors, full-body harnesses, lanyards, energy absorbers, anchorage connectors, fall arresters, vertical lifelines and self-retracting lanyards comprising personal fall arrest systems for users within the capacity range of 130 to 310 pounds (59 to 140 kg).

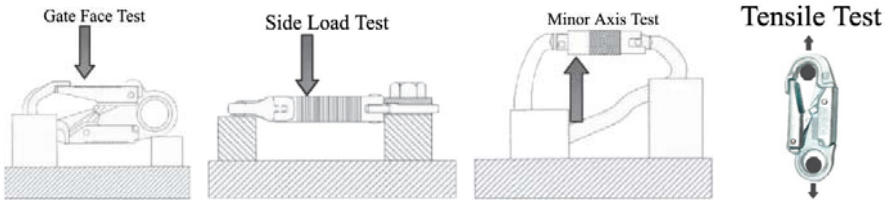
ANSI Z359.1-2016: The Fall Protection Code
A set of standards that covers program management; system design; training; qualification and testing; equipment, component and system specifications for the processes used to protect workers at height in a managed fall protection program

ANSI Z359.2-2007: Minimum Requirements for a Comprehensive Managed Fall Protection Program
Establishes guidelines and requirements for an employer's managed fall protection program, including policies, duties and training, fall protection procedures, eliminating and controlling fall hazards, rescue procedures, incident investigations and evaluating program effectiveness.

ANSI Z359.3-2007: Safety Requirements for Positioning and Travel Restraint Systems
Establishes requirements for the performance, design, marking, qualification, test methods and instructions of lanyards and harnesses comprising personal positioning and travel restraint systems for authorized persons within the capacity range of 130 to 310 pounds (59 to 140 kg).

ANSI Z359.3-2017: Safety Requirements for Lanyards and Positioning Lanyards
Establishes requirements for the performance, design, marking, qualification and verification testing and instructions for lanyards and positioning lanyards for users within the capacity range of 130 to 310 pounds

ANSI Z359.4-2013: Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components
Establishes requirements for the performance, design, marking, qualification, instruction, training, use, maintenance and removal from service of connectors, harnesses, lanyards, anchorage connectors, winches/hoists, descent control devices, rope tackle blocks and self-retracting lanyards with integral rescue capability comprising rescue systems used in preplanned self-rescue and assisted-rescue applications for 1-2 persons.



Snap hooks and carabiners must meet the following:

- Gate Face must withstand a load of 3,600 lbs. (16 kN) up from 220 lbs. (1 kN)
- Side of Gate must withstand a load of 3,600 lbs. (16 kN) up from 350 lbs. (1.55 kN)
- Minor Axis of a snap hook or carabiner, except those with captive eyes, must withstand 3,600 lbs. (16 kN)
- Tensile load for the snap hook or carabiner must withstand 5,000lbs. (22.2 kN) same as current

ANSI Z359.6-2009: Safety Requirements and Specifications for Personal Fall Arrest Systems
This Standard is intended for engineers with expertise in designing fall-protection systems. It specifies requirements for the design and performance of complete active fall-protection systems, including travel-restraint and vertical and horizontal fall-arrest systems.

ANSI Z359.6-2016: Specifications and Design Requirements for Active Fall Protection Systems
Specifies requirements for the design and performance of complete active fallprotection systems, including travel-restraint and vertical and horizontal fall-arrest systems and is intended for engineers with expertise in designing fall-protection systems

ANSI Z359.7-2011: Qualification and Verification Testing of Fall Protection Products
Sets requirements for certification of ANSI Z359 Code products and components as well as requirements for third-party testing, witness testing and manufacturer selfcertification of fall protection products and components

ANSI Z359.11-2014: Safety Requirements for Full Body Harnesses
Establishes requirements for the performance, design, marking, qualification, instruction, training, test methods, inspection, use, maintenance and removal from service of full body harnesses used for fall arrest, positioning, restraint, suspension and/or rescue applications

ANSI Z359.12-2009: Safety Requirements for Connecting Components for Personal Fall Arrest Systems
This standard establishes requirements for the performance, design, marking, qualification, test methods and removal from service of connectors

ANSI Z359.13-2013: Safety Requirements for Lanyards & Energy Absorbers for Personal Fall Arrest Systems
This standard establishes requirements for the performance, design, marking, qualification, instructions, inspection, maintenance and removal from service of energy absorbing lanyards and personal energy absorbers. It is the intention of this standard to require all energy absorbing lanyards and personal energy absorbers to reduce the forces implied on the user to less than 10 G's (10 times the normal gravitational pull of the Earth). Users must be within the range of 130 to 310 lbs (59 - 140 kg)
ANSI Z359.14-2014: Safety Requirements for Self-Retracting Devices for Fall Arrest and Rescue Systems
Sets requirements for performance, design, qualification testing, marking and instructions, inspection, maintenance and storage, and removal from service of selfretracting devices including self-retracting lanyards (SRL's), self-retracting lanyards with integral rescue capability (SRL-R's), and self-retracting lanyards with leadingedge capability (SRL-LE's), comprising personal fall arrest or rescue systems
ANSI Z359.15-2014: Safety Requirements for Single Anchor Lifelines and Fall Arresters for Personal Fall Arrest Systems
Sets requirements for the design criteria, qualification testing (performance requirements), marking and instructions, user inspections, maintenance and storage and removal from service of single anchor lifelines and fall arresters for users within the capacity range of 130 to 310 pounds
ANSI Z359.16-2016: Safety Requirements for Climbing Ladder Fall Arrest Systems
Sets requirements for the performance; design; marking; qualification testing; instructions for use; inspection; maintenance and storage; and removal from service of vertically oriented climbing ladder fall arrest systems lifelines
ANSI Z359.18-2017: Safety Requirements for Anchorage Connectors for Active Fall Protection Systems
Establishes requirements for the performance, design, testing, marking and instructions for the use of anchorage connectors in travel restraint, fall arrest, rescue, work position, rope access and suspended component/tie-back line systems

Future activity planned ANSI Z359 standard includes:
ANSI Z359.9: Personal Equipment for Protection Against Falls – Descending Devices
ANSI Z359.17: Safety Requirements for Horizontal Lifelines for Personal Fall Arrest Systems

KNOW?

