



Toolbox Talks

Fall Protection Part 1



Falls From Any Height

Who needs fall protection equipment? If you said workers building bridges or cleaning office tower windows, you would be right. But what about all the workers who work at lesser heights, just a few feet off the ground? They should also be protected from falls, which can be every bit as fatal.

The situations to be considered are:

- **Permanent** - such as a fixed ladder on a process tank or mezzanine floor where materials are stored.
- **Temporary** - such as a scaffold or the top of a loaded truck.

The law in many areas says a worker must be protected if he is exposed to a fall hazard of 10 feet or 3 meters. But a study has indicated 10% of fatal falls occur at heights lower than that. Imagine someone falling four feet from a loading dock & striking his head on the pavement. Such an incident could very well be fatal.

Fall protection equipment is broadly divided into two categories:

- **Fall prevention equipment**
- **Fall arrest equipment**

It is important for you to understand the difference between a fall arrest system & a fall restraint system. These are most commonly used in the construction industry but may apply to many other situations where employees must work at heights.

FALL RESTRAINT: A fall restraint system consists of the equipment used to keep an employee from *reaching a fall point*, such as the edge of a roof or the edge of an elevated working surface. The most commonly utilized fall restraint system is a standard guardrail. A tie off system that "restrains" the employee from falling off an elevated working surface is another type of fall restraint. Guardrails & tie off systems aren't the only fall restraints used to prevent falls, coverings at floor openings & safety-interlock gates on elevated platforms are designed to prevent falls as well. A body harness worn by the worker can also be used to tether him to an area away from the fall hazard.

FALL ARREST: According to the definition in the Federal OSHA standard, a personal fall arrest system means a system used to *arrest* an employee in a fall from a working level; a system designed to save the worker if he falls. It consists of an anchor point, connectors, a body belt or body harness, & may include a lanyard, deceleration device, lifeline, or suitable combinations of these. A net slung below the work area may also be used to protect an employee. The entire system must be capable of withstanding the tremendous impact forces involved in *stopping* or arresting the fall. The forces increase with the fall distance due to acceleration (**a person without protection will free fall 4 feet in a 1/2 second & 16 feet in 1 second!**).

5 Key Requirements For Fall Arrest Systems:

- 1) Body belts may not be used after 12/31/97. In the meantime, body belts can only be used if the system *limits* the maximum arresting force on an employee to 900 pounds. A maximum arresting force of 1800 pounds is allowed when a body harness is utilized. In some jurisdictions, such as Washington State, belts are currently not allowed for fall arrest purposes.
- 2) The system must be rigged so that an employee can neither free-fall more than 6 feet nor contact a lower level. After the free-fall distance, the deceleration or shock absorbing component of the system must bring an employee to a complete stop within 3.5 additional feet.
- 3) The anchorage point must be capable of supporting at least 5000 pounds per employee. Most standard guardrail systems are not adequate anchorage points, because they are not built to withstand the impact forces generated by a fall.

4) The system's D-ring attachment point for body harnesses shall be in the center of the employee's back near shoulder level.

5) The system components must be inspected for damage & deterioration prior to each use. All components subjected to the impact loading forces of a free-fall must be immediately removed from service.

Unsafe fall arrest equipment contributed to the fatal 150 foot fall of an Oregon construction worker recently. Burn holes in the worker's fall arrest straps & a faulty self-retracting lanyard were blamed for the failure. These could have been discovered if adequate equipment inspections had been conducted.

Would you gamble with your life? A lot of people do just that when they fail to inspect their personal fall arrest equipment daily. They gamble that the equipment will save their life if they fall. Wearing fall arrest equipment without inspecting it, provides a false sense of security.

This equipment is subject to tremendous loads during a fall, so unless each component is thoroughly inspected & properly used, it may not save your life. Always follow manufacturers' recommendations when inspecting your equipment. Here are several things to look for.

Belts & Body Harnesses:

- Thoroughly inspect all nylon webbing on belt/body harnesses for frayed edges, broken fibers, burn marks, deterioration, or other visible signs of damage. Do the same if the belt or body harness is constructed of other materials. Stitching should be intact & not torn or loose. The belt or harness should be somewhat "soft" & flexible & not stiff from dirt or contaminants.
- Check to see that buckles & "D" rings are not distorted or damaged. Look closely at all components for stress cracks, deformity, gouging, corrosion, & sharp edges. Inspect connection points where the buckle or "D" ring is attached to the belt or body harness. Insure that no stitching is pulled & that the buckle or "D" ring is securely attached.
- Inspect all rivets & grommets to be certain they are not deformed & are securely fastened to the belt or body harness & cannot be pulled loose. If you find any of these conditions during the inspection, do not use the equipment.

