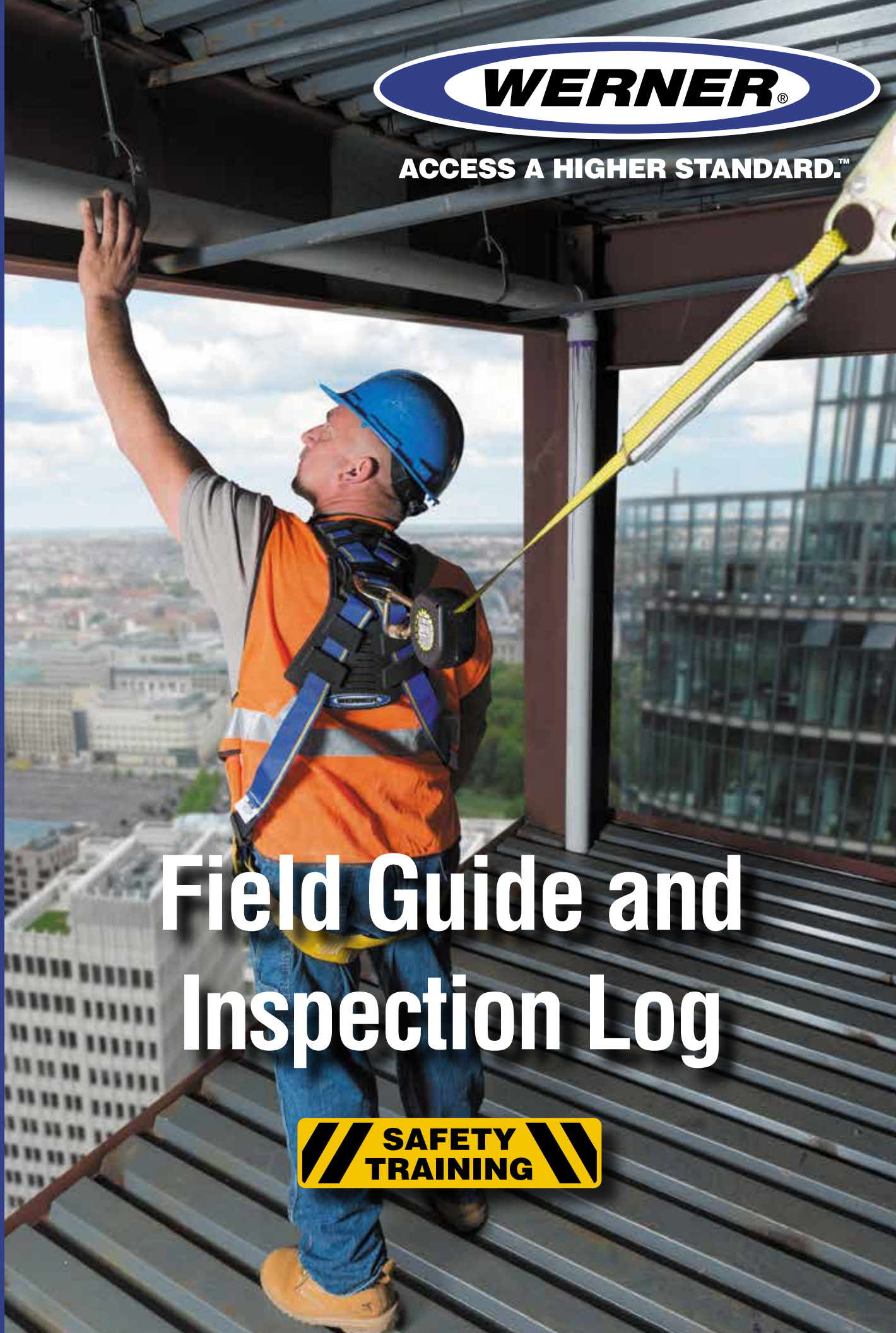
FALL PROTECTION

WERNER®

ACCESS A HIGHER STANDARD.™



Field Guide and Inspection Log

SAFETY TRAINING

What is Fall Protection?

SAFETY TRAINING

A series of reasonable steps taken to eliminate or control the injury effects of an unintentional fall while working at height or same level surface.

Why is it important?

Falls are the number one cause of fatalities in the construction industry.

100,000+ injuries occur as a result of falls each year.	
Struck by equipment or machinery	11%
Electrical	11%
Caught in equipment of machinery	11%
Falls	**34%**

How Long Does it Take to Fall?