1. What are the two basic types of fall protection?

- Fall restraint systems, like guardrails. These keep you from falling.
- Fall arrest systems, like safety nets. These break your fall.
- Never use any type of fall protection unless you have been trained.

2. If there are no guardrails, when and where should you tie off with a harness and lines?

- OSHA's main rule is that you should tie off when the drop is 7½ feet or more.
- There are exceptions to the 7½ foot rule for some trades, like roofers and ironworkers.

3. When and where should safety nets be used?

- Safety nets should be used if it is not practical to tie off.
- Safety nets should be placed no more than 30 feet below the work area.
- Nets should extend from 8 to 13 feet beyond the structure you're working on.
- No work can proceed unless the net is in place.

4. If you use fall protection equipment, what do you need to check?

- Be sure all equipment is safety-approved. Look for a label showing that it meets American National Standards Institute (ANSI) safety requirements.
- Be sure the equipment is installed and used according to the manufacturer's instructions.
- Be sure everything is in good condition. Remove from service any lanyard or drop line that has broken someone's fall, or is frayed or worn.
- Be sure you have the right equipment for the job. For example, safety belts are not allowed in fall arrest systems.

5. Where should you place the anchor end of a lanyard?

- Anchor it at a level no lower than your waist. That way, you limit any fall to a maximum of four feet.
- Anchor it to a substantial structural member, or to a securely rigged catenary or pendant line.
- Don't anchor it to a pipe.

6. What are some of the requirements for a drop line?

- A drop line (and its anchorage) must be able to support at least 5000 lbs.
- Drop lines should be made of synthetic fibers (except near heat or flame).
- If a drop line is subject to fraying or rock damage, it must have a wire rope center.

7. What if it's not practical to tie off or use a safety net?

- If the usual fall protection measures are impractical or create a greater hazard than they prevent, OSHA allows an employer to develop a fall protection plan.
- The plan allows work to be done in a designated area without the normal fall protection. Alternate measures must be used to reduce fall hazards in that area. These include special training for workers, and constant observation of the work by a safety monitor.
- The plan must be drawn up by a qualified person, and a copy of the plan must be available on the site.
- The areas without fall protection are called "controlled access zones." Only certain trained workers can enter these areas.

8. What are some of the requirements for controlled access zones?

- There should be a barrier (ropes, wires, or caution tape) to restrict access to the zone.
- Warning signs should be posted around the zone.
- In many cases, there must be a designated safety monitor for the zone, who is in communication with anyone working in the zone at all times.

European Standards Description

EN341 Personal Protective Equipment Against Falls from Heights - Descender Devices
EN353-1 Personal Protective Equipment Against Falls from Heights - Guided Type Fall Arresters including a Rigid Anchor Line
EN353-2 Personal Protective Equipment Against Falls from Heights - Guided Type Fall Arresters including a Flexible Anchor Line
EN 354: 2002 Personal Protective Equipment Against Falls from Heights - Retractable-Lanyard
EN 355: 2002 Personal Protective Equipment Against Falls from Heights - Retractable-Energy Absorbers
EN358 Personal Protective Equipment for Work Positioning and Prevention of Falls from Heights - Belts for Work Positioning and Restraint and Work Positioning Lanyards
EN 360: 1993 Personal Protective Equipment Against Falls from Heights - Retractable-Type Fall Arresters
EN 361: 2002 Personal Protective Equipment Against Falls from Heights - Retractable-Full Body Harnesses
EN 362: 2005 Personal Protective Equipment Against Falls from Heights - Connectors
EN 363: 2002 Personal Protective Equipment Against Falls from Heights - Fall Arrest Systems
EN 364: 1993 Personal Protective Equipment Against Falls from Heights - Test Methods
EN 365: 1993 Personal Protective Equipment Against Falls from Heights - General Requirements for Instructions for Use & Markings
EN517 Prefabricated Accessories for Roofing-roof Safety Hooks
EN565 Safety Requirements and Test Method
EN795 Protection Against Falls From Heights - Anchor Devices Requirements and Testing
EN813 Personal Protective Equipment for Prevention of Falls from Heights - Sit Harnesses
EN1497 Rescue Equipment, Rescue Harnesses
EN1498 Rescue Equipment, Rescue Loops
EN1868 Personal Protective Equipment Against Falls from Heights - List of Equivalent Terms

References:

Occupational Safety and Health Administration https://www.osha.gov
The National Institute for Occupational Safety and Health https://www.cdc.gov/niosh
American National Standards Institute https://www.ansi.org
The Safety Equipment Institute http://www.seinet.org
International Safety Equipment Association https://safetyequipment.org
European Committee for Standardization https://www.cen.eu
The European Union https://europa.eu