Lanyards:

- Completely check the entire length of the lanyard looking for cuts, fraying, deterioration, knots, kinks, burns, or visible signs of damage. Stitching should be intact & not torn or loose. Spliced ends must also be carefully examined for damage or deterioration. Check to see that the lanyard is somewhat "soft" & not stiff from dirt or contaminants.
- If using a "shock absorber" type of lanyard, look for the "warning tag" which indicates that the lanyard has been exposed to a fall.
- Snap hooks & eyes should not be distorted or bent. Inspect them for cracks, sharp edges, gouges, or corrosion. Check to be sure the locking mechanism is operating properly & that there is no binding of the mechanism.
- If using a self retracting lanyard (SRL), you must inspect the body of the mechanism for flaws to assure that all nuts, screws, & rivets are installed & tight. Also check crimped ends or stitching for damage. Inspect the entire length of the SRL for any visible signs of defects. Test the locking mechanism by pulling sharply on the cable end to be sure it locks immediately & firmly.

If you like to gamble at the card table--okay. But don't do it with your life!





Toolbox Talks

Fall Protection Part 2



Head Injuries: After the Fall

You can work for years & hardly get a scratch, then one day a fall can turn your life around. Fall injuries may cause abrasions, fractures, & dislocations. However, one of the most *serious* result of a fall, other than death, can be a head injury. How this will affect you depends upon which part of your brain has been injured as a result of a fall or impact. Broken bones usually heal, but head injuries can result in life long serious problems, such as:

- Changes in personality, including things like increased anxiety, depression, or anger.
- Difficulties with eye & hand coordination & inability to handle tools or play sports well.
- Defects in vision & visual illusions.
- Short-term memory loss or interference with long term memory.
- Increased aggressive behavior.
- Difficulty in distinguishing left from right.
- Changes in social behavior



How You Fall Often Determines Your Specific Injury:

From the time a worker loses a secure grip, footing, or balance, until impact, several factors influence what part of the body will be injured & how severe the damage will be.

These factors are:

- Distance of the fall - *momentum & velocity affect the impact on your body.*
- The angle of the body at impact - *we're not like cats landing on all fours.*
- The obstacles the body strikes - *what if you fall on railings, steps, or vehicles?*
- The surface eventually landed on - *will it be a pile of hay or broken concrete & re-bar?*

What You Can Do: THINK!

- Help remind your co-workers to play it safe & avoid taking risks.
- Report unsafe conditions to the nearest supervisor.
- Make it a habit to work safely, regardless of time pressures & productivity goals.
- Practice caution at home - accidents & head injuries from falls happen more often off the job than at work.
- Know how to use fall protection & fall restraint equipment. Never say, "I don't need to fool around with that stuff, I'll only be up there a minute."

Stay Alert! Head injuries can have devastating consequences that may impact your life forever.



All information found at www.safetytoolboxtalks.com & www.toolboxtopics.com

Forklift Safety- Elevating Personnel Safely

I finally found an article on how to elevate co-workers safely using a forklift...not to say that OSHA would recommend this as a regular use of a forklift.

Forklifts (or powered industrial trucks) were never intended by manufacturers as a means of lifting personnel to perform job tasks at heights. *Through the years, however, it became apparent, as evidenced by the number of injuries occurring, that this was, indeed, a method being employed for getting to light fixtures, top storage racks, elevated motors, & other items too high to reach from the floor or from a ladder.* It was viewed as a quicker way to accomplish tasks. Instead of going to the storage area & retrieving a ladder, riding the forks to the upper level would take less time--that is, if you didn't count the time you were off work or in the hospital recovering from injuries because you fell.

In an attempt to reduce this exposure, regulatory groups, manufacturers, & other interested parties decided that developing a "safe method" of elevating personnel would be the best course of action.

Presently, forklifts may be used to lift personnel *only* if the following guidelines are followed:

- A work platform equipped with standard guardrails or equivalent means & firmly secured to the lifting carriage or forks must be used.
- The hydraulic system must be so designed that the lift mechanism will not drop faster than 135 feet per minute in the event of a failure in any part of the system.
- An operator must attend the lift equipment while workers are on the platform.
- The operator must be in the normal operating position while raising or lowering the platform.
- The vehicle must not travel from point to point with the work platform elevated at a height greater than 4 feet while workers are on the platform. (When necessary, at heights greater than 4 feet, inching is permitted provided it is done at a very slow speed.)
- The area between workers on the platform & the mast must be guarded to prevent contact with chains or other shear points.
- A safe & adequate access/egress must be provided for workers entering & exiting the work platform.