Height (Feet)	Time (Seconds)
4	0.5
16	1.0
36	1.5
64	2.0
100	2.5
144	3.0
256	4.0

Statistics

53% of falls occurred at a height of 10-feet or less

Most victims were **not using** fall protection

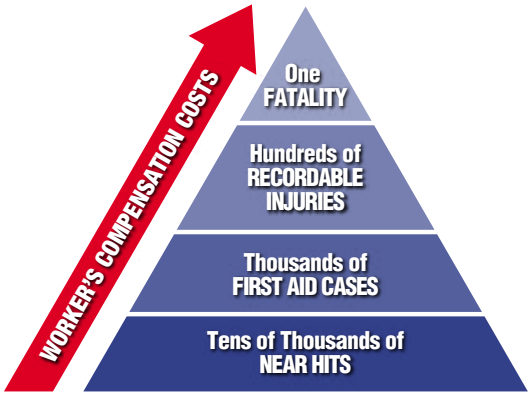
Most falls occur on **scaffolds or roofs**

- on a **Monday** than any other day
- in the **morning** than any other time of day

About **25%** of fall fatalities…

- were from heights of **11-20 feet**
- were from heights of **20-30 feet**

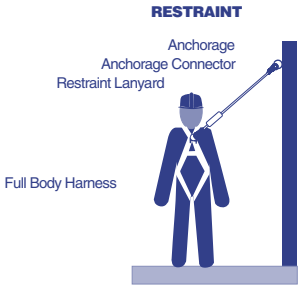
Employer's Costs



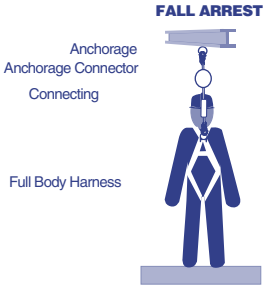
Increased Safety = Decreased claims and decreased worker's compensation

Fall Protection FAQ

Types of Fall Protection



- **Fall restraint:**
  Worker's center of gravity cannot fall over the unprotected edge in any direction.
  A – anchor = 2 x force exerted, or 3,000 lbs.
  B – body belt or full body harness = 3,000 lbs
  C - Lanyard/rope = 3,000 lbs



- **Personal fall arrest:**
  Basic system with Lanyard
  A – 5,000 lbs anchorage per person. (Certified anchor may be 3,600 lbs)
  B – full body harness
  C – 6 ft shock-absorbing lanyard
  Minimum clearance = 17.5 ft from anchor (6-ft lanyard, 3.5 ft shock absorber, 5 ft surface to dorsal D-ring, 1 ft harness stretch, 2 ft safety factor).
  System with Self-Retracting Lifeline (SRL)
  A – 5,000-lb anchorage per person (Engineered anchor may be 3,000 lbs)
  B – full-body harness
  C – web or cable self-retracting lifeline with or without shock absorbing pack
  Minimum clearance = non-shock-absorbing SRL = 5 ft; shock absorbing (read label) = 7.5 ft; account for pendulum effect

- **Work positioning:**
  A – 3,000 lbs anchorage per person
  B – belt of full body harness
  C – 5,000 lb lanyard
  Minimum free-fall = 2 ft

- **Rescue planning:**
  Prompt rescue plan in place prior to beginning work can decrease the response time to a fall and therefore lower the danger of suspension trauma to the victim

FAQs

- **Safety monitor:** (Low slope) Roofing work only, roof > 50 ft requires warning line at 6 ft, monitor to edge.

- **Guardrails, parapets:**
  42 ± 3 in. high; withstand 200 lb at top rail; guardrails must have mid-rail and toeboards if tools, material can fall to lower level
  ***Materials:** Constructed of minimum 500-lb strength material (no barrier tape). Pipe 1½ in. minimum; Wood 2 x 4 in. minimum; two cables minimum ¼-in. diameter, top cable flagged at 6-ft intervals, no deflection under pressure below 39 in.*
  Mid rail (rated 150), toe board (rated 50)

- **Skylights:** Every skylight floor opening and hole shall be guarded by a standard skylight screen or a fixed standard railing on all exposed sides.

