Test Report
ANSI/ASSP Z359.14-2021

Pure Safety Group, Inc.
607 East Sam Houston Pkwy S
Suite 800, Pasadena, TX 77053

Test Report Number:	202409244200030
Job Number:	Test 123, Test 346, K-581029-2403H06-R00
Product SKU#:	4200030
Product Type:	SRL
Product Description:	SRL, CR5 ARC Flash, Class 1, Single, 9FT, AFK Web, Steel Snap Hook
Testing Standard:	ANSI/ASSP Z359.14-2021 Safety Requirements for Self-Retracting Devices for Personal Fall Arrest and Rescue Systems
Date(s) of Manufacture:	1/01/2024, 6/01/2024
Date(s) of Testing:	4/08/2024, 4/12/2024, 4/15/2024, 4/24/2024, 4/25/2024, 6/25/2024

REQUIREMENT VERIFICATION

Requirement Description	Clause/Section	Result
General Requirements	3.1 General Requirements	Meets or Exceeds
Markings and Instructions	5. Markings and Instructions	Meets or Exceeds

QUALIFICATION TESTING

Test Description	Test Date	Clause/Section	Result
Static Strength (SRL)	4/15/2024	4.2.1 Static Testing of Self-Retracting Devices	Pass
Locking Strength	4/24/2024	4.2.3 Locking Strength Testing of Self-Retracting Devices	Pass
Dynamic Performance (SRL, Ambient)	6/25/2024	4.3.1 Dynamic Performance of Self-Retracting Devices (SRDs)	Pass
Dynamic Performance (SRL, Hot)	4/12/2024	4.3.1.7 Dynamic Performance of Self-Retracting Devices (SRDs, Hot)	Pass
Dynamic Performance (SRL, Cold)	4/12/2024	4.3.1.8 Dynamic Performance of Self-Retracting Devices (SRDs, Cold)	Pass
Dynamic Performance (SRL, Wet)	4/15/2024	4.3.1.9 Dynamic Performance of Self-Retracting Devices (SRDs, Wet)	Pass
Dynamic Performance (SRL-P)	4/25/2024	4.3.2 Additional Dynamic Performance Testing of Self-Retracting Lanyards, Personal	Pass
Retraction Testing	4/24/2024	4.5.1 Retraction Tension Testing of Self-Retracting Device Line	Pass
Horizontal Retraction (Class 2)	4/08/2024	4.5.2 Horizontal Orientation Retraction Testing of Class 2 Device Line	Pass
Corrosion	4/08/2024	7.4 ASTM B117 Standard Practice for Operating Salt Spray (Fog) Apparatus	See Appended Report
Electric Arc Testing	3/15/2024	ASTM F887-20, Section 22	See Appended Report
Dynamic Performance (SRL, Post-Arc)	3/28/2024	4.3.1 Dynamic Performance of Self-Retracting Devices (SRDs)	Pass

This test report covers these additional products:

4200031, 4200032, 4200033, 4200035, 4200036, 4200037, 4200038

Please contact quality@guardianfall.com for signed report.

TEST EQUIPMENT		
EQUIPMENT	**MODEL**	**SERIAL**
Load Cell	1220ACK-25K-B	347989A
Load Cell	1210ACK-10K-B	229097A
Load Cell	1220ACK-5K-B	1071229A
Force Gauge	M3-50	4334162
Test Weight	310 lb	GFP001, 7HME, GFP002
Measuring Tape	TX1-25	20243699
Environmental Chamber	S-8-8200	46336
Environmental Chamber	SM-16-8200	49357
Scale	TLI	02314063019

Notes

3.1	General Requirements	
3.1.1	Integral Connectors. Snaphooks or carabiners which are integral to self-retracting devices shall meet the requirements of the most recent version of ANSI/ASSP Z359.12. Integral rings or similar openings intended to accept a snaphook or carabiner shall be designed to minimize the possibility of rollout of a mating snaphook or carabiner.	Meets or Exceeds
3.1.2	Locking Function. Self-retracting devices shall be automatic in their locking (fall arresting) function. It shall not be possible to override the self-locking feature of the device when in use. The design of working parts, their location and the protection afforded to them shall be such as to prevent the possibility of performance being impaired by casual interference.	Meets or Exceeds
3.1.3	Energy Absorption. Self-retracting devices which perform an energy absorption function shall be designed such that the energy absorption function is available throughout the usable working range of the device. The working range or length is defined as the amount of travel allowed by the device starting from full retraction to full extension under normal working tension.	Meets or Exceeds
3.1.4	3.1.4 Visual Indicator. Self-retracting devices shall include a visual indicator that will activate in accordance with the requirements of 3.3.	Meets or Exceeds
3.1.5	Corrosion Protection. Corrosion protection shall be afforded to all elements (parts) of self-retracting devices. Protection shall, at a minimum, allow the device to operate as intended and show no signs of corrosion which, if left unchecked, could result in corrosion-related failure of the device after being salt spray (fog) tested for 96 hours in accordance with the method described in the reference in 7.4. After the salt spray test, the line shall pay out, retract and lock. Retraction tension shall be as specified in 3.5.	See Appended Corrosion Test Report
3.1.6	**Line Constituent of Self-Retracting Devices**	
3.1.6.1	Webbing and Synthetic Rope. Webbing and synthetic rope used as a line constituent of the self-retracting device shall be made of pure or non-recycled synthetic materials having strength, aging and abrasion resistance characteristics equivalent or superior to polyamides. Other synthetic materials than those stated herein are permitted for the line constituent of SRDs only when it can be demonstrated that all requirements of this standard are met and, additionally, that the durability, reliability and other properties pertinent to the intended uses have been evaluated and determined suitable by the manufacturer. Any restrictions on the use of such SRDs shall be marked on the SRD. Webbing shall have a minimum breaking strength of 4,500 pounds (20kN) for Class 1 devices and 5,000 pounds (22.2kN) for Class 2 devices, when tested in accordance with references in 7.1, 7.2 or 7.3 as appropriate.	Meets or Exceeds
3.1.6.2	Wire Rope. Wire rope used as a line constituent of a self-retracting device shall be constructed of stainless steel or galvanized steel strand. There is no required specification, provided that the SRD meets the minimum requirements of 3.2.1and 3.3.	Meets or Exceeds
3.1.6.3	Terminations of the constituent line shall be designed so as to meet the requirements of 3.2.1.	Meets or Exceeds
3.1.7	Class 2 Energy Absorber. The line constituent of Class 2 devices shall include an integral energy absorber element adjacent to the end of the line which connects to the body support. The energy absorber shall meet the requirements of ANSI/ASSP Z359.13. Alternative energy absorber designs are allowed provided all performance requirements for Class 2 devices are satisfied including 3.2.1 with the alternative energy absorber included during the static test. If the Class 2 device housing(s) is intended to be connected to the full body harness and can only be used in this orientation, then an energy absorber is not required as part of the line constituent although an energy management system is still required.	NA

