Appendix B: Personal Fall Arrest Systems

Anchorage

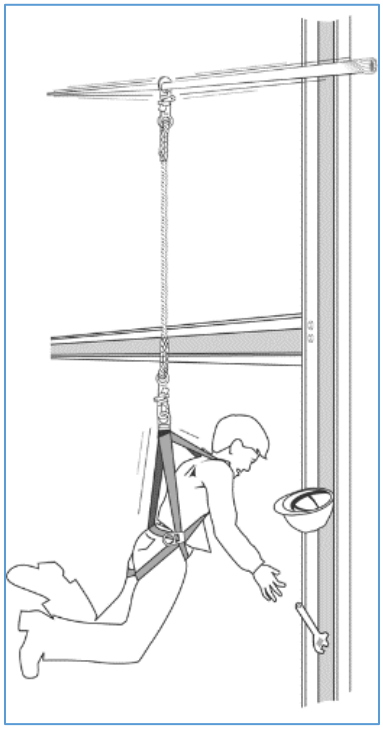
An **anchorage point** is a secure point of attachment for lifelines, lanyards, deceleration devices, or self retracting lanyards.

The anchorage point can be a single attachment to a substantial structure above the surface from which the employee is working, or it can be one to two attachments used to anchor a vertical or horizontal lifeline.

Remember - The anchorage point for fall arrest systems must be capable of supporting **5000 lb.** for each worker or used as part of a complete PFAS which maintains a safety factor of at least two and under the supervision of a qualified person.

A **qualified person** is defined as one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his/her ability to solve or resolve problems relating to the subject matter, the work, or the project.

Full Body Harness



The impact of the fall is imposed on the trunk of the body which distributes the maximum arresting force (MAF) to a larger area than the safety belt, reducing the potential for damage to the body.

OSHA allows a maximum of **1800 lbs.** MAF when using a full body harness. OSHA prohibits the use of a safety belt for personal fall arrest.

The attachment point (D-Ring) must be located in the center of the wearer's back near shoulder level.

Connector

Connector means a device which is used to connect parts of the PFAS and positioning devices together. Connectors include everything between your harness and anchor.

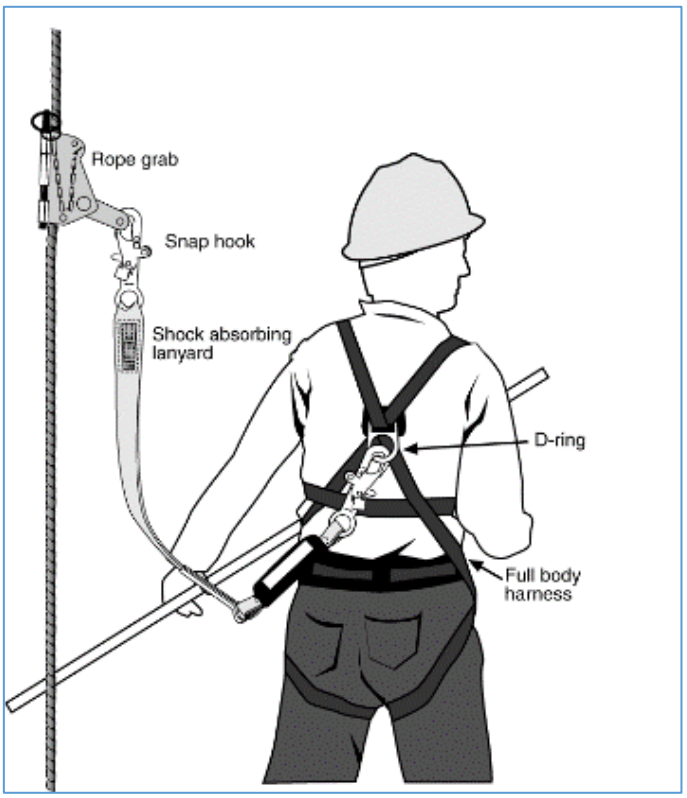
Connectors include lanyards, snaphooks, carabiners, D-Rings, lifelines, and deceleration devices.

Lanyards are devices which connect the worker to the anchorage point

- Used to connect the two front D-Rings to the anchorage point for positioning
- Secured at one end to the worker's harness D-Ring and the other end to the anchorage point for fall arrest
- Lanyards must be made from synthetic material and have a minimum breaking strength of 5000 lbs.
- Only locking-type *snaphooks* and *carabiners* can be used
- The following connections are prohibited (unless the locking-type snaphook is designed for it):
  - engaged directly to webbing, rope, or wire rope
  - engaged to another snaphook
  - engaged to a D-Ring to which another snaphook/carabiner is attached
  - engaged to a horizontal lifeline
  - engaged to any object which is incompatibly shaped or dimensioned such that unintentional disengagement can occur (roll out)

Deceleration Device

Deceleration device means any mechanism which dissipates a substantial amount of energy imposed on an employee during fall arrest. Deceleration devices include rope grabs, rip-stitch/tearing lanyards, and self-retractable lanyards.



Remember - maximum arresting forces on an employee during a fall arrest must be less than 1800 lbs.

Lifelines are flexible lines which connect to an anchorage point at one end to hang vertically, or at both ends to stretch horizontally.

Vertical lifelines are designed to be used by only one person and with a rope grab.

Horizontal lifelines can be used only as part of a complete PFAS which maintains a safety factor of at least two, **and** when designed, installed, and used under the supervision of a qualified person.

Personal Fall Arrest Systems - The Fall[1]

A free fall is defined as the act of falling before a personal fall arrest system begins to apply force to arrest the fall. When a fall is experienced using a PFAS, the fall is referred to as a free fall up until the system starts to arrest the fall to stop the fall.

OSHA regulations allow no more than a **six** foot free fall distance.

When the fall does come to a complete stop, the action is referred to as the fall arrest. Tremendous force is imposed on the body during the fall arrest. This force imposed during the arrest is known as the ***arrest force***. Forces imposed in a fall greatly depend on the type of system you are using and the free fall distance.

For example: A 220 lb. worker:

Free falling 2 ft. using a wire rope lanyard (without a deceleration device) = approx. 3917 lbs.

Free falling 4 ft. using a nylon rope lanyard (without a deceleration device) = approx. 2140 lbs.

Free falling 6 ft. using a synthetic web lanyard (with a deceleration device) = <900 lbs.

OSHA sets limits on the Maximum Arrest Force (MAF). The law prohibits the use of a safety belt for fall arrest and allows a maximum of **1800 lbs.** when using a full body harness. **ARREST FORCE = the force imposed when the stop occurs.**

[1] Oregon OSHA Fall Protection Workshop Materials, 2004