FALLTECH DuraTech 9ft Cable Self Retracting Device Instruction Manual

Contents

FALLTECH
Fall Protection. Precision Engineered

FALLTECH DuraTech 9ft Cable Self Retracting Device

This manual is intended to meet the Manufacturer’s Instructions as required by the American National Standards

Institute (ANSI) Z359 and should be used as part of an employee training program as required by the Occupational Safety and Health Act (OSHA).

WARNING
This product is part of a personal fall arrest, restraint, work positioning, suspension, or rescue system. A Personal Fall Arrest System (PFAS) is typically composed of an anchorage and a Full Body Harness (FBH), with a connecting device, i.e., a Shock Absorbing Lanyard (SAL), or a Self-Retracting Device (SRD), attached to the dorsal D-ring of the FBH.

These instructions must be provided to the worker of this equipment. The worker must read and understand the manufacturer's instructions for each component or part of the complete system. Manufacturer's instructions must be followed for proper use, care, and maintenance of this product. These instructions must be retained and be kept available for the worker's reference at all times. Alterations or misuse of this product, or failure to follow instructions, may result in serious injury or death.
A Fall Protection Plan must be on file and available for review by all workers.

It is the responsibility of the worker and the purchaser of this equipment to assure that workers of this equipment are properly trained in its use, maintenance, and storage. Training must be repeated at regular intervals. Training must not subject the trainee to fall hazards. Consult a doctor if there is reason to doubt your fitness to safely absorb the shock of a fall event. Age and fitness seriously affect a worker's ability to withstand falls. Pregnant women or minors must not use this equipment.
NOTE: For more information consult ANSI Z359.

DESCRIPTION

- ANSI and OSHA

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DESCRIPTION

The FallTech® DuraTech™ 9′ Cable SRD is a self-retracting lifeline for those working at height and subject to fall hazards. This manual contains two Appendices, Appendix A and Appendix B. Appendix A contains figures and tables specific to the SRD discussed in this manual. Appendix B contains figures and tables applicable to fall protection equipment in general. All figure, table, and chart references in this manual are to Appendix A unless otherwise noted. All paragraph and section references are to this manual unless otherwise noted. The user of the equipment discussed in this manual must read and understand the entire manual before beginning work.

For purposes of this manual, the SRD may be referred to as the SRD, the equipment, the device, the product, or the unit. The terms galvanized wire rope and steel cable are used interchangeably. At the top of the unit, a swiveling steel eye provides an attachment point for a self-closing and self-locking connector. The SRD body consists of a nylon housing containing a 9′ length of galvanized or stainless steel wire rope wound onto a spring-tensioned drum.

The drum is equipped with a pawl system that engages a brake on the drum, slowing and halting lifeline payout to arrest the fall in a fall event. The leg end of the cable is equipped with a wound spring retracting shock absorber, with a rubber handle over the double clamps of a thimble eye. The leg end connector may be one of a variety of connectors. See Tables 1A – 1C, and Figure 1.

The safe working lifeline length of the SRD is 9′. A certain amount of lifeline must always remain on the SRD drum to ensure proper brake function. The lifeline is equipped with colored working length line indicators. See Section 4. When attached and the worker moves about, the lifeline pays out and retracts, automatically maintaining a taut line.

The SRD is not designed for Leading Edge applications. Do not use the SRD where a Leading Edge hazard is present. OSHA Regulations and ANSI Standards: The device discussed in this manual complies with OSHA 1926.502 regulations. The device also complies with ANSI standards Z359.14. Z359.14 sets performance requirements for SRDs, based on dynamic testing. There are two classifications; Class A, and Class B. The SRD discussed in this manual has been tested by ANSI Z359.7, and conforms to ANSI Z359.14 standards for a Class B device. These tests include Dynamic Performance Testing, Dynamic Strength Testing, Static Strength Testing, and Retraction Tension Testing. See paragraph 3.5.1.

APPLICATION

- Purpose: An SRD is designed for use as a component in a PFAS, to provide a combination of worker mobility and fall protection as required for inspection work, general construction, maintenance work, oil production, confined space work or any application where fall protection and worker mobility is required. The SRD is not designed nor suited for use in restraint, personnel riding, suspension, work positioning, or rescue applications. Do NOT use the SRD for these applications except as part of a back-up PFAS.
- Personal Fall Arrest System: A PFAS is typically composed of an anchorage and a FBH, with an energy absorbing connecting device, i.e., an SAL, an SRD, or a Fall Arrester Connecting Subsystem (FACSS), attached to the dorsal D-ring of properly fitted and adjusted FBH. All uses and applications of a FBH with this equipment require the FBH to be properly fitted and adjusted to the user. Failure to properly fit the FBH to the user could result in serious injury or death.