Notes

5	**Instruction Requirements**	
5.1	**Marking Requirements**	
5.1.1	Warnings shall be in English and shall meet the formatting requirements of the reference in 7.7. Non-warning markings shall be in English or pictorial format.	Meets or Exceeds
5.1.2	The legibility and attachment of required markings shall endure for the life of the component, subsystem or system being marked. When pressure-sensitive labels are used, they shall comply with the applicable provision of the reference in 7.6.	Meets or Exceeds
5.1.3	Self-Retracting Devices shall be marked with:	
	- part number and model designation	Meets or Exceeds
	- year of manufacture	Meets or Exceeds
	- manufacturer's name or logo	Meets or Exceeds
	- capacity range, including clothing, tools and equipment (130 lbs to 310 lbs);	Meets or Exceeds
	- unique ID number;	Meets or Exceeds
	- standard number (Z359.14-2021)	Meets or Exceeds
	- how to inspect visual indicator	Meets or Exceeds
	- warning to follow the manufacturer's instructions included with the equipment at time of shipment from the manufacturer	Meets or Exceeds
	- warning of the need for inspection in accordance with the manufacturer's instructions	Meets or Exceeds
	- the fiber or other materials used in the lanyard construction and any limitations of such materials	Meets or Exceeds
	- the lanyard working length	Meets or Exceeds
	- maximum arresting force	Meets or Exceeds
	- average arresting force	Meets or Exceeds
	- arrest distance	Meets or Exceeds
	- guidance with respect to clearance requirements	Meets or Exceeds
	- proper installation means	Meets or Exceeds
	- warning of the need for testing of the device for locking and retraction before each use	Meets or Exceeds
	- warning of the need to avoid lanyard contact with sharp edges and abrasive surfaces (not required for Class 2 SRDs)	Meets or Exceeds
	- suitability for use with horizontal lifelines	Meets or Exceeds
	- suitability for horizontal use	Meets or Exceeds
5.1.4	Class Designation Icon. In addition to the requirements of 5.1.3, the manufacturer shall include, in a conspicuous location on the device, the appropriate color-coded icon designating the class of the device. For SRLs and SRL-Rs, the icon shall be a minimum of 1-inch square (25mm). For SRL-Ps it shall be a minimum of .5-inch square (12.5mm).	Meets or Exceeds

5.1.5	Self-Retracting Lanyards with Integral Rescue Capability. In addition to the requirements in 5.1.3, self-retracting lanyards with integral rescue capability shall be marked to identify:	
	- direction to turn crank	Meets or Exceeds
	- warning against allowing slack line while in rescue mode	Meets or Exceeds
5.1.6	Class 2 Self-Retracting Devices.In addition to the requirements in 5.1.3, Class 2 self-retracting devices shall be marked to identify:	
	- minimum installation setback distance	NA
	- clearance required when falling over edge	NA
	- a warning that exposure to a sharp or serrated structural edge could damage the device and that anchorage should be elevated to the extent possible to limit the risk of damage or failure	NA
	- a warning to adhere to the hierarchy of controls as discussed in ANSI/ASSP Z359.2	NA
5.1.7	Class 2 SRLs. In addition to the requirements of 5.1.6, Class 2 SRLs shall include labels illustrating a fall clearance table and a diagram of the axes shown on the table. These labels shall be affixed to the product, preferably at or near the point of attachment to the full body harness.	NA
5.1.8	Class 2 SRL-Ps. In addition to the requirements of 5.1.6, Class 2 SRL-Ps shall include an illustration of clearance requirements on the label.	NA
5.1.9	Warnings for Dual SRL-Ps. SRL-Ps shall be marked to include a warning that dual-connections shall only be made for the purposes of 100% tie-off transitions.	NA

Notes

5.2	Instruction Requirements	
5.2.1	Instructions shall be provided to the user printed in English at the time of shipment from the manufacturer. Alternate media may be used for the dissemination of instructions, but only in addition to, not in lieu of printed instructions.	Meets or Exceeds
5.2.2	Instructions shall contain the following information:	
	- a statement that the manufacturer's instructions shall be provided to users	Meets or Exceeds
	- manufacturer's name, address and telephone number	Meets or Exceeds
	- manufacturer's part number or model designation for the equipment	Meets or Exceeds
	- intended use and purpose of the equipment	Meets or Exceeds
	- proper method of use and limitations on use of the equipment	Meets or Exceeds
	- illustrations showing locations of markings on the equipment	Meets or Exceeds
	- reproduction of printed information on all markings	Meets or Exceeds
	- inspection procedures required to assure the equipment is in serviceable condition and operating correctly	Meets or Exceeds
	- anchorage requirements	Meets or Exceeds
	- criteria for discarding equipment which fails inspection	Meets or Exceeds
	- procedures for cleaning, maintenance and storage	Meets or Exceeds
	- reference to the Z359 standards and applicable regulations governing occupational safety	Meets or Exceeds
	- proper installation means and limitations on the type of anchorage connectors used, if any	Meets or Exceeds
	- the diameter of rope or wire rope, and width and thickness of webbing used in the lanyard	Meets or Exceeds
	- the fiber or other materials used in the lanyard construction	Meets or Exceeds
	- the lanyard length	Meets or Exceeds
	- suitability for use with horizontal lifelines, deforming or flexible anchorages	Meets or Exceeds
	- the maximum and average arresting force when dynamically tested in ambient conditions, in accordance with the requirements of this standard	Meets or Exceeds
	- the arrest distance when dynamically tested in accordance with the requirements of this standard	Meets or Exceeds
	- how to determine fall clearance, which shall include a safety margin	Meets or Exceeds
	- testing of the device for locking before each use	Meets or Exceeds
5.2.3	Instructions shall require that only the equipment manufacturer, or persons or entities authorized in writing by the manufacturer, shall make repairs to equipment.	Meets or Exceeds
5.2.4	Instructions shall require the user to remove equipment from field service if it has been subjected to the forces of arresting a fall or effecting a rescue.	Meets or Exceeds
5.2.5	Instructions shall require the user to have a written rescue plan and the means at hand to implement it when using the equipment.	Meets or Exceeds