- **Warning line systems:** Low slope roofs only.
  General industry—"Designated Area"—minimum 6 ft from unprotected edge.
  Construction—"Nonconforming Guardrail"—minimum 15 ft from unprotected edge.
  System requirements—uprights withstand 16-lb force at 30-in. height; line to be rope, wire, chain of 500-lb tensile strength, flagged at 6-ft intervals; height 34-39 in.; line attached to uprights—no line slip.

- **Horizontal lifeline:** Horizontal lifeline: 5000 lbs. per person attached, unless designed by qualified person with a safety factor of 2.

- **Vertical lifeline:** 5,000-lb anchor (only one worker per lifeline) for clearance add 1 ft for rope grab to activate, minimum clearance = 7.5 ft + lanyard length.

- **Ladder climbing devices:** Maximum 9-in. connector between the ladder safety device and a front (chest) D-ring, engineered support. Must limit fall distance to 2 ft or less.

The ABC's and DE of Fall Protection

Anchorage

The secure point that your fall protection is connected to

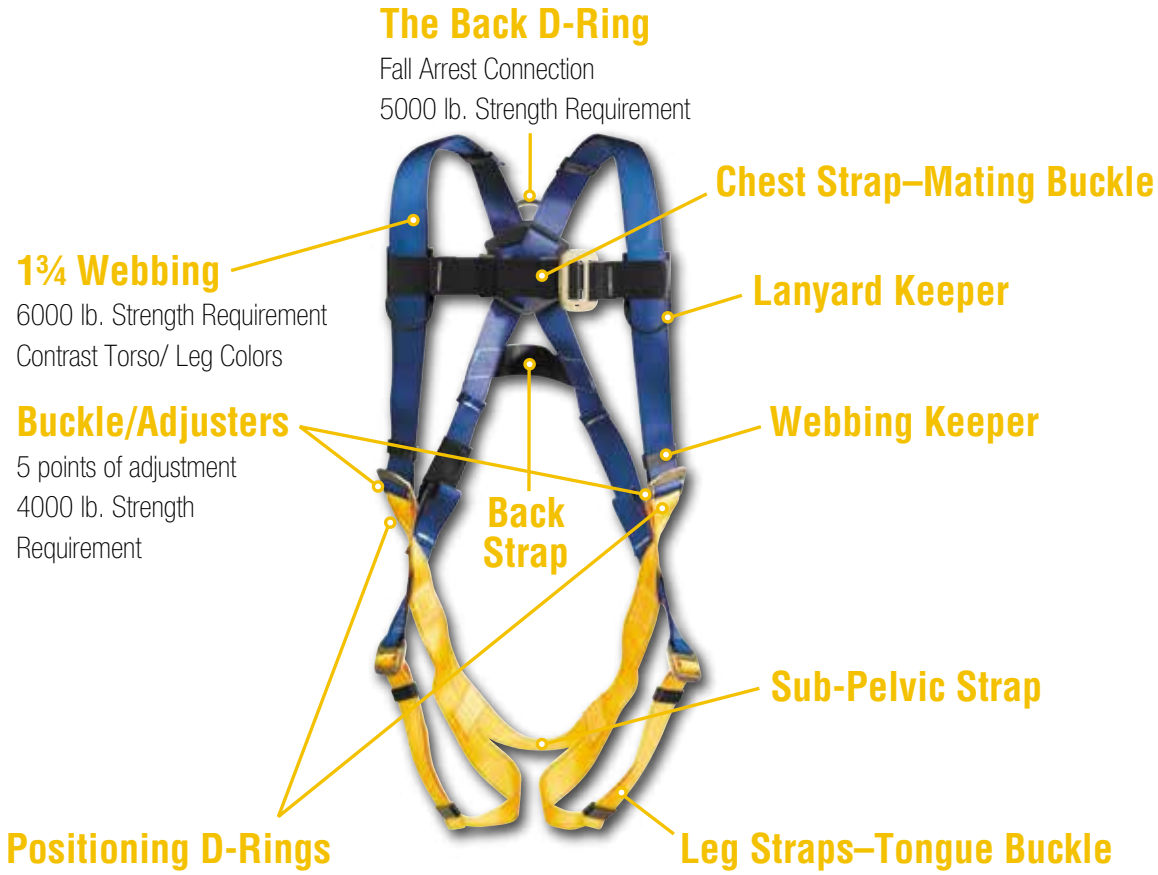
- Must be able to support at least 5,000 lbs. for each worker who will be attached
- Always try to tie off above your head to reduce the distance of a fall and to help avoid the pendulum or superman effect
- Always try to tie off as close as possible to where you are working to limit your fall distance
- Insure that there is adequate fall arrest clearance