The SRD may be installed on a FBH, or attached to a suitable anchorage. See Section 4 for additional details.

- SRD Orientation In Fall Arrest: The 9′ Cable SRD is designed for use in either of two configurations;
  - With the housing end installed on the dorsal D-ring of a properly adjusted and fitted FBH. The leg end is connected to an anchorage, which can range from overhead (above the D-ring) to non-overhead (up to 2′ below the D-ring). See Figure 2A.
  - With the housing end attached to a suitable anchorage, which can range from overhead (above the D-ring) to non-overhead (up to 2′ below the D-ring). The leg end is connected to the dorsal D-ring of a properly adjusted and fitted FBH. See Figure 2B.
- Rescue: Rescue operations require specialized equipment that is beyond the scope of this manual. Users are required to have a written rescue plan in place, and a method to implement it promptly.
- Application Limits: Take action to avoid moving machinery and thermal, electrical and chemical hazards as contact may cause serious injury or death. Avoid swing falls. Follow the weight restrictions and recommendations in this manual. Be advised, the SRD discussed in this manual is NOT rated for Leading Edge applications. The lifeline is vulnerable to damage by sharp edges and abrasive surfaces. Avoid sharp and abrasive surface hazards as a damaged lifeline may cause serious injury or death.
- DO NOT attach to a foot-level anchorage.
- DO NOT use the SRD to lift tools, materials, or personnel.
- Remove from service any equipment subjected to fall arrest forces.

SYSTEM REQUIREMENTS

- Capacity: The SRD discussed in this manual is rated for a user weight range of 130-310 lbs. (58.9-140.6 kg), including clothing, tools, etc. Use by those exceeding this maximum weight is not allowed.
- Compatibility of Connectors: Connectors are considered to be compatible with connecting elements when they have been designed to work together in such a way that their sizes and shapes do not cause their gate mechanisms to inadvertently open regardless of how they become oriented. Contact FallTech if you have any questions about compatibility. Connectors must be compatible with the anchorage or other system components. Do not use equipment that is not compatible. Non-compatible connectors may unintentionally disengage. Connectors must be compatible in size, shape, and strength. Self-closing, self-locking snap hooks and carabiners are specified by OSHA and ANSI Z359.12. FallTech offers a wide variety of connectors for use with the 9’SRD. See Table 1-B and Table 1-C.
- Compatibility of Components: Equipment is designed for use with approved components and subsystems only. Substitutions or replacements made with non-ANSI Z359 compliant components or subsystems may jeopardize compatibility of equipment and may affect the safety and reliability of the complete system. Ensure compatibility between the connectors if non-FallTech components are used for fall protection.
- Making Connections: Only use self-locking snap hooks, rebar hooks, and carabiners with this equipment. Only use connectors that are suitable to each application. Ensure all connections are compatible in size, shape, and strength. Do not use equipment that is not compatible. Visually ensure all connectors close and lock completely. Connectors (snap hooks, rebar hooks, and carabiners) are designed for use only as specified in this manual. See Figure 13 in Appendix B.
- Personal Fall Arrest System: A PFAS is an assembly of components and subsystems used to arrest a person during a fall event. A PFAS is typically composed of an anchorage and a FBH, with an energy absorbing connecting device, i.e., a SAL, an SRD, or a Fall Arrester Connecting Subsystem (FACSS) attached to the dorsal D-ring of the FBH. PFAS components used with this equipment must meet applicable ANSI Z359

requirements and OSHA regulations. OSHA requires a personal fall arrest system be able to arrest the worker's fall with a maximum arresting force of 1,800 lbs., and limit the free fall to 6 feet or less. If the maximum free fall distance must be exceeded, the employer must document, based on test data, that the maximum arresting force will not be exceeded, and the personal fall arrest system will function properly.