5.2.6	Instructions shall provide warnings regarding:	
	- altering the equipment	Meets or Exceeds
	- misusing the equipment	Meets or Exceeds
	- using combinations of components or subsystems, or both, which may affect or interfere with the safe function of each other	Meets or Exceeds
	- exposing the equipment to chemicals, high heat, severe cold or other harsh environments which may produce a harmful effect and to consult the manufacturer in cases of doubt	Meets or Exceeds
	- using the equipment around moving machinery and electrical hazards	Meets or Exceeds
	- using the equipment near sharp edges and abrasive surfaces	Meets or Exceeds
	- risk of striking an object or obstruction during a swing fall	Meets or Exceeds
	- avoiding the use of SRDs in applications where engulfment hazards exist	Meets or Exceeds
	- that the consequences of improperly using the device, not following instructions or markings may cause serious injury or death	Meets or Exceeds
5.2.7	Self-Retracting Lanyards with Integral Rescue Capability.In addition to the requirements of 5.2.1 through 5.2.6, instructions for self-retracting lanyards with integral rescue capability shall include:	
	- capacity when used for rescue, one or two persons	Meets or Exceeds
	- force required to operate rescue features when device is loaded to capacity	Meets or Exceeds
	- appropriate methods to receive the individual when retrieved to upper elevation	Meets or Exceeds
	- warning to prevent slack line while in rescue mode	Meets or Exceeds
	- maximum input RPM if equipped for powered operation	Meets or Exceeds
	Class 2 Self-Retracting Devices.In addition to the requirements of 5.2.1 through 5.2.6, instructions for self-retracting lanyards with integral leading-edge capability shall include:	
	- advisory that the device was successfully tested for horizontal use and falls over a steel edge without burrs. As a result, the device may be used in situations where a fall may occur over similar edges, such as found on structural steel members or metal sheeting	NA
	- a warning identifying known prohibited edge substrates	NA
	- a warning that the allowable angle of redirection of the lanyard portion of the device at the edge over which a fall might occur (measured between the two sides formed by the redirected lanyard) shall be at least 90 degrees	NA
	- a warning that the anchor point may only be situated at the same height as the edge at which a fall might occur or above the edge	NA
	- any limitations to the allowable work area relative to the anchorage point, including factors such as swing fall and abrasion on the line at the edge, and the use of a single anchor point versus anchors that allow horizontal movement such as a horizontal lifeline or rail	NA
	- indication whether the device may be used in combination with a horizontal lifeline or rail	NA
	- a warning not to work on the far side of an opening, opposite the anchorage point	NA
	- advise that in the event of a fall over the edge, special rescue measures may be required	NA
	- a warning that use of this device in an orientation such that the constituent line may contact a sharp, jagged or abrasive structural edge is inherently dangerous, and such use should be a last resort	NA

5.2.8	Class 2 Self-Retracting Devices. In addition to the requirements of 5.2.1 through 5.2.6, instructions for self-retracting lanyards with integral leading-edge capability shall include:	
	- advisory that the device was successfully tested for horizontal use and falls over a steel edge without burrs. As a result, the device may be used in situations where a fall may occur over similar edges, such as found on structural steel members or metal sheeting	NA
	- a warning identifying known prohibited edge substrates	NA
	- a warning that the allowable angle of redirection of the lanyard portion of the device at the edge over which a fall might occur (measured between the two sides formed by the redirected lanyard) shall be at least 90 degrees	NA
	- a warning that the anchor point may only be situated at the same height as the edge at which a fall might occur or above the edge	NA
	- any limitations to the allowable work area relative to the anchorage point, including factors such as swing fall and abrasion on the line at the edge, and the use of a single anchor point versus anchors that allow horizontal movement such as a horizontal lifeline or rail	NA
	- indication whether the device may be used in combination with a horizontal lifeline or rail	NA
	- a warning not to work on the far side of an opening, opposite the anchorage point	NA
	- advise that in the event of a fall over the edge, special rescue measures may be required	NA
	- advise that in the event of a fall over the edge, special rescue measures may be required	NA
5.2.9	Warnings for Class 2 SRDs.A printed card, minimum size of 3 inches by 5 inches (76mm by 127mm), shall be included by the manufacturer with each Class 2 SRD. The card shall be white font (Arial, 16 pt.) on an orange background and shall state as follows:	
	WARNING: This Class 2 self-retracting device, when attached to a foot-level anchorage, poses significant risk of injury. The user, the competent person and/or qualified person should all acknowledge that normal use of this device MAY NOT PREVENT A SERIOUS INJURY. Failure to follow all manufacturer's instructions and warnings may result in serious injury or death.	NA
5.2.10	Warnings for Dual SRL-Ps. If the device produces a maximum arrest force greater than 1,800 pounds (8kN) when tested in accordance with 4.6.2, it shall be marked to include a warning that dual-connections shall only be made for the purposes of 100% tie-off transitions and that if a dual connection is made for any other purpose, anchorages of different elevations must be utilized.	NA

Notes

4.2.1 Static Testing of Self-Retracting Devices
Requirements per 3.2.1

a) Shorten the constituent line, if necessary, to allow installation in the static tensile test equipment specified in 4.1.2. With the SRD constituent fully extracted, install the device in the tensile test equipment.

b) Apply a minimum load of 3,600 pounds (16kN). Time to reach the load shall be no less than one minute to avoid dynamic effects. The load shall be maintained for a period of no less than one minute.

c) Compare the results with the requirements of 3.2.1.