Body Holding Device

What the worker wears

- Full Body harnesses are mandatory for fall arrest and attach to a shock absorbing lanyard or self-retracting lifeline. The maximum allowable force to be placed on a body as a result of a fall is 1,800 lbs

Basic Anatomy of a Harness



The ABC's and DE of Fall Protection

Connecting Devices

To connect a worker's body harness to the anchor point

Three Options:

Self-Retracting Lifelines (SRL)

- Extends and retracts automatically during typical use, but a brake activates in the event of a fall
- Reacts immediately to reduce fall distance
- The shorter the fall, the less impact there is on the body
- Allows more freedom of movement on jobsite
- Available in web strapping or cable

Self-Retracting Classifications

Class A *Maximum arresting distance up to 24 inches. Average arresting force not to exceed 1350 pounds*

Class B *Maximum arresting distance up to 54 inches. Average arresting force not to exceed 900 pounds*

Lanyard

- Shock absorbing lanyards when activated, can extend an additional 3.5'
- Shock packs are designed for controlled tearing action to reduce fall arrest force
- Never use a lanyard that has a knot tied in it
- Do not connect one lanyard to another for additional length
- The shock pack end of the lanyard should always attach to the D-ring of the harness

Rope & Rope Grab

- Easily move up and down vertical lifelines
- Provide continuous fall protection
- Some models offer complete hands-free operation for increased productivity
- Lock quickly in the event of a fall
- Can be rigged for fall arrest and fall restraint

Descent / Rescue

An appropriate rescue plan needs to be in place, falls do happen

- Remain calm
- Initiate pre-planned rescue procedures
- Determine if medical attention is warranted

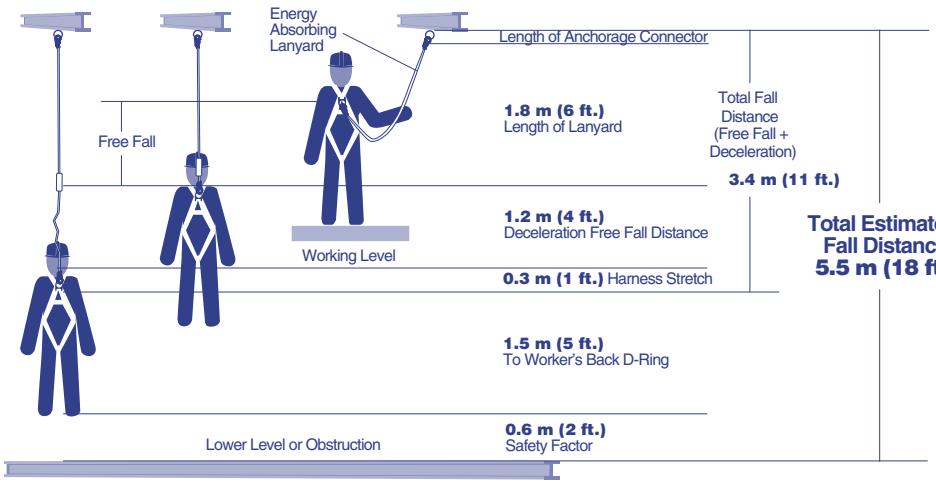
Education

All employees exposed to fall hazards must receive training by a competent person that addresses:

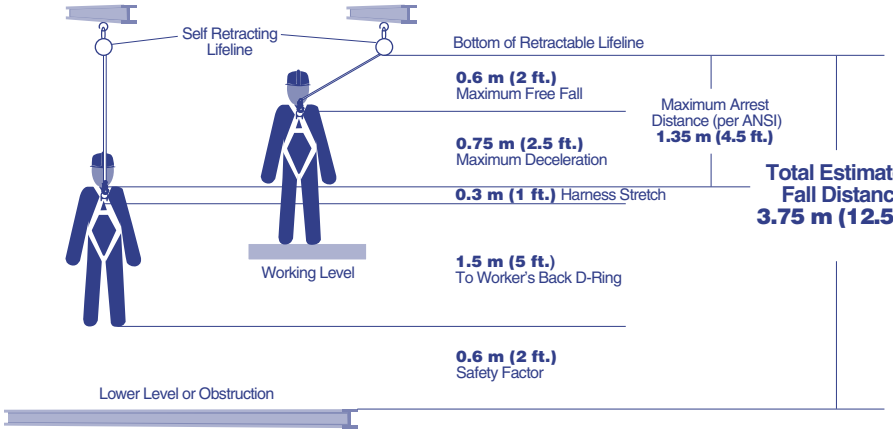
- The nature of fall hazards in the work area
- Procedures for erecting, maintaining, disassembling and inspecting fall arrest equipment
- Use and operation of fall arrest equipment

