

HEALTH AND SAFETY ADVISORY

Self-Retracting Lifelines (SRLs) for Leading Edge Work

A leading edge is the unprotected end of formwork, floors, roofs, decks, or other walking or working surfaces. It is the edge that workers are building out from, so it constantly moves or changes location as each new section is added. An unprotected edge presents a significant fall hazard to workers. So, workers **must** use some type of fall protection when working on the leading edge.

Fall protection can include a properly installed guardrail, a travel-restraint system, or a fall-arrest system. Guardrails and travel restraint prevent a worker from falling, so they are the preferred methods of fall protection over fall arrest, which is designed to “arrest” or stop a worker’s fall before they hit the ground or an object below. However, using guardrails may not always be possible when working on the leading edge. In those situations, workers must use a travel-restraint or fall-arrest system consisting of a full-body harness with an energy-absorbing lanyard connected to a lifeline that is affixed to an adequate anchor point.



An arrested fall puts a tremendous amount of force on the body and can sometimes cause serious injury. To minimize that force, it is important to keep the fall distance as short as possible. Self-retracting lifelines (SRLs) allow the lifeline to extend and retract as the worker moves. Connecting an SRL to a fall-arrest system will limit the distance a worker can fall. A shorter fall distance reduces the risk of the worker hitting any obstructions below and makes rescuing a suspended worker easier and faster. An SRL can also be used for travel restraint, but only if the unspooled length of the lifeline will prevent the worker from reaching the edge.

Risks

Most SRLs are designed to be mounted to an overhead anchorage point. However, in many leading edge applications, overhead anchorage is not possible and the SRL is used horizontally. Not all SRLs are tested or designed for horizontal use. Always check the manufacturer’s instructions or contact them directly to determine if the SRL can be used horizontally.

If the SRL travels repeatedly over the edge of a flat surface, the webbing can start to fray. If the lifeline bends 90° around the sharp edge of formwork, concrete, or other work surface during a fall,

the amount of force generated by the fall arrest can be enough to cut through the lifeline (see image on right). Make sure there are no sharp edges near your anchor location and try to minimize the distance between where you are working and your anchor.

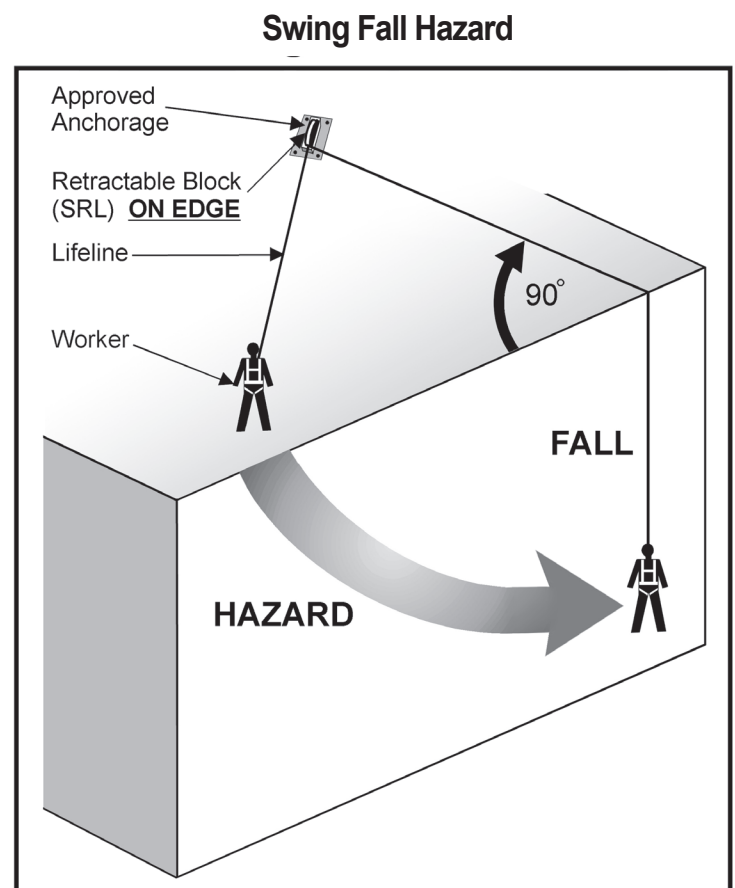


Prevention

Follow the tips below to prevent the failure of an SRL during free fall from the leading edge:

- Use an SRL that is approved by the manufacturer for use on the leading edge.

Note: The CSA is currently updating their standard to include a classification for approved leading edge SRLs. Once the standard is complete, this classification will be clearly marked on approved SRLs.
- Use a rubber bumper or padding around any sharp edges to prevent cutting or fraying of the lifeline.
- When anchoring the SRL horizontally, try to find an anchor point that is located above the D-ring on your harness. If this is not possible and horizontal attachment points are required, consider using a temporary horizontal lifeline. All temporary horizontal lifelines must be engineered.
- Keep your lifeline at a 90° angle from the edge as much as possible. The farther you move sideways from your anchor point, the greater the chance that your body will swing if you fall. This is known as a “swing fall” hazard or “pendulum effect”. The more you swing, the harder your body will hit any object in your path (columns, walls, etc.). Swinging may even cause your lifeline to break if it bends and slides across a sharp edge (see diagram on right).
- Inspect your fall-arrest equipment before each use.
- If the SRL has been involved in a fall arrest, remove it from service until it can be inspected and approved for further use. Many SRLs have built-in fall-arrest indicators.
- If you are unsure about the SRL or cannot obtain information from the manufacturer, choose another means of fall protection that does not include an SRL.



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