4.2.1 Static Testing of Self-Retracting Devices
Requirements per 3.2.1

Samples	Sample # 01	Sample # 02	Sample # 03
Actual load applied (>3,600 lb) (lb)	3635.78	3635.57	3635.39
SRL withstands tensile load?	Yes	Yes	Yes
Result/Assessment	Pass	Pass	Pass

4.2.3 Locking Strength Testing of Self-Retracting Devices
Requirements per 3.2.3

a) Shorten the constituent line, if necessary, to allow installation in the static tensile test equipment specified in 4.1.2. With the SRD constituent fully extracted, install the device in the tensile test equipment.

b) Apply a minimum load of 3,600 pounds (16kN). Time to reach the load shall be no less than one minute to avoid dynamic effects. The load shall be maintained for a period of no less than one minute.

c) Compare the results with the requirements of 3.2.1.

4.2.3 Locking Strength Testing of Self-Retracting Devices
Requirements per 3.2.3

Samples	Sample # 19	Sample # 20	Sample # 21
Actual load applied (>1,800 lb) (lb)	1812.60	1811.75	1812.73
SRL withstands tensile load?	Yes	Yes	Yes
Result/Assessment	Pass	Pass	Pass

Notes

4.3.1 Dynamic Performance of Self-Retracting Devices (SRDs, Ambient)
Requirements per 3.3.1

a) Attach the load cell (transducer) to the drop test structure specified in 4.1. Anchor the SRD to the load cell according to manufacturer's instructions. Connect the 310-pound (140kg) test weight specified in 4.1.1 to the attachment-end connector on the constituent line.

b) Attach the quick release mechanism specified in 4.1 to the test weight and attach the hoisting means to the quick release mechanism

c) Hoist the test weight to the level at which 36 inches ± 1.0 inch (914mm ± 25mm) of the device line is extended from the nozzle. The horizontal distance of the quick release mechanism from the device nozzle shall not exceed 12 inches (305mm).

d) Do not lock the device or inhibit retraction of the device.

e) Release the test weight by activating the quick release mechanism.

f) Measure and record the maximum arrest force, average arrest force and arrest distance.

g) Compare the test results with the requirements of 3.3.1.

4.3.1 Dynamic Performance of Self-Retracting Devices (SRDs, Ambient)
Requirements per 3.3.1

Samples	Sample # 04	Sample # 05	Sample # 06
Locking function operates correctly?	Yes	Yes	Yes
Line pays out and retracts correctly?	Yes	Yes	Yes
Visual Indicator activated?	Yes	Yes	Yes
Max. Arrest Force (<1,800 lb) (lb)	988.28	984.81	1040.88
Average Arrest Force (<1,350 lb) (lb)	702.06	692.66	712.83
Arrest Distance (<42 in.) (in.)	23.25	25.25	22.5
Result/Assessment	Pass	Pass	Pass

4.3.1 Dynamic Performance of Self-Retracting Devices (SRDs, Hot)
Requirements per 3.3.1

a) Attach the load cell (transducer) to the drop test structure specified in 4.1. Anchor the SRD to the load cell according to manufacturer's instructions. Connect the 310-pound (140kg) test weight specified in 4.1.1 to the attachment-end connector on the constituent line.

b) Attach the quick release mechanism specified in 4.1 to the test weight and attach the hoisting means to the quick release mechanism

c) Hoist the test weight to the level at which 36 inches ± 1.0 inch (914mm ± 25mm) of the device line is extended from the nozzle. The horizontal distance of the quick release mechanism from the device nozzle shall not exceed 12 inches (305mm).

d) Do not lock the device or inhibit retraction of the device.

e) Release the test weight by activating the quick release mechanism.

f) Measure and record the maximum arrest force, average arrest force and arrest distance.

g) Compare the test results with the requirements of 3.3.1.

4.3.1 Dynamic Performance of Self-Retracting Devices (SRDs, Hot)
Requirements per 3.3.1

Samples	Sample # 10	Sample # 11	Sample # 12
Locking function operates correctly?	Yes	Yes	Yes
Line pays out and retracts correctly?	Yes	Yes	Yes
Visual Indicator activated?	Yes	Yes	Yes
Max. Arrest Force (<1,800 lb) (lb)	921.02	896.31	1031.33
Average Arrest Force (<1,575 lb) (lb)	697.53	664.43	688.68
Arrest Distance (<42 in.) (in.)	22.5	21	24
Result/Assessment	Pass	Pass	Pass

Notes

4.3.1 Dynamic Performance of Self-Retracting Devices (SRDs, Cold) *Requirements per 3.3.1*
a) Attach the load cell (transducer) to the drop test structure specified in 4.1. Anchor the SRD to the load cell according to manufacturer's instructions. Connect the 310-pound (140kg) test weight specified in 4.1.1 to the attachment-end connector on the constituent line
b) Attach the quick release mechanism specified in 4.1 to the test weight and attach the hoisting means to the quick release mechanism
c) Hoist the test weight to the level at which 36 inches ± 1.0 inch (914mm ± 25mm) of the device line is extended from the nozzle. The horizontal distance of the quick release mechanism from the device nozzle shall not exceed 12 inches (305mm)
d) Do not lock the device or inhibit retraction of the device.
e) Release the test weight by activating the quick release mechanism.
f) Measure and record the maximum arrest force, average arrest force and arrest distance.
g) Compare the test results with the requirements of 3.3.1.

