# HEALTH AND SAFETY ADVISORY

## Safe setup and use of self-retracting lifelines

When a worker moves or installs materials while working at heights, they need to be protected from falls without sacrificing their freedom of mobility. In these scenarios, if guardrails, travel restraint, and fall restraint systems are not feasible options, workers can protect themselves from fall hazards by using a self-retracting lifeline (SRL). SRLs are a type of personal fall arrest system designed to "arrest" or stop a fall at its onset, shortening the worker's fall distance to just a few inches.

SRLs extend and retract as a worker moves around the work area, keeping the lifeline taut to reduce tripping and dragging. In the event of a fall, the SRL automatically locks and arrests the fall.

There are several types of SRLs:

- SRLs that are anchored overhead
- SRLs with retrieval capabilities (SRL-Rs)
- SRLs with leading edge capabilities (SRL-LEs)

Although SRLs have several benefits, they present two major hazards if they are not set up properly: bottoming out and swing falls. To avoid these hazards, it is critical that workers follow the setup instructions in the equipment manufacturer's operating manual.

### Information in an operating manual

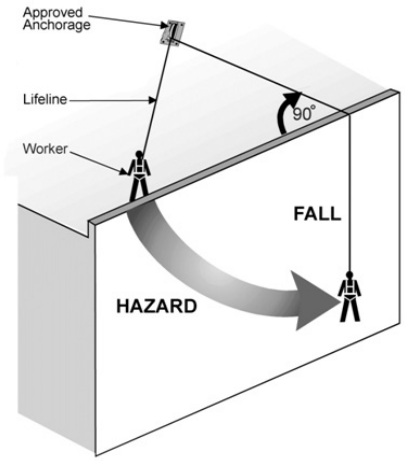
To prevent serious fall hazards, workers must always set up each part of their SRL according to the equipment manufacturer's operating manual. An SRL's operating manual will include the following information:

- The equipment's application and purpose (e.g., situations where worker mobility and fall protection are required)
- Standards the equipment must conform to (i.e., Canadian Standards Association's *CAN/CSA-Z259.2-09: Self-retracting Devices for Personal Fall-Arrest Systems*)
- Weight capacity in pounds and kilograms
- Appropriate anchor location (i.e., above the worker's D-ring)
- Fall clearance distance
- Maximum fall arrest force
- Schedules and instructions for inspections

### Determining your anchor points

Anchor points are the fixed points to which workers connect their lanyards or lifelines when using a fall protection system. If an SRL is anchored in the wrong place (i.e., below the worker's D-ring) or if the anchor is not strong enough to sustain the worker's weight and maximum arresting force, the worker could be seriously injured in the event of a fall. When setting up your SRL, refer to the manufacturer's operating manual for the appropriate anchor location.

Most SRLs are designed to be mounted to an overhead anchorage point. Workers must use the SRL within the radius of the anchor point that is indicated in the equipment's operating manual. This will reduce the likelihood that the worker's body will swing when they fall—this is known as a "swing fall" hazard or "pendulum effect." The more a worker swings, the harder their body will hit an object in their path.



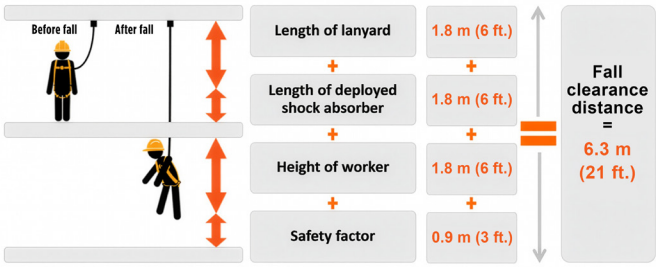

While setting up their SRL, workers must also consider whether the equipment is designed for leading edge work. A leading edge is the unprotected end of formwork, floors, roofs, decks, or other walking or working surfaces. If a worker falls while using an SRL that is anchored at the ground level, the lifeline could rub against the sharp edge and break or not engage to stop the fall. If you must anchor the lifeline below the D-ring, make sure to use an SRL-LE, which is designed for leading edge work. Only use class SRL-LE devices approved by the manufacturer for use over a leading edge.

## Calculating fall clearance distance

"Bottoming out" is a major fall hazard that happens when a worker falls from a height and hits the ground or an object below. A worker can bottom out if their fall clearance distance (i.e., the distance from the ground or object below to the SRL's anchor point), is shorter than the distance the worker could fall before being stopped by the SRL. When calculating the fall clearance distance, consider the length of the lanyard, the length of the energy absorber when deployed, the worker's height, and a safety factor.

Before setting up your SRL, calculate fall clearance distance using the formula below:

**Length of lanyard +**
**Length of deployed shock absorber +**
**Height of worker +**
**Safety factor (0.9 m [3 ft.])**
**= Fall clearance distance**




*Note: Calculate fall clearance distance using the formula in the SRL manufacturer's operating manual.*

## Safety talk video

Visit IHSA's YouTube channel to watch our *Fall protection safety: Understanding self-retracting lifelines with a leading edge (SRL-LEs)* safety talk video: youtube.com/@ihsaworksafeforlife