

HONEYWELL REPLIES:

Actual Performance of Self-Retracting Devices - - for Fall Arrest Systems Design

The Question: “I’m planning to use Honeywell Turbolite+ Personal Self Retracting Lanyards (SRL-Ps) to complement my design of an active Fall Arrest System (FAS) in an overhead setup. After checking product markings, I was able to see that Arrest Distance (AD) is 42 inches, Average Arrest Force is 1,350 lbf, and Peak Force is 1,800 lbf. If available clearance at my customer’s site is limited, and a Safety Factor of two for loading is required, what should I do to pick the right Turbolite+ model?”

Louis, 39, NYC. P.E. / Qualified Person

Our Answer:

Dear Louis,

First and foremost, thanks for taking the time to consider all markings and specifications affixed to our products to make an informed decision before completing your FAS design. This is an example of best practice we recommend to all Fall Protection System designers who use active connecting devices as part of their solutions.

To address your question, we would like to clarify that most of the markings on our products sold in the United States of America are ultimate limits established by ANSI/ASSP Z359.14-2021¹ for products certified to those specific standards. Depending on the family of Honeywell products, you will find the actual performance to be better than the limits of the ANSI/ASSP Z359.14-2021 standard. For situations in which limited fall clearances are a key constraint and safety factors are required by design, we strongly recommend the use of the values stated in the table below to optimize your design and protect users with the most suitable Turbolite+ model for overhead anchorage applications.



| PRODUCT FAMILY | SRL-P LENGTH | DEVICE CLASS (ANSI Z359.14-2021) | AVERAGE FALL ARREST LOAD -ACTUAL- | ARREST DISTANCE ² (AD) -ACTUAL- | WEIGHT CAPACITY |
|----------------|----------------|-------------------------------------|--------------------------------------|---|------------------|
| Turbolite + | 4.5 to 6.0 ft | Class 1 | 900 lbf | 21 inches | 310 lb ANSI Z359 |
| | 6.1 to 9.0 ft | Class 1 | 900 lbf | 35 inches | 310 lb ANSI Z359 |
| | 9.1 to 11.0 ft | Class 1 | 900 lbf | 39 inches | 310 lb ANSI Z359 |

The table above lists Average Fall Arrest Loads as the primary input for the design of FAS given that it most accurately represents the actual load the structure will experience when bounces, vibrations, and system energy absorption are considered. The maximum arrest force (Peak Force) measured during testing of fall protection equipment occurs for a very short duration, approximately 20 milliseconds while the main event³ in a free fall lasts approximately 400 milliseconds in total. That said, the application of the peak force over a few milliseconds represents a very small portion of the dynamic load energy applied to the system and is dissipated very quickly by the system components, including the connecting device and anchorage connector. The average fall arrest load most accurately represents the loading and overall energy

applied to the support structure during the main event. In recent years, it has become an accepted industry practice to use the average arrest force when reviewing the strength of the supporting structure when Safety Factors are required in the design of active Fall Arrest Systems.

Additionally, Arrest Distances are listed to serve the purpose of Fall Clearance calculations when a higher level of accuracy is required, and when distances to a lower level or next-level obstacles are limited in the workplace.

It is worthwhile to highlight all values stated in this document may change based on our continuous design improvement process. Honeywell engineers strive to deliver high-performance products for each application. Please consult with your sales representative or technical contact to obtain the latest technical literature and key insights about compatibility with other solutions in our portfolio.

¹ANSI/ASSP Z359.14 – Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems.

²Arrest Distance defined as: "The total vertical distance required to arrest a fall. The arrest distance includes the deceleration distance and activation distance". Source: ANSI/ASSP Z359.0-2023

³The "main event" in dynamic testing is measured throughout the initial free fall until the first rebound of the test weight.



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