Calculating Fall Height

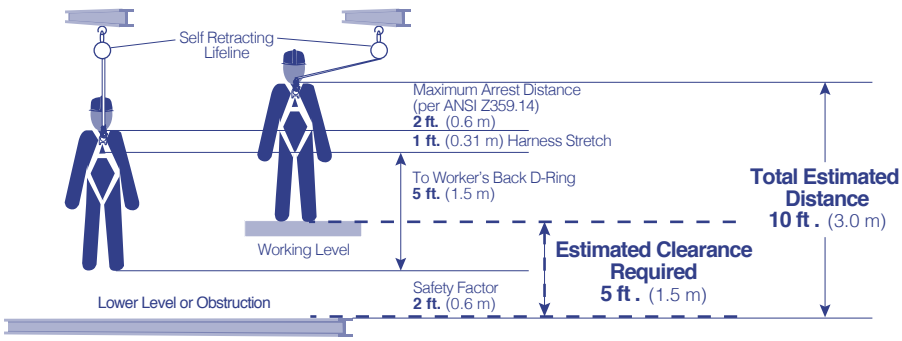
Always calculate your fall distance before selecting your fall protection equipment



Fall Distance for Shock Absorbing Lanyard



Fall Protection Distance for Class B Self-Retracting Lifeline



Fall Distance for Class A Self-Retracting Lifeline

Choosing and Fitting the Right Harness

Harness Adjustment and Use

Adjustment

Harness closures and keepers ensure proper harness fit. which is of fundamental importance for safe use. Chest straps should fit across the middle of the sternum. not higher or lower. leg straps should be snug. Adjusting the leg straps too loosely will cause injuries in the case of a fall. Correct harness adjustments will place the sub-pelvic strap snugly below the buttocks, the position necessary both to absorb energy in the case of a fall, but also to provide somerelief from suspension trauma after a fall has occured. correct sub-pelvic position is the result of the correct combination of all the harness adjustments.

Tongue Buckle

I. The most common leg closure type with function similar to the belt holding your pants. Ensure that straps are not twisted.

II. Put open end of strap with grommets through the buckle, pull until snug on the leg and engage the tongue into a grommet.

III. User MUST ensure that webbing ends are tucked into the web keepers to keep this type of buckle connected while in use. Failure to properly secure the leg strap ends in the keepers could result in unintentional disengagement.

Mating/Pass-Through Buckle

I. Ensure straps are not twisted and the loose end is on the outside.

II. Pass the buckle with the center bar through the open buckle. The slot will assist. Tug to ensure buckle is in place.

III. Pull the webbing to tighten the strap so there is a snug fit.

IV. User MUST slide plastic keepers to strap end or find other location to tuck end to ensure there are no loose and dangling ends.

Quick Connect

I. Ensure straps are not twisted and the loose webbing end is on the outside.

II. Pull webbing through adjuster to loosen or tighten until snug.

III. Insert male connector into buckle, tug straps to verify firmly engaged.

IV. User MUST slide plastic keepers to strap end or find other location to tuck end to ensure there are no loose and dangling ends.

Torso Length Adjuster

I. The torso adjuster ensures the overall fit of the harness. Check to see that the sub-pelvic strap is situated below the buttocks. If it is too high the torso adjuster should be loosened to lower the sub-pelvic strap. If it is too low the torso adjuster can be tightened to raise the sub-pelvic strap.

II. To shorten or lengthen the torso webbing push the top of the torso adjuster down so it is horizontal.

III. Pull up either the inside web to lengthen, or pull up the outside web to shorten the torso length.

For BaseWear harnesses, separate the small mating buckle from the larger pass-through to allow web to flow through the torso adjustment.