- Average Arrest Force and Arrest Distance: The SRD discussed in this manual is classified by ANSI Z359.14 as a Class B device. This ANSI standard allows a Class B device to have a Maximum Arrest Distance of 54", an Average Arrest Force of 900 lbs, and a Maximum Arrest Force of 1,800 lbs. Testing is carried out in two unit orientations; SRD attached to overhead anchor, and SRD attached to weight with the leg end connector attached to an overhead anchor. Testing is also conducted under various environmental conditions; at ambient temperature, hot, cold, and in wet conditions. In manufacturer's tests, typical performance attributes of the SRD, connected at the FBH D-ring or higher, discussed in this manual, are;
    - Longest Arrest Distance = 35″
    - Largest Average Arrest Force = 876 lbs
    - Largest Maximum Arrest Force = 1381 lbs

In addition, Table 1B: Typical FallTech Performance and ANSI Performance Attributes provides two lists of test performance attributes, listed by Average Values Of Testing, and by Maximum Values Of Testing, using a 310 lb. weight in both an overhead anchorage condition, and in non-overhead anchorage conditionss. The competent person may find this data useful with planning anchorage location and calculating fall arrest loads and distances from the walking/working level to the nearest obstruction or lower level. See Section 4.
NOTE: Arrest distance is one part of the Minimum Required Fall Clearance (MRFC). The MRFC is determined by consideration of multiple factors in fall protection. Attachment below the level of the FBH D-ring will require additional fall clearance. MRFC is discussed in detail in Section 4.

- PFAS Anchorage Strength: An anchorage selected for PFAS application must have the strength to sustain a static load applied in the direction permitted by the PFAS of at least two times the maximum arrest force permitted when certification exists, or 5,000 lbs. (22.2 kN) in the absence of certification.
- Definitions: The following are definitions of terms as defined in ANSI Z359.0-2012.
- Authorized Person: A person assigned by the employer to perform duties at a location where the person will be exposed to a fall hazard (otherwise referred to as "user" for these instructions).
- Certified Anchorage: An anchorage for fall arrest, positioning, restraint, or rescue systems that a Qualified Person certifies to be capable of supporting the potential fall forces that may be encountered during a fall or that meet the criteria for a certified anchorage prescribed in this standard.
- Competent Person: One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate hazards.
- Harness Stretch: Amount of vertical travel of the Full Body Harness D-ring during a fall arrest.
- Qualified Person: A person with a recognized degree or professional certificate and with extensive knowledge, training, and experience in the fall protection and rescue field who is capable of designing, analyzing, evaluating and specifying fall protection and rescue systems to the extent required by this standard.
- Rescuer: Person or persons other than the rescue subject acting to perform an assisted rescue by operation of a rescue system.

INSTALLATION AND USE

WARNING

- Do not alter or intentionally misuse this equipment. Consult FallTech when using this equipment in combination with components or subsystems other than those described in this manual.
- Do not use rebar hooks, large carabiners or large snap hooks to connect to FBH dorsal D-rings or to any small diameter non-compatible anchor point as this may cause a roll-out condition and/or unintentional disengagement.
- Plan the Personal Fall Arrest System (PFAS). Inspect the SRD before each use by the procedures detailed in Section 7. Examine the work area and take action to address hazards.
- See paragraph 2.4. Falls are a serious hazard when working at height. Training and equipment are the tools of fall hazard management. There are several closely related facets of fall hazard management with a PFAS;
    - Anchorage
    - Minimum Required Fall Clearance (MRFC)
    - Overhead (Above the D-ring) Anchorage Condition
    - Non-Overhead (Below the D-Ring) Anchorage Condition:
    - Swing Fall
    - Overhead (above the FBH D-ring) Anchorage and Swing Fall
    - Non-overhead (Below the FBH D-ring) Anchorage and Swing Fall

Anchorage: Select a suitable anchor point. See paragraph 3.6. In addition to strength and load requirements, consider the height of the anchorage, the distance between the anchorage and the user's FBH dorsal D-ring, the distance between the anchorage and the walking/working surface, and the distance between the walking/working surface and any obstructions below it, including the ground.

Also consider the area where the work is being performed. The area below the anchorage is the work zone. The point directly below the anchorage is the center of the work zone. As the user moves outward from the center in a lateral movement, the work zone expands. Work zone expansion is measured in feet and has a direct effect on user safety.

NOTE: OSHA 1926.502 and 1910.66 requires that anchors for a PFAS be able to hold at least 5,000 pounds of weight per person or maintain a safety factor of at least two (twice the impact load) under the supervision of a qualified person. Also ensure the anchor point will provide sufficient MRFC. 4.3 Minimum Required Fall Clearance: The MRFC is the minimum distance a user needs between himself and the nearest obstruction (or ground) below the walking/working surface to avoid serious injury or death in case of a fall event.

The user of this equipment must determine the MRFC for the equipment discussed in this manual to ensure adequate clearance exists in the fall path. Variables discussed in this manual include the height of the anchor point relative to the user's FBH D-ring, i.e., overhead or non-overhead anchorage condition, plus swing fall and how an expanded work zone affects these variables.