4.3.1 Dynamic Performance of Self-Retracting Devices (SRDs, Cold) *Requirements per 3.3.1*			
Samples	**Sample # 13**	**Sample # 14**	**Sample # 15**
Locking function operates correctly?	Yes	Yes	Yes
Line pays out and retracts correctly?	Yes	Yes	Yes
Visual Indicator activated?	Yes	Yes	Yes
Max. Arrest Force (<1,800 lb) (lb)	1118.85	1093.98	1167.99
Average Arrest Force (<1,575 lb) (lb)	768.97	785.27	755.03
Arrest Distance (<42 in.) (in.)	17	20	19.75
Result/Assessment	Pass	Pass	Pass

4.3.1 Dynamic Performance of Self-Retracting Devices (SRDs, Wet) *Requirements per 3.3.1*
a) Attach the load cell (transducer) to the drop test structure specified in 4.1. Anchor the SRD to the load cell according to manufacturer's instructions. Connect the 310-pound (140kg) test weight specified in 4.1.1 to the attachment-end connector on the constituent line.
b) Attach the quick release mechanism specified in 4.1 to the test weight and attach the hoisting means to the quick release mechanism
c) Hoist the test weight to the level at which 36 inches ± 1.0 inch (914mm ± 25mm) of the device line is extended from the nozzle. The horizontal distance of the quick release mechanism from the device nozzle shall not exceed 12 inches (305mm)
d) Do not lock the device or inhibit retraction of the device.
e) Release the test weight by activating the quick release mechanism.
f) Measure and record the maximum arrest force, average arrest force and arrest distance.
g) Compare the test results with the requirements of 3.3.1.

4.3.1 Dynamic Performance of Self-Retracting Devices (SRDs, Wet) *Requirements per 3.3.1*			
Samples	**Sample # 16**	**Sample # 17**	**Sample # 18**
Locking function operates correctly?	Yes	Yes	Yes
Line pays out and retracts correctly?	Yes	Yes	Yes
Visual Indicator activated?	Yes	Yes	Yes
Max. Arrest Force (<1,800 lb) (lb)	866.71	1194.13	1169.90
Average Arrest Force (<1,575 lb) (lb)	704.53	735.99	759.91
Arrest Distance (<42 in.) (in.)	21.5	21	18.5
Result/Assessment	Pass	Pass	Pass

Notes

4.3.2 Additional Dynamic Performance of Self-Retracting Lanyards, Personal (SRL-P)

Requirements per 3.3.2

a) Attach the load cell (transducer) to the drop test structure specified in 4.1. Anchor the SRL-P to the load cell according to manufacturer's instructions. Connect the 310-pound (140kg) test weight specified in 4.1.1 to the attachment-end connector on the SRL-P.

b) Attach the quick release mechanism specified in 4.1. to the test weight and attach the hoisting means to the quick release mechanism.

c) Hoist the test weight to the level at which activation would begin (the point at which the device would have its first opportunity to engage) and measure the distance to a fixed point of reference (initial height). Elevate the test weight 72 inches + 1.0/-0 inch (1,829mm + 25mm/-0mm) above the initial height. The horizontal distance of the quick release mechanism from the device nozzle shall not exceed 12 inches (305mm)

d) Do not lock the device or inhibit retraction of the device.

e) Release the test weight by activating the quick release mechanism.

f) Measure and record the maximum arrest force.

g) Compare the test results with the requirements of 3.3.2.

4.3.2 Additional Dynamic Performance of Self-Retracting Lanyards, Personal (SRL-P)

Requirements per 3.3.2

Samples	Sample # 07	Sample # 08	Sample # 09
Locking function operates correctly?	Yes	Yes	Yes
Visual Indicator activated?	Yes	Yes	Yes
Max. Arrest Force (<1,800 lb) (lb)	956.38	957.54	965.46
Result/Assessment	Pass	Pass	Pass

4.5.1 Retraction Tension Testing of SRD Line

Requirements per 3.5

a) Suspend the SRD from a rigid anchorage in the manner prescribed by the manufacturer's instructions. When the SRD line is in the fully retracted position, extract 1.0 foot (305mm) of line. Attach a non-slip clamp to the extracted line segment at a point approximately 1.0 foot (305mm) from the line outlet on the SRD housing. The weight of the clamp shall not exceed 2 ounces (57g).

b) Connect the tension test gauge specified in 4.1.3 to the clamp and allow the line retraction tension to be borne by the gauge while the gauge is held stationary and unsupported by the line.

c) Align the test gauge load axis with the vertical. Record the gauge reading within 90 seconds. Disconnect the gauge and clamp and allow the line to retract back onto the SRD drum under only the SRD's power.

d) Repeat this procedure at 50% and 100% extraction of the manufacturer's specified line length.

e) Compare the results to the requirements set forth in 3.5.

4.5.1 Retraction Tension Testing of SRD Line

Requirements per 3.5

Samples	Sample # 22	Sample # 23	Sample # 24
Force @ 1 ft extraction (>1.25, <25 lb) (lb)	3.10	3.00	3.55
Force @ 50% extraction (>1.25, <25 lb) (lb)	5.65	6.75	6.2
Force @ 100% extraction (>1.25, <25 lb) (lb)	13.15	11.5	14.6
Result/Assessment	Pass	Pass	Pass

4.5.1 Retraction Tension Testing of SRD Line (Corrosion)

Requirements per 3.5

Samples	Sample # 25	Sample # 26	Sample # 27
Force @ 1 ft extraction (>1.25, <25 lb) (lb)	1.80	2.15	2.05
Force @ 50% extraction (>1.25, <25 lb) (lb)	6.90	6.90	4.30
Force @ 100% extraction (>1.25, <25 lb) (lb)	11.30	13.60	10.80
Result/Assessment	Pass	Pass	Pass

4.3.1 Dynamic Performance of Self-Retracting Devices (SRDs, Post-Arc) *Requirements per 3.3.1*
a) Attach the load cell (transducer) to the drop test structure specified in 4.1. Anchor the SRD to the load cell according to manufacturer's instructions. Connect the 310-pound (140kg) test weight specified in 4.1.1 to the attachment-end connector on the constituent line.
b) Attach the quick release mechanism specified in 4.1 to the test weight and attach the hoisting means to the quick release mechanism
c) Hoist the test weight to the level at which 36 inches ± 1.0 inch (914mm ± 25mm) of the device line is extended from the nozzle. The horizontal distance of the quick release mechanism from the device nozzle shall not exceed 12 inches (305mm).
d) Do not lock the device or inhibit retraction of the device.
e) Release the test weight by activating the quick release mechanism.
f) Measure and record the maximum arrest force, average arrest force and arrest distance.
g) Compare the test results with the requirements of 3.3.1.

