White Paper:
ANSI Z359.14-2021 Self-Retracting Device (SRD) Standard Updates

12/27/2022 UPDATE: On December 23rd, 2022, the ANSI/ASSP Z359 Committee approved a second 6-month extension to the effective date of ANSI/ASSP Z359.14-2021 standard. The standard will now go into effect on August 1st, 2023.

On June 17, 2021, ANSI/ASSP approved the new 2021 revision of Z359.14, Safety Requirements for Self-Retracting Devices (SRDs) for Personal Fall Arrest and Rescue Systems. This revision supersedes the 2014 version and goes into effect on August 1, 2023. This is an important date for both manufacturers and end users when it comes to ANSI compliance while using self-retracting devices. In this white paper, we will review the changes to the Z359.14 standard as interpreted by FallTech and discuss the compliance timeline and what that means for equipment you are using today.

The objective of this white paper is to educate end users, buyers, employers, distributors, safety professionals, engineers, Competent Persons, and more about the changes to the ANSI/ASSP Z359.14 standard ahead of the August 1, 2023 deadline, so that you can prepare or adjust your fall protection plans.

At a high level, the 2021 changes to the ANSI/ASSP Z359.14 standard are designed to:

1. Simplify types and classes of SRD's so end users can quickly identify a compliant product's capabilities
2. Increase factors of safety on multiple components and tests
3. Introduce a new testing regime for personal SRD's or SRL-P's (those worn on the back, connected to the full body harness), including specific tests to address product issues that led to a manufacturer recall
4. Further standardize labels and markings to make clear an ANSI compliant product's capabilities

SRD Types and Classes

Since ANSI first began classifying SRDs in 2012, FallTech has repeatedly received questions or encountered end users who misunderstand the meaning of SRD classifications. Such misunderstandings could lead to a serious injury or death.

In the previous revisions of Z359.14, SRDs were organized by type (SRL, SRL-R for devices with rescue/retrieval functions, or SRL-LE for devices with leading edge capability) and class (Class A or Class B). The intent was to organize SRDs by features in "Type" and then by their overhead performance capability by "Class." However, the Class A/B performance was commonly applied to non-overhead anchorage situations, which led to improper fall clearance calculations, potentially causing serious injury or death.

Both types and classes have been overhauled in 2021: "types" are SRL, SRL-P for personal devices meant to be installed on the user's full body harness, or SRL-R for devices with rescue/retrieval functions, and "classes" are Class 1 or Class 2. Rather than dictating overhead performance, the SRD class now dictates the acceptable anchorage locations. Class 1 devices are suitable for at or above dorsal D-ring anchorage locations. Class 2 devices are suitable for above, at, or up to 5 feet below the dorsal D-ring anchorage locations AND must be leading edge rated. So, if you or your customer's jobsite has edge exposures and you need a leading edge SRL or SRL-LE, you will be looking for a Class 2 device in compliance with ANSI/ASSP Z359.14-2021! Coincidentally with the type and class changes, Z359.14-2021 also introduced standard overhead performance criteria for all SRDs as well as standardize class labeling. Now a worker can quickly identify the right device for the hazards faced in their work zone.

In both the 2012 and 2014 revisions of Z359.14, overhead performance criteria was defined by SRD class: Class A or Class B. In 2021, overhead performance was standardized across all SRDs. The performance requirements are summarized in the table below:

	"Old" ANSI/ASSP Z359.14-2014		"New" ANSI/ASSP Z359.14-2021
SRD Class	Class A	Class B	Class 1 & Class 2
Maximum Arrest Force	1,800 pounds		1,800 pounds
Average Arrest Force*	1,350 pounds*	900 pounds*	1,350 pounds*
Maximum Arrest Distance	24 inches	54 inches	42 inches

*Note: During Hot, Cold, & Wet Conditioned Tests, Average Arrest Force limit is increased.

Standardized Labeling

All ANSI/ASSP Z359.14-2021 compliant SRDs will have one of the markings below consistent with its class:

In addition to the Class 1 and Class 2 standard labels, all Class 2 SRLs must include a full fall clearance table or diagram on the physical product, not just in the user instruction manual. This places critical clearance information directly on the product, where it is most easily accessible by the end user or Competent Person.

Product Testing Program Expansion

The 2021 version of Z359.14 includes a significant expansion to the volume and severity of testing required to comply with the standard. Most of these changes are intended to improve safety factors and address specific known hazards or applications of SRDs. While the testing of the products mainly affects manufacturers and test labs, it's important to understand how these changes may impact the way in which these devices are deployed and used in the field. Below is a list of some of the important changes:

1. Performance criteria has changed for all compliant SRDs when tested in overhead anchorage applications.
2. Requirements for Hot, Cold, and Wet conditioned testing are the same, but the number of tests is increased.
3. The test mass for all dynamic drop tests has increased to 310 lbs. from the previous 282 lbs. This change was made so a test mass equal to the ANSI maximum allowable user capacity, including clothes, tools, gear, etc.
4. Static strength testing load was increased to 3,600 lbs. from the previous 3,000 lbs. With this change, all compliant SRDs will now have a true 2:1 safety factor.
5. New static test to ensure the locking mechanism on SRDs that do not use an internal brake can withstand a minimum load of 1,800 lbs.
6. New dynamic test to ensure that SRDs with an internal brake have sufficient reserve lifeline in the event of a fall while the SRD's line constituent is fully paid out or deployed.
7. SRL-P's have several new, specific tests:
    a. 6-foot free fall dynamic performance test
    b. Twin or dual-leg devices will be dynamically tested with both leg-end connectors attached to ensure proper deployment of energy absorbers and provide warning if arrest forces may exceed 1,800 lbs.
    c. Tie-back or Wrap-back SRL-Ps have additional static testing to validate the strength of the tie-back section when secured around an anchorage
    d. Custom connectors for SRL-Ps have additional testing requirements

Ultimately, this standard has introduced more static testing, more dynamic testing, more application specific testing, more application relevant testing, and increased factors of safety to continue to improve the quality of SRDs in the fall protection market and to continue saving lives.

Compliance Timeline and Existing SRDs in the Field

ANSI/ASSP Z359.14-2021 goes into effect on August 1, 2023. For organizations or jobsites which mandate ANSI compliance, all SRDs must be manufactured to comply with and marked as complaint to Z359.14-2021. Any SRDs marked as compliant with Z359.14-2014 or any previous revision will be considered out of compliance after August 1, 2023.

But keep in mind that ANSI is a voluntary consensus standard with no designated enforcement body. It is therefore reasonable to assume that many employers will gradually transition to 2021 compliant SRD's as their existing units in the field are rotated out of service. Our goal at FallTech is to qualify all of our SRDs to the new standard before the August 1, 2023 deadline, so that users may transition at their convenience. The 14-month period between the approval date and the effective date is designed to give manufacturers, testing labs, and end users time to transition to the new standard. During this time, FallTech recommends reaching out to your manufacturer to inquire how this standard change affects SRDs that you are using now and plan your transition to 2021 compliant devices.

If you have any additional questions or concerns regarding the information contained in this white paper, please contact FallTech at 1-800-719-4619 or email us at info@falltech.com.