Fall Protection
CalCIMA Spring Thaw 2019

Jack Donnelly
Los Angeles, CA

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#PowerOfOne
3M Fall Protection

DBI-SALA & Protecta Brands

Field support:

Los Angeles: Jack Donnelly; jdonnelly@mmm.com; (310) 422-7524
San Diego: Mike Murphy; mmurphy@mmm.com; (949) 698-8861
Bay Area: Chris Vanover; cvanover@mmm.com; (714) 307-3638
Northern CA: Marc Ipsen; maipsen@mmm.com; (209) 351-8093

Orange County Training Center- Tustin, CA
- Fall Protection, Confined Space, Rescue courses
Active vs. Passive Fall Protection

Active

- Fall Arrest
- Fall Restraint
- Work Positioning

Passive

- Guardrails
- Handrails
- Netting
- Hole Covers
- Warning Signs
ABCs of Active Fall Protection

A- Anchorage System

B- Body Support (Harness)

C- Connecting Devices

D- Descent & Rescue/ Dropped Objects

E- Education
Inspections

Frequency

- Prior to each use by Authorized Person
- Twice annually by Competent Person (documented)

Inspection Components:

- Webbing
- Stitching
- Labels
- Hardware (D-Rings, metallic components, plastic components, etc.)
- Snaphooks & Carabiners
- and more…
Anchorage System

Definition: secure point of attachment for lifelines, lanyards, or deceleration devices

Non-Certified Anchorage strength requirements
- 5000 lbs. Fall Arrest
- 3000 lbs. Work Positioning
- 1000 lbs. Restraint

Certified (Engineered) Anchorage
- 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 times maximum anticipated force
Body Support

Harnesses distribute fall forces over the upper thighs, pelvis, chest, and shoulders.

Provides connection point on the worker for the personal fall protection system.

Desirable traits:
- Fast and simple to adjust, put on, and take off
- OSHA and ANSI compliant
- Comfortable
D-Rings

Dorsal D-Ring: Only acceptable D-Ring for fall arrest

Chest D-Ring: Ladder Climbing

Hip D-Rings: Working Positioning & Restraint

Shoulder D-Rings: Retrieval & Vertical Entry

*One snaphook connection per D-Ring
Harness Fit & Sizing

Should fit snugly; a loose harness may cause:

- Bodily injury
- Choking
- Potential to fall out of harness

Weight capacity varies by harness

Leg straps: should be able to slide flat hand underneath, but not a fist

Dorsal D-ring: centered in between shoulder blades

DBI-SALA & Protecta harnesses: One size up
Harness Fit & Sizing
Connecting Devices

Connect a worker’s harness to the anchorage system

Types

Lanyards
- Shock Absorbing Lanyard
- Fall Restraint Lanyard
- Positioning Lanyard

Self-retracting lifelines (SRLs)
- Personal SRL
- Traditional SRL/SRD
Connector Components

Cable/Web Line

Snaphooks & Carabiners
- 5000 lb. breaking strength
- Dual action
- Self-closing and self-locking
- Gate strength: 3600 lbs.

Energy Absorbers
- Max. Weight Capacity
- Max. Free Fall
- Max Arresting Force
Fall Arrest Lanyards

Types

- Single Leg
- Twin Leg

Shock Absorber

- External
- Internal

Avg. Length: 6 ft

- 18 ft. fall clearance required
Self-Retracting Lifelines

Traditional
- Typically mounted directly overhead
- Must be aware of swing fall hazards; swing fall occurs when anchorage is not located directly above worker’s head

Personal
- Typically connected directly to harness
  - Single leg
  - Twin leg
Fall Clearance Requirements

Clearance is measured from anchor point to lower level

Vary based on type of connector

SRLs can require less fall clearance than fall arrest lanyards

Variables affecting fall clearance:
- anchor point height
- lanyard length
- deceleration distance
- height of suspended worker
- safety factor
**Fall Clearance Requirements**

6 ft. Fall Arrest Lanyard, anchored overhead: 17.5 ft. Clearance required

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**Figure 2 – Fall Clearance**

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<table>
<thead>
<tr>
<th>RD</th>
<th>Required Fall Clearance Distance</th>
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</thead>
<tbody>
<tr>
<td>LL</td>
<td>Length of Lanyard (Specified on labeling)</td>
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</tbody>
</table>
| DD  | Deployment Distance = 4 ft (1.2 m) except:
|     | * for ANSI/OSHA Lanyards with Free Fall greater than 6 ft (1.8 m) up to 12 ft (3.7 m), or user weights greater than 310 lbs (141 kg) up to 420 lbs (191 kg), add 1 ft (0.3 m): DD = 5 ft (1.5 m) |
| HH  | Height of Suspended Worker |
| C   | Safety Factor = 1.5 ft (0.5 m) |
|     | (Factors in D-Ring Slide and Harness Stretch) |

**Example:** Assuming a 6 ft (1.8 m) tall user with a typical 6 ft (1.8 m) lanyard with 6 ft (1.8 m) Free Fall, Fall Clearance calculation would be as follows:

\[ RD = LL + DD + HH + C \]
\[ RD = 6 + 4 + 6 + 1.5 = 17.5 \text{ ft} \]
\[ RD = 1.8 + 1.2 + 1.8 + 0.5 = 5.3 \text{ m} \]```
**Fall Clearance Requirements**

Nano-Lok SRL, anchored overhead: 4 ft. fall clearance required
Leading Edge

Leading Edge: unprotected border, perimeter, or opening where a fall hazard exists

Unique risks:
- Increased fall distance
- Unpredictable lock up speed
- Increased fall arrest forces
- Increased potential for swing hazards
- Potential for sharp edge to cut or damage lifeline

Leading Edge SRLs can be used for non Leading-Edge applications!
Questions?
Thank You!