4.3.1 Dynamic Performance of Self-Retracting Devices (SRDs, Post-Arc) *Requirements per 3.3.1*			
Samples	**Sample # 28**	**Sample # 29**	**Sample # 30**
Locking function operates correctly?	Yes	Yes	Yes
Line pays out and retracts correctly?	Yes	Yes	Yes
Visual Indicator activated?	Yes	Yes	Yes
Max. Arrest Force (<1,800 lb) (lb)	912.84	953.27	977.64
Average Arrest Force (<1,350 lb) (lb)	699.78	706.22	697.51
Arrest Distance (<42 in.) (in.)	20.25	16.75	17.25
Result/Assessment	Pass	Pass	Pass

Notes

Pictured: 4200030
Represents 4200030

Pictured: 4200031
Represents 4200031

Pictured: 4200032
Represents 4200032

Pictured: 4200033
Represents 4200033

Pictured: 4200035
Represents 4200035

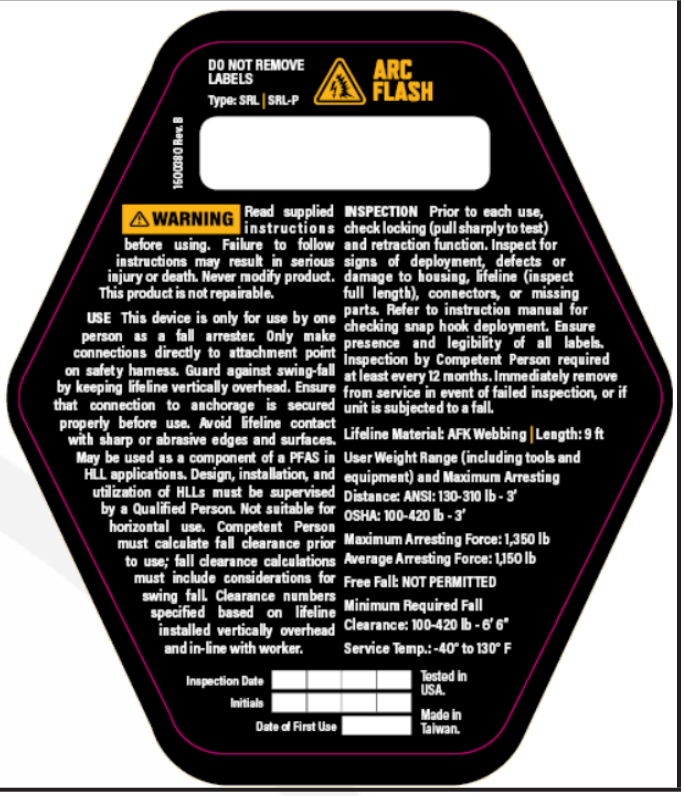
Pictured: 4200036
Represents 4200036

Pictured: 4200037
Represents 4200037

Pictured: 4200038
Represents 4200038

Labels

Represents all products



Notes

Test Report
ASTM B117-2019

Pure Safety Group, Inc.
607 East Sam Houston Pkwy S
Suite 800, Pasadena, TX 77053

Test Type:	96 Hour Neutral Salt Spray Test (NSS)	**Test Description:**	96 Hour Neutral Salt spray Test
Lab Technician:	Sutton Cameron	**Testing on Behalf of:**	Guardian Fall
Start of Test:	4/03/2024	**End of Test:**	4/08/2024
Part Number:	4200030	**Number of Sample(s):**	3
Part Description:	SRL, CR5 Arc Flash, Class 1, Single, 9FT, AFK Web, Steel Snap Hook		
Salt Purity (Percent):	>97.7%	**Water Type:**	Type IV Deionized Water

Interval				**Quantity**	**Specific Gravity**		**PH**
Exposure Time	Actual Time Log	Water Jacket Temperature	Bubble Tower Temperature	Measurement *mL/h/80cm²*	Collection Temperature	Density g/cm³	Measurement 6.5-7.2
Start	2516.02	95°F	116.5°F	1.51	78.5°F	1.034	6.63
24 Hours	2540.02	95°F	116.5°F	1.33	75.7°F	1.036	6.59
48 Hours	-	-	-	-	-	-	-
72 Hours	-	-	-	-	-	-	-
96 Hours	2612.02	95°F	116.5°F	1.49	75.5°F	1.035	6.54

Please contact quality@guardianfall.com for signed report.

Test Equipment		
Equipment	**Model**	**Serial**
Salinity Tester	HI998319	LA02500060
PH Meter	H18424	03370090101
Salt Spray Chamber	SS600e	2018052202

Notes

Temperature °C (°F)	Density g/cm³		
	4% Salt Concentration	5% Salt Concentration	6% Salt Concentration
20 (68)	1.025758	1.032360	1.038867
21 (69.8)	1.025480	1.032067	1.038560
22 (71.6)	1.025193	1.031766	1.038245
23 (73.4)	1.024899	1.031458	1.037924
24 (75.2)	1.024596	1.031142	1.037596
25 (77)	1.024286	1.030819	1.037261
26 (78.8)	1.023969	1.030489	1.036919
27 (80.6)	1.023643	1.030152	1.036570
28 (82.4)	1.023311	1.029808	1.036215
29 (84.2)	1.022971	1.029457	1.035853
30 (86)	1.022624	1.029099	1.035485
31 (87.8)	1.022270	1.028735	1.035110
32 (89.6)	1.021910	1.028364	1.034729
33 (91.4)	1.021542	1.027986	1.034343
34 (93.2)	1.021168	1.027602	1.033950
35 (95)	1.020787	1.027212	1.033551
36 (96.8)	1.020399	1.026816	1.033146
37 (98.6)	1.02006	1.026413	1.032735
38 (100.4)	1.019605	1.026005	1.032319
39 (102.2)	1.019199	1.025590	1.031897
40 (104)	1.018786	1.025170	1.031469