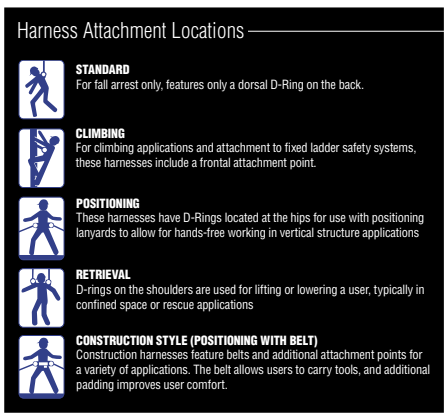
IV. When at the right length, slide the lower plastic keeper down near the torso adjuster and the upper plastic keeper up so the webbing end is not dangling.

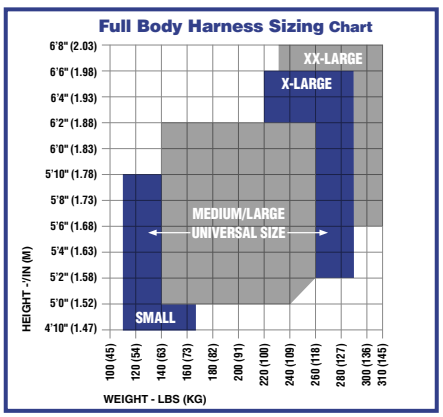
Webbing Keepers

All webbing ends are equipped with plastic webbing keepers, which are important to the safe use of the harness. Sliding one keeper close to the buckles ensures the buckle can't be accidently opened or moved while in use. Sliding the other close to the end of the strap keeps it from being loose and dangling and a possible snag hazard.

Joining belts to harnesses

Some Werner harnesses made without integrated belts have loops through which accessory belts can be looped, joining the accessory to the harness. The loops are found on the inside of the harness webbing, below the impact indicators.





Inspection & Maintenance

Inspections should be recorded in a centralized logbook that includes the serial number, date of purchase, dates of inspection, service work performed and authorized signatures. Werner does not specify a pre-determined shelf life for fall protection products. Product life expectancy will be determined by routine inspection, conducted before each use by the user and conducted at least semi-annually by a competent person per OSHA requirements. This process can begin with the date of first use of the product when it goes into service.

Always refer to the manufacturer's instruction for details on storage and maintenance

A. Examine buckles and D ring for wear or corrosion
B. Examine webbing for excessive fraying, cuts or burns
C. Examine stitching for loose or torn threads
D. Examine grommets for looseness and deformities

WebAlert inspectable polyester webbing makes wear and damage visible and obvious making inspection easier.

Self-Retracting Lifeline

- Inspect the units housing for damaged parts
- Test the lifeline retraction by pulling it out several feet and allowing it to retract slowly
- Test the breaking mechanism by applying a sharp steady pull downward
- Inspect the snap hook and anchorage connection for damage

Lanyard

- Examine webbing for excessive fraying, cuts or burns
- Examine shock packs for signs of elongation
- Examine snap hooks for proper action
- Examine lifelines for frays, cuts, and tight braid

Anchor

- Examine beam trollies for smoothly moving parts, distortion or corrosion
- Examine anchor for operation and broken components
- Examine cross-arm straps for excessive fraying, cuts and burns
- Examine rings for deformation or corrosion

Rope/Rope Grab

- Examine rope grabs for cam wear, pin wear, distortion or corrosion
- Examine rope for frayed ends, excessive wear, broken components, cuts and burns

Hook/Carabiner

- Inspect for cracks, burrs or deformities.
- Inspect for corrosion, which effects the operation and/or strength
- Make sure certain marking(s) are legible

THE WERNER PRODUCT PROMISE

1

Must offer **inspectability**
to indicate wear or damage
prior to use

2

Must be **adjustable** to
accommodate most body frames
to ensure **comfort** and
productivity
with or without tools

3

Must **perform safely**
in the event of a fall

4

Must be able to
be **manipulated**
in a post-fall condition
to eliminate pain,
pressure points
and improve
ability to assist
in a rescue

Chest Strap Adjustment

DO's and DONT's of Ladder Climbing

Smart ladder users are safe climbers

Ladders are such common everyday tools that many workers take them for granted. As you read the safety guidelines, you may say: "I know that, that's just plain common sense." You can avoid a ladder injury if you think before you act and use ladders correctly. Your work will be easier and more productive, too. Ladder related injuries are preventable, if you think before you climb.

THE "RIGHT" WAY TO USE A LADDER

RIGHT
Properly set-up and use the ladder in accordance with safety instructions and warnings. Wear shoes with non-slip soles.

RIGHT
Center body on the ladder and keep belt buckle between the rails while maintaining a firm grip.