Overhead (Above the D-ring) Anchorage Condition: In an overhead anchorage condition, the SRD is installed anywhere in the allowable attachment area, which ranges from directly above the user to level with the FBH D-ring, as shown in Figure 3A. The overhead condition MRFC has three metrics, labeled A, B, and C, measured from the walking/working surface. The sub total of these metrics, labeled D, is the MRFC.

- A = SRD deceleration distance
- B = D-ring shift and harness stretch
- C = Safety factor

The MRFC for an overhead anchorage is calculated as A+B+C=D. The user must be aware that if a swing fall hazard exists, additional steps are required. Use Chart 1 to determine the amount of swing fall, and place that

value in E. Add the E value to the D value to determine the total MRFC. See paragraph 4.4.

Non-Overhead (Below the D-Ring) Anchorage Condition: In a non-overhead anchorage condition, the anchor point is level with the FBH dorsal D-ring, or up to 2′ below it, as shown in Figure 3B. The MRFC for a below the D-ring condition has five metrics, labeled A, B, C, D, and E, and are measured from the walking/working surface. The sum of these metrics, labeled F, is the MRFC.

- A = Added Free Fall Distance Required Due To Non-Overhead Anchorage B = SRD Deceleration Distance
- C = Additional Deceleration Distance Due To Below D-Ring Attachment D = D-Ring Shift And Harness Stretch
- E = Safety Factor

The MRFC for an anchorage below the D-ring is calculated as A+B+C+D+E=F. The user must be aware that if a swing fall hazard exists, additional steps are required. Use Chart 1 to determine the amount of swing fall, and place that value in E. Add the G value to the F value to get H, the MRFC. See paragraph 4.4.

- Swing Fall: A swing fall occurs when the worker moves laterally out from under the anchor and creates an expanded work zone condition. If a fall event occurs, the worker would swing back toward the anchorage.
- The swinging action generates considerable force, and if the worker strikes an obstruction or the lower level, this force could cause severe injury or death.
- Swing falls may be one of two types; with an overhead anchorage, and with a non-overhead anchorage. Both types require additional fall clearance.
- Overhead Anchorage and Swing Fall: For each foot of work zone expansion, the risk of severe injury or death from a swing fall increases. This increased risk requires additional MRFC distance, as shown in Figure 4A
- Non-Overhead Anchorage and Swing Fall: A swing fall from a non-overhead anchorage, one that is lower than the user’s FBH D-ring. Combine an expanded work zone with a lower anchorage and the risk increases greatly, as shown in Figure 4B.
- A swing fall from an expanded work zone, combined with the much lower height of a non-overhead anchorage, will significantly increase the risk of severe injury or death. This condition requires an increased MRFC. See Chart 1 for instructions on how to determine a safe work zone.

WARNING

- An expanded work zone combined with an SRD used in a non-overhead (below the D-ring) condition is extremely hazardous.
- DO NOT attach to an anchorage more than 2 feet below the level of the FBH D-ring.
- Installation And Use Of The SRD: Use compatible connectors when connecting to the anchorage and ensure unintended disengagement cannot occur. Visually ensure all connectors close and lock securely. See Figure 13 in Appendix B.

The SRD is configurable into two orientation options, with the housing attached to the FBH, or with the housing end attached to an approved anchorage. Inspect the SRD before each use by the procedures detailed in this manual. Before each use, ensure the SRD lifeline locks by slowly extracting a length of lifeline, then pull sharply on the lifeline. The SRD must lock and the lifeline must stop paying out.

Housing End Attached To The FBH: The SRD housing end is installed to the dorsal D-ring of an FBH and the leg end attached to a suitable anchorage, as shown in Figure 5A. The anchorage may range from directly overhead, to as low as 2′ below the dorsal D-ring. Refer back to Figure 2A. To attach the SRD on the harness see Figure 5A.

Follow these steps:

1. Don the harness according toy the harness manufacturer's instructions.
2. Insert the nose end of an ANSI compatible double-locking carabiner through the SRD housing swivel eye.
3. Attach the carabiner to the dorsal D-ring of the FBH. Visually ensure the carabiner gate is fully closed and locked.
4. Connect the leg end connector to an approved, suitable anchor that meets work zone requirements.

The SRD will pay out and retract smoothly to maintain a taut line during normal movement. Work as directly under the anchor as possible. If necessary, the leg end connector may be attached to a lower level anchorage, up to 2 ft. below the user's harness D-ring. Be aware that a lower anchorage increases the risk of injury due to swing fall. Additional fall clearance is required.