ArcWear
A KINECTRICS COMPANY

KINECTRICS

EXPOSURE TO AN ELECTRIC ARC

Requesting Agency:
Guardian
607 East Sam Houston Pkwy S
Suite 800
Pasadena, TX 77503

Reference Test Standard:
ELECTRIC ARC TESTS: ASTM F887-20, SECTION 22
Qualification Testing for Exposure to an Electric Arc

Test Report:
K-581029-2403H06-R00

Test Specimen:
Lanyard, Style 4200030 - SRL, CR5 ARC FLASH, CLASS 1, SINGLE, 8FT, AFK WEB, STEEL SNAP HOOK, Webbing: Kevlar/Nomex, Black and Yellow

Result:
As requested, the 3 samples of Guardian lanyard style 4200030-SRL with Kevlar/Nomex webbing were exposed to an electrical arc. No melting or afterflame was observed. The arc qualification requirements for SRLs are not specifically covered in ASTM F887-20, the samples were tested similar to non-SRL lanyards. The arc tested samples shall be subjected to the applicable required drop test specified in section 25.5 or 25.6 as soon as is practically possible by the requesting agency.

Sample Received	Test Date	Report Date
March 6, 2024	March 15, 2024	April 3, 2024

Prepared by

Claude Maurice
Technical Specialist, HCL
TD Technologies, Kinectrics

Approved by

Brian Shiels
Service Line Manager
ArcWear, Kinectrics AES

Revision History

Rev	Description		
00	Initial report creation		
	Issue Date April 3, 2024	Prepared by Claude Maurice	Approved by Brian Shiels
Rev	Description		
	Issue Date	Prepared by	Approved by

For questions about this test report, please contact Contact.ArcWear@Kinectrics.com

DISCLAIMER

Kinectrics prepared this report as a work of authorship sponsored by their Client. This report has been prepared solely for the benefit of the Client and may not be used or relied upon in whole or in part by any other person or entity without Client permission or without Kinectrics' permission if required by the Contract between Client and Kinectrics Inc. Neither Kinectrics, their client nor any person acting on behalf of them: (a) makes any warranty or representation whatsoever, express or implied, or assumes any legal liability of responsibility for any third party's use, or the results of such use, with respect to (i) the use of any information, apparatus, method, process, or similar item disclosed in this report including the merchantability or fitness for any particular purpose of any information contained in this report or the respective works or services supplied or performed or (ii) that such use does not infringe on or interfere with privately owned rights, including any party's intellectual property; or (b) assumes responsibility for any damages or other liability whatsoever (including any consequential damages resulting from a third party's selection or use of this report or any information, apparatus, method, process, or similar item disclosed.

QUALITY MANAGEMENT

The arc testing performed to the above mentioned Standard is accredited by the Standards Council of Canada (SCC) to conform to the requirements of CAN-P-4E (ISO/IEC 17025:2017). Accreditation by the Standards Council of Canada (SCC) is a mark of competence and reliability

- The test performed does not apply to electrical contact or electrical shock hazard.
- The test result is applicable only to the Test Specimens delivered to Kinectrics, other material, design or color may have a different response.
- It is the clients' responsibility to provide full and accurate information about the items supplied.
- No test is done to validate the fiber content or composition of the test item.
- Photographs of the test specimens and waveforms of the arc current, voltage and calorimeters with the circuit and arc exposure calibration records are available from Kinectrics and provided to the client separately from this report.

1 Test Standard:

Electrical arc test according to ASTM F887-20, Section 22
Standard Specifications for Personal Climbing Equipment, After Exposure to an Electric Arc Evaluation. Specimens are mounted on mannequins having a distance of 30.5 cm (12 inches) from the chest to the centerline of the electrodes. The test standard requires that the finished personal climbing equipment be exposed to a level of 40 cal/cm² ± 5 cal/cm².

1.1 Test Requirements

Harnesses- The test program requires the specimens be placed on mannequins as normally worn. Sufficient quantities shall be exposed on the front and on the back to meet the drop test requirements of Table 5 of the Standard.

Harness with dorsal attachment only: 4 frontal arc exposure, 4 rear arc exposure (8 samples arc tested).
Harness with front and dorsal attachment: 6 frontal arc exposure, 6 rear arc exposure, (12 samples arc tested).

Harness accessories, loops etc. - Three specimens of each accessory or loop are required to be exposed to the arc.

Energy Absorbing Lanyard - Three specimens of each lanyard are required to be exposed to the arc.

SRL & SRD- Self-retracting devices (SRDs) are not included in the scope of arc exposure test in ASTM F887-20, Section 22. Their test method, number of samples required, and subsequent drop test and criteria has not been established by ASTM. Until the standard is revised, the arc exposure test is based on the requirements for Energy Absorbing Lanyards (non-retracting). The drop test to verify mechanical integrity following the arc exposure will be arranged by the producer based on the applicable drop method followed for such devices.

Other effects as a result for an arc fault such as the noise, light emissions, pressure rise, hot oil, electric shock, the consequences of physical and mental shock or toxic influences are not covered by this standard.

1.2 Acceptance criteria for products exposed to electrical arc:

The procedure outlined in ASTM F887-20 is followed to verify the electric arc performance of the personal climbing equipment. The product is considered as having passed the visual inspection criteria if the parameters defined in Table 1-1 are met. As proof of performance following the arc exposure, the exposed test specimens shall be subjected to a drop test as soon as practical after the arc exposure.

Table 1-1: Visual inspection Criteria for Electric Arc Performance of ASTM F887-20

Parameter	Criterion
Arc Energy	Electrical arc exposure of 40 cal/cm² ± 5 cal/cm²
Ignition	No electric arc ignition.
After-flame Time	Less than 5 seconds on load bearing materials and less than 15 seconds for accessories or non-load bearing components.
Material Performance	No melting and dripping of any load bearing material. Accessories, such as elastic or hook, labels and loop fasteners, are allowed to exhibit melting and dripping provided they are not ignited while dripping or propagating the flames to other parts of the product.