RIGHT
Haul materials with a line rather than carry them up an extension ladder. Use extra caution when carrying anything on a ladder.

RIGHT
Climb facing the ladder, move one step at a time and firmly set one foot before moving the other.

RIGHT
Have another person help with a heavy ladder. Have another person hold the ladder while you are working on it.

RIGHT
Move materials with extreme caution so as not to lose balance or tip the ladder.

THE "WRONG" WAY TO USE A LADDER

WRONG
DON'T stand above the second step from the top of a stepladder or the fourth rung from the top of an extension ladder.

WRONG
DON'T climb a closed stepladder. DON'T climb on the back of a stepladder. DON'T stand or sit on a stepladder top or pail shelf.

WRONG
DON'T climb a ladder if you are not physically and mentally up to the task.

WRONG
DON'T place the base of an extension ladder too close to or too far away from the building.

WRONG
DON'T over-reach, lean to one side or try to move a ladder while on it. Climb down and then reposition the ladder closer to your work.

WRONG
DON'T exceed the maximum load capacity or duty rating of a ladder. DON'T permit more than one person on a single-sided stepladder or an extension ladder.

If you have any questions please email us at ***EndUserSpecialist@wernerco.com***

SAFETY TRAINING | WERNER® ACCESS A HIGHER STANDARD™ | **www.wernerco.com/us/**

Fall Protection Standards

Height where fall protection is required:

General Industry
4 Feet

Construction
6 Feet

Scaffolding
10 Feet

Steel Erection
15 Feet

OSHA Federal Standard

OSHA 1926.501 (b) – Unprotected Sides and Edges

(1) Each employee on a walking/working surface (horizontal and vertical surface) with an unprotected side or edge which is 6 feet or more above a lower level shall be protected from falling by the use of guardrail systems, safety net systems, or personal fall arrest systems.

OSHA 1926.501 – Duty to Have Fall Protection

(1) This section sets forth requirements for employers to provide fall protection systems. All fall protection required by this section shall conform to the criteria set forth in 1926.502 of this subpart..

OSHA 1926.502 – Fall Protection System Criteria and Practices

(a)(1) Fall Protection systems required by this part shall comply with the applicable provisions of the section. (d)(15) Anchorages used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspends platforms and capable of supporting at least 5,000 pounds per employee attached. (e)(1) Positioning devices shall be rigged such that an employee cannot free fall more than 2 feet.

OSHA 1926.503 (a) – Training Requirements

(1) The employer shall provide a training program for each employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall training each employee in the procedures to be followed in order to minimize these hazards.

OSHA 1910.66 App C

(ii) Limit maximum arresting force on an employee to 1,800 pounds when used with a body harness.

ANSI Federal Standard

ANSI/ASSE Z359.0-2012 Definitions and Nomenclature Used For Fall Protection and Fall Arrest

ANSI/ASSE Z359.1-2007 Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

ANSI/ASSE Z359.2-2007 Minimum Requirements for a Comprehensive Managed Fall Protection Program

ANSI/ASSE Z359.3-2007 Safety Requirements for Positioning and Travel Restraint Systems

ANSI/ASSE Z359.4-2013 Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components

ANSI/ASSE Z359.6-2009 Specifications and Design Requirements for Active Fall Protection Systems

ANSI/ASSE Z359.7-2011 Qualification and Verification Testing of Fall Protection Products

ANSI/ASSE Z359.11-2014 Safety Requirements for Full Body Harnesses

ANSI/ASSE Z359.12-2009 Connecting Components for Personal Fall Arrest Systems

ANSI/ASSE Z359.13-2013 Personal Energy Absorbers and Energy Absorbing Lanyards

ANSI/ASSE Z359.14-2014 Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems

ANSI/ASSE Z359.15-2014 Safety Requirements for Single Anchor Lifelines and Fall Arresters for Personal Fall Arrest and Rescue Systems

To view all OSHA and ANSI standards, please refer to https://www.osha.gov/ and https://www.ansi.org/

Inspection Log - Anchor

Serial Number	Date in Service	Webbing	Cable	Stitching	Hardware	Mechanisms	Labels	Date of Inspection	Inspector Name
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Inspection Log - Body Harness

Serial Number	Date in Service	Impact Indicators	Webbing	Stitching	Hardware	Grommets	Padding	Labels	Date of Inspection	Inspector Name
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Notes

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