Housing End Attached To The Anchorage: The housing end connector may be installed to a suitable anchorage, as shown in Figure 5B. The anchor point may range from directly overhead to as low as 2′ below the dorsal D-ring. Refer back to Figure 2B. The leg end is connected to the dorsal D-ring of the FBH. To attach the housing to an anchorage, see Figure 5B and follow these steps;

1. Don the harness according to the harness manufacturer's instructions.
2. Insert the nose end of an ANSI compatible double-locking carabiner through the SRD housing swivel eye.
3. Attach the carabiner to the anchor point. Visually ensure the carabiner is fully closed and locked.
4. Connect the leg end connector to the dorsal D-ring of the FBH. Visually ensure the connector is fully closed and locked.

The SRD will pay out and retract smoothly to maintain a taut line during normal movement. Work as directly under the anchor as possible. If necessary, the leg end connector may be attached to a lower level anchorage, up to 2 ft. below the user's harness D-ring. Be aware that a lower anchorage increases the risk of injury due to swing fall. Additional fall clearance is required.

- DO NOT attach the SRD leg end to the FBH with a rebar hook or any large-throat snap hook or large carabiner. A side load could cause an unintentional disengagement. Use small snap hooks only.
- DO NOT attach the housing to the FBH with a rebar hook or any large-throat snap hook or large carabiner. A side load could cause unintentional disengagement.

Locking Speed: The SRD utilizes a centrifugally activated pawl locking mechanism to engage a brake to slow and arrest the user in a fall event. This requires a certain minimum pay-out rate to function. Some situations, confined or cramped spaces, shifting footing such as sand, gravel, grain, or a sloped surface, may not allow the lifeline to reach sufficient speed to activate the lock mechanism. A clear fall path is required to assure positive locking of the SRD.

Impact and Lifeline Indicators: The SRD incorporates a fall arrest impact indicator in the leg end connector in the form of a red band, as shown in Figure 6A. If a red band is visible, the SRD has been subjected to fall arrest forces. Remove the unit from service immediately.

The SRD is also equipped with two lifeline indicators; a green marker to indicate the end of the lifeline's working length, and a red marker, to indicate the reserve cable in the housing has been breached. When the green marker becomes visible as shown in Figure 6B, the lifeline will stop paying out. Do not extract additional lifeline from the SRD. Attempts to extract additional lifeline from the housing may result in serious injury or death. The red marker is further up the cable, also shown in Figure 6B. When the red marker is visible, it indicates the reserve portion of the lifeline has been breached. Remove the SRD from service immediately, tag it as "UNUSABLE", and contact

FallTech at **info@falltech.com**

The green marker, and a small portion of the lifeline past it, may become visible due to manufacturing variables during normal use. As long as the lifeline stops paying out near the green marker, this is normal. The red marker will not be visible in normal use.

- DO NOT allow the lifeline to become tangled or twisted as this may prevent it from retracting.
- DO NOT allow the lifeline to pass under arms or between legs during use.
- DO NOT clamp, knot, or prevent the lifeline from retracting or being taut
- DO NOT lengthen the SRD by connecting a lifeline or similar component.
- DO NOT allow the lifeline to freewheel back into the housing.
- After a Fall: Remove from service immediately any equipment subjected to fall arrest forces, or exhibiting damage consistent with the effects of fall arrest forces.

SPECIFICATIONS

See Table 1A – Specifications and Dimensions.

MAINTENANCE, SERVICE, AND STORAGE

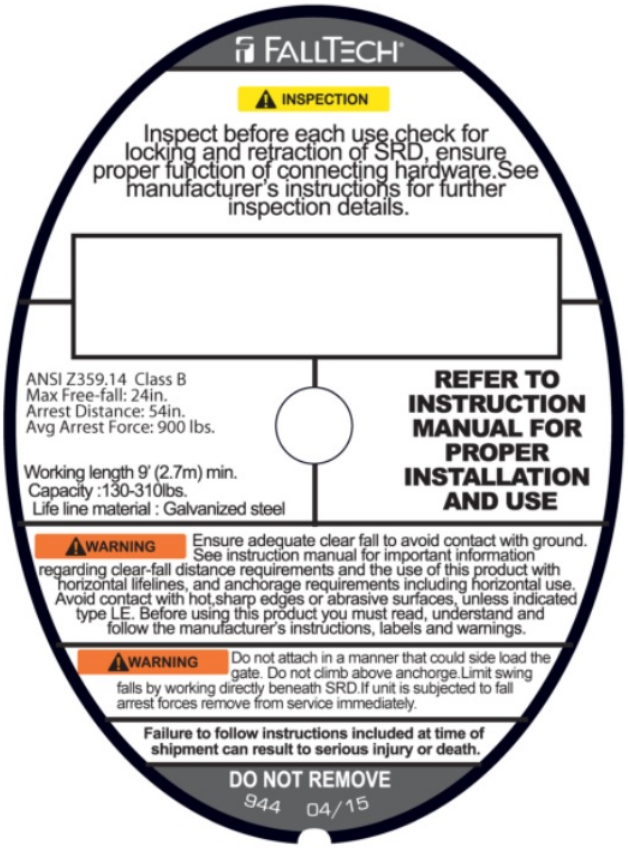
- Maintenance: Ensure the SRD is kept free of excess paint, grease, dirt or other contaminants as this may cause the cable or retracting mechanism to malfunction. Ensure no debris enters the housing through the cable access port.
- Clean the exterior of the unit as required with a detergent/water solution.
- Do not allow excess water inside the housing. After cleaning, pull the lifeline out, allow the unit to air dry, then retract the lifeline into the unit.
- Clean labels as required.
- DO NOT attempt to disassemble the SRD.
- Inspect the SRD according to the procedures in Section 7 before returning it to service. If the SRD fails any portion of the inspection checklist, remove it from service, tag the unit as “UNUSABLE”, and consult with the manufacturer.
- Service: Remove the unit from service if it has been subjected to fall arrest forces. Tag the unit as “UNUSABLE” to prevent future use. The SRD is not repairable from fall arrest impact loading.
- Storage: Hang to store, out of direct sunlight. Ensure the lifeline is completely retracted into the housing. Avoid exposure to chemical agents and vapors, airborne debris, and water ingress. Store units tagged as “UNUSABLE” in a marked area to prevent
- inadvertent use. Inspect any unit that has been stored for an extended time by the procedures detailed in Section 7.

INSPECTION

- Before Each Use: Perform an inspection before each use by the SRD Inspection Recommendations in Table 2, and Guidelines for Cable SRD Inspection in Table 3. See paragraph 7.4.
- Inspection Frequency: OSHA 1910.66, OSHA 1926.502, and ANSI Z359.14 require an inspection by the Authorized Person before each use.

- In addition, an inspection by a Competent Person at regular intervals is required. The competent person will use the information in the Inspection Interval Table to determine the inspection frequency. See Table 3.
- Inspection Guidelines: Use the Inspection Guidelines provided in Table 3 to inspect the SRD. See Figure 7 for constituent line inspection.
- Inspection Results: If an inspection reveals defects in or damage to the equipment, inadequate maintenance or activated fall force indicators, mark as “UNUSABLE”, and remove the equipment from service.
- Inspection Document: Record inspection results on the Inspection Record provided in Appendix B, or on a similar document.

LABELS
The labels must be present and legible.



APPENDIX A

Tabla 1A: Especificaciones para los SRD con Cable DuraTech de 9 pies (2,7 m)

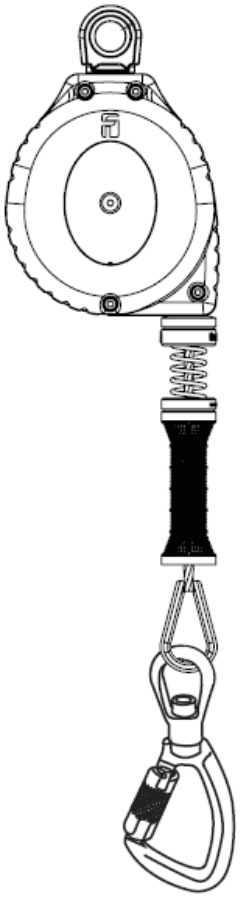
Table 1A: **Specifications for DuraTech 9' Cable SRDs**				
Standards: ANSI Z359.14-2014 Class B **User Capacity:** 310 lbs Max.				
Model #	**Housing Anchorage Connector**	**Lifeline Leg-End Connector**	**Materials**	**SRD**
83709SA7 3/16" Galvanized	**Housing Swivel Eye :** Aluminum	**Load-Indicating S wivel Carabiner:**		
Wire Cable		Alloy Steel 5,000 lb s Min Tensile Strength 3,600 lbs Min Gate Strength	**Main Spring:** Stainless Steel **Housing:** Polycarbonate	
83709SB7 3/16" Galvanized Wire C able	**Alloy Steel Carabin er:** 5,000 lbs Min Ten sile Strength 3,600 lb s Min Gate Strength			
			Main Shaft:	
		Load-Indicating	Alloy Steel	
83809SG9 3/16"	**Forged Aluminum Carabiner:** 5,000 lbs Min	**Swivel Snap Hook :** Stainless Steel	**Locking Pawls:** Stainless Steel	
Stainless Steel Wir e Cable	Tensile Strength 3,60 0 lbs Min Gate Stren gth	5,000 lbs Min Tensi le Strength 3,600 lbs Min		
		Gate Strength		
Min Cable Tensile Strength: Galvanized 4,200 lbs Stainless Steel 3,700 lbs				

Table 1B: 9ft Cable SRD- Typical FallTech Performance Attributes and ANSI Performance Requirements.

Table 1B: **9ft Cable SRD- Typical FallTech Performance Attributes and ANSI Performance Requirements**										
Average Values of Testing				**Maximum Values of Testing**				**ANSI Performance Requirements**		
User Condition	**Arrest Distance**	**Average Arrest Force**	**Maximum Arrest Force**	**User Condition**	**Arrest Distance**	**Average Arrest Force**	**Maximum Arrest Force**	**Maximum Arrest Distance**	**Average Arrest Force** *Conditioned	**Maximum Arrest Force**
310 lbs. Overhead Anchorage	21”	766 lbs	1,162 lbs	310 lbs. Overhead Anchorage	35”	876 lbs	1,381 lbs	54”	1,125 lbs	1,800 lbs
310 lbs. Non-Overhead Anchorage	60”	690 lbs	1,344 lbs	310 lbs. Non-Overhead Anchorage	73”	744 lbs	1,546 lbs	n/a	n/a	n/a

Extreme Condition Testing; Hot/Wet/Cold. Worst case scenario

Table 2 – ANSI Z359.14-2014 SRD Inspection Recommendations

Table 2 – ANSI Z359.14-2014 SRD Inspection Recommendations			
Type of Use	**Application Examples**	**Conditions of Use**	**Inspection Frequency** **Competent Person**
Infrequent to Light Use	Rescue and Confined Space, Factory Maintenance	Good Storage Conditions, Indoor or Infrequent Outdoor use, Room Temperature, Clean Environments	Annually
Moderate to Heavy Use	Transportation, Residential Construction, Utilities, Warehouse	Fair Storage Conditions, Indoor and extended outdoor use, All temperatures, Clean or dusty environments	Semi-annually to Annually
Severe to **Continuous Use**	Commercial Construction, Oil and Gas, Mining	Harsh Storage Conditions, Prolonged or Continuous outdoor Use, all temperatures, Dirty environments	Quarterly to Semi-annually

Table 3: Guidelines for Cable SRD Inspection (use Figure 1 where needed)

Table 3: **Guidelines for Cable SRD Inspection**

(use Figure 1 where needed)

Inspection	**Pass**	**Fail**
The cable lifeline should extract and retract completely and without falterin g and should remain taut under tension without sagging.		
Extract the cable lifeline several inches and apply a firm pull to confirm the SRD locks. The locking should be certain and without skidding. Repeat this lockup at additional places along the lifeline length to confirm the SRD is operating c orrectly.		
Examine the load indicator on the swiveling carabiner to be certain that it h as not been loaded, impacted or activated. (see figure 6A if needed)		
Inspect the entire length of the constituent line up to the Green Maximum Working Length Visual Indicator shown in Figure 6B. Review the constituent cable lifeline closely for broken strand wires, welding spatter bu rns, welding slag, birdcaging, kinks and bent strands. Also examine for rust, dirt, paint, grease or oil. Check for damage caused by chemical corruption or excessive heat as evident with discoloration. See Figure 7 for examples. If any of these conditions exist, remove the SRD from service.		
If during your line inspection defined above, you extract the line past the Gr een Indicator and ultimately expose a secondary Red Indicator on the line, you must remove the SRD from service immediately. This Secondary Red Visual Indicator signals the SRD unit's Reserve Line has been deployed or the SRD has experienced a fall event and is no longer in working order.		
Check for any missing or loose screws or nuts and any deformed or damaged components.		
Examine the external housing for cracks, breaks or warping.		
Check the external Connector Eye and the Anchorage Carabiner for dama ge and deformation. The Anchorage Carabiner Gate should twist open and snap shut easily and smoothly.		
Examine the overall SRD unit for any indications of deterioration or damag e.		
All labels must be intact and readable (see Section 8)		

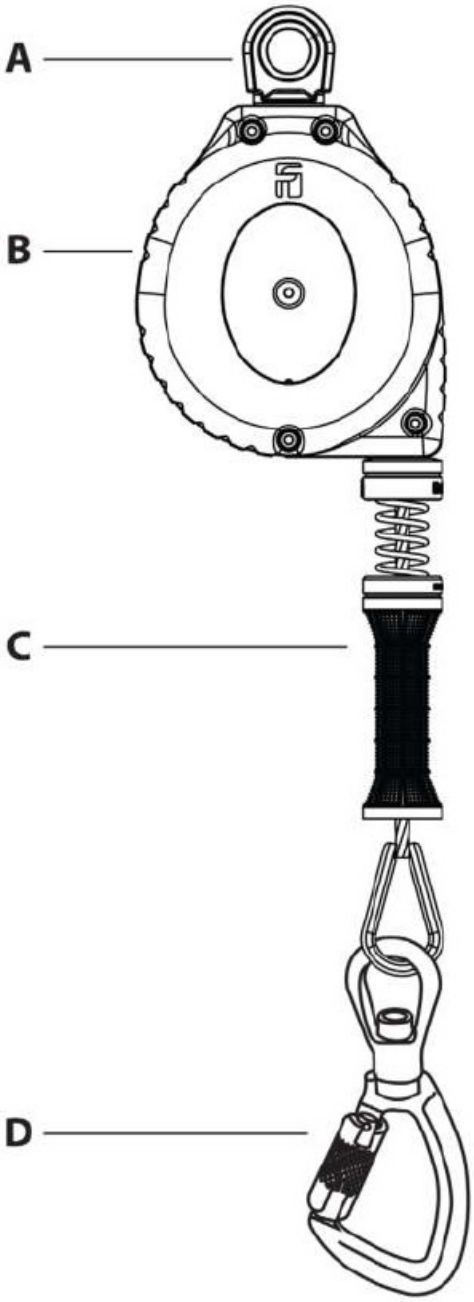


Figure 1: **About DuraTech 9’ Cable SRDs**	
A	Housing Swivel Eye
B	SRD Unit Housing
C	Cable-Stop/Handle Assembly (spring/bumpers)
D	Load-indicating Swivel Carabiner

Shaded area indicates Range of Allowable Connection from: Directly Overhead to as low as 2’ Below Dorsal D-ring for 310 lb User

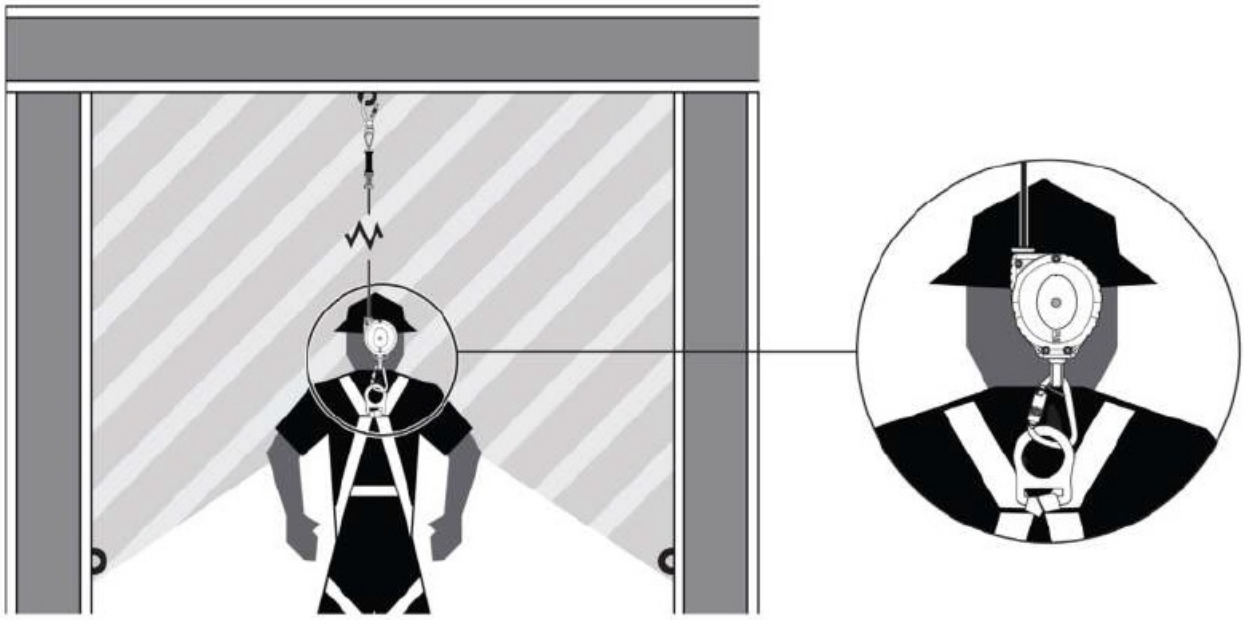