2 Test Condition:

The following test circuit parameters and conditions were used.

- Electric arc current: 8 kA rms ± 10%, 60 Hz
- Open circuit voltage: 2500 V rms ± 10%, 60 Hz
- Nominal Heat Flux Density: 2100 kW/m^2 (50 cal/cm²·s)
- Arc duration: 0.85 seconds ± 0.1 s to obtain required incident energy
- Electrode gap: 305 mm (12 inches)
- Distance from mannequin to electrode: 305 mm (12 inches)
- Deviations and abnormalities: none

Note: The measurement uncertainty, MU, for the measured values of this test method are well within the requirements of the test standard and are defined on a 95% confidence interval basis over the full test range, as follows:

- Temperature: ± 2 °C Incident Energy: ± 1.5%
- Arc Current: ± 2.5% Voltage: ± 2.2%
- Time zero reference: ± 3 ms

3 Test Sample Description:

The following description of the test sample was provided by the client and confirmed by the sample shown in Figure 3.1.

Sample description:	Lanyard, Style 4200030 - SRL, CR5 ARC FLASH, CLASS 1, SINGLE, 8FT, AFK WEB, STEEL SNAP HOOK, Webbing: Kevlar/Nomex, Black and Yellow
Sample identification:	Serial number when available identified in Table 4-1
Manufacturer:	Guardian
Material of webbing:	Kevlar/Nomex, Webbing thickness 2 mm
Number of samples tested:	2 shock-pack, 1 SRL enclosure
Notes:	No serial numbers on lanyards

Figure 3.1: Guardian Lanyard Style 4200030 - SRL

4 Test Results:

Two mannequin torsos were placed at 120° in the arc test cage at a distance of 305 mm (12 in) from the electrodes. The samples were placed on each of the two mannequins as shown in Figure 6.1.

Table 4-1: Summary of Test Results

	Trial # 24-0830	
Mannequin	**A**	**B**
Serial number	No SN	No SN
Exposure area	Shock pack and webbing	SRL body and webbing
Incident Energy	41 cal/cm²	38 cal/cm²
Ignition or Afterflame time	0 s	0 s
Melting and Dripping	No	No
Acceptance Criteria	Meets	Meets

4.1 Observations:

Samples having met the visual performance criteria are marked as “Meets”. Samples marked as ‘Fails” indicate they do not meet the requirements due to long AF time or ignition. Photographs of the samples before and after the arc exposure are shown in Section 6.

Charring was observed on the webbing and exposed material on all samples.

- No afterflame or melting and dripping of any webbing or pack was observed. The shock-pack cover material had breakopen at the hook & loop closure exposing the inside material, see Figure 6-1.
- Some deformation of the SRL body was observed, no after-flame

5 Interpretation of Results:

This testing does not assign an arc rating to this product. The purpose of this test is to observe the response characteristics of the lanyards when exposed to an open-air electric arc as described in ASTM F887-20.

Based on test results, this lanyard meets the requirements in Table 1-1 for ASTM F887-20 section 22. The arc tested samples shall be subjected to the applicable required drop test specified in section 25.5 or 25.6 as soon as is practically possible by the requesting agency.

6 Photographs:

The following photographs are representative of the test results observed. Photographs and video of all test samples are provided with this report for review.

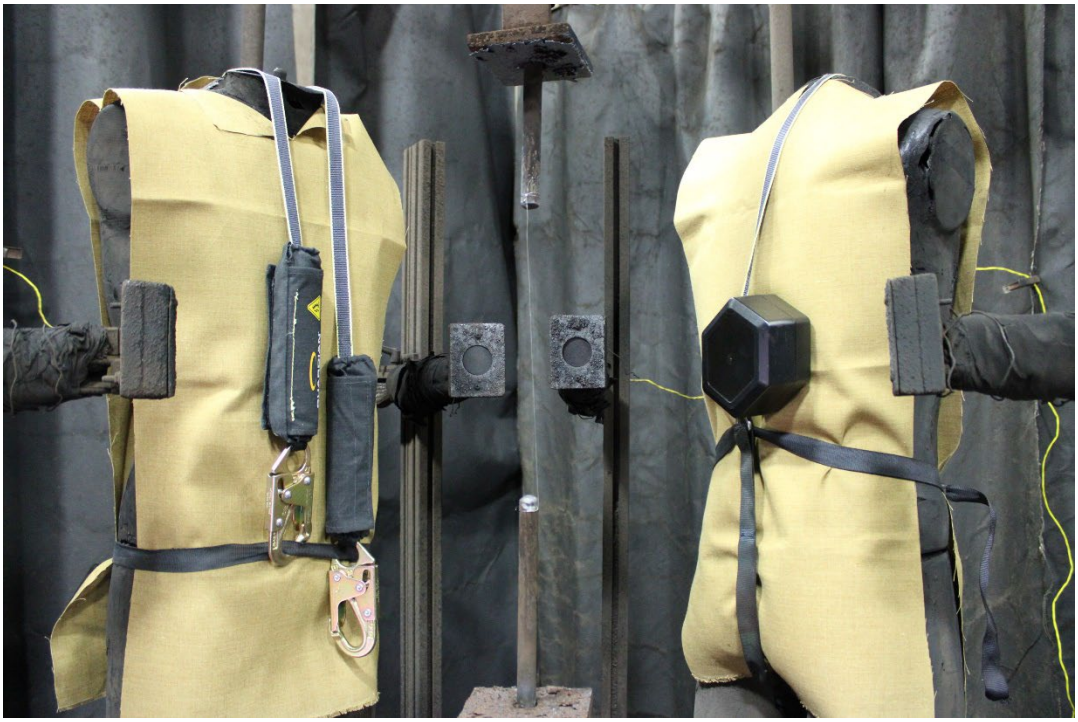


Figure 6.1: Sample set up before the arc exposure.

Figure 6.2: Sample after the arc exposure, test 24-0830, A: Left, B: Right.