

Safety Talk

Calculating Fall Distance

A common type of fall protection is the Personal Fall Arrest System or PFAS. This system consists of an anchorage, connectors, and a full-body harness that work together to stop a fall and to minimize the arrest force. Other parts of the system may include a lanyard, a deceleration device, and a lifeline. The personal fall-arrest system is effective only if you know how all of the components work together to stop a fall and how to place the components in order to keep you safe during a fall.

The PFAS prevents you from hitting a lower working or walking surface when you fall from an elevation. This is the fall distance or clearance and should be calculated before using fall protection to ensure that you don't slam into the lower surface before the fall protection kicks in.

To calculate your total fall distance you'll need the following measurements:

- Lanyard length- in most instances, a value of 6 feet is used here. This is because the vast majority of lanyards are of a standard length of 6 feet. Whatever the length of your lanyard- that's the number you'll use in the calculation.
- Deceleration distance- This is the elongation of the deceleration device when it's deployed. Again, the standard is to allow 3.5 ft. for this distance. You can check your manufacturers' instructions for exact distances. In some cases a retractable lanyard may only add a foot of deceleration distance, but to be on the safe side you should always use the 3.5 ft. when calculating. You're less likely to get into trouble by adding a bit more to your distance than not enough.

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- Worker's height- this is an area where sometimes there is a bit of a discrepancy. OSHA uses the full height of the worker, which they use 6 feet as an average. Other sources use something called D-ring height. This is the distance from the workers feet to the harness dorsal d-ring and is often set at 5 feet. Again, this is another spot where using the higher number (6 feet) may help to keep you safe by adding a bit more distance.
- Safety margin- this is the name used by OSHA but others may refer to it as Safety Factor. This is added to act as a cover-all for anything that may have been mis-measured or miscalculated, as well as for D-ring movement and system material stretch. It can be as small as one foot, but OSHA recommends setting it at 3 feet.

The Formula

Lanyard length+ Deceleration distance + Worker's height + Safety margin= Fall Distance

Using the recommended values, the formula should look something like this:
6 feet + 3.5 feet + 6 feet+ 3 feet = 18.5 feet. This number, 18.5 feet, is the least distance allowable from the anchorage point to the lower walking or working surface, anything less than 18.5 feet will cause you to potentially hit the lower surface before the fall protection has a chance to start working.

Knowing how this calculation affects your safety can ensure that you walk off the jobsite safely, if you're uncertain how this impacts you or how to do these calculations, be sure to ask your supervisor for help before using a PFAS.

CHECK YOUR UNDERSTANDING

Is it better to underestimate or overestimate your fall distance? Why?

Why is the Safety Factor included in the formula?

MEETING / TRAINING ATTENDANCE ROSTER

COMPANY: _____

_____ SAFETY MEETING

JOB/DEPT: _____

_____ SAFETY TRAINING

DATE: ___/___/___

TIME: _____

TOPICS ADDRESSED: _____

EMPLOYEE'S SIGNATURES

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

EMPLOYEE SUGGESTIONS AND RECOMMENDATIONS: _____

ACTION TAKEN: _____

Supervisor's Signature

_____/_____/_____
Date

Safety Coordinator's Signature

_____/_____/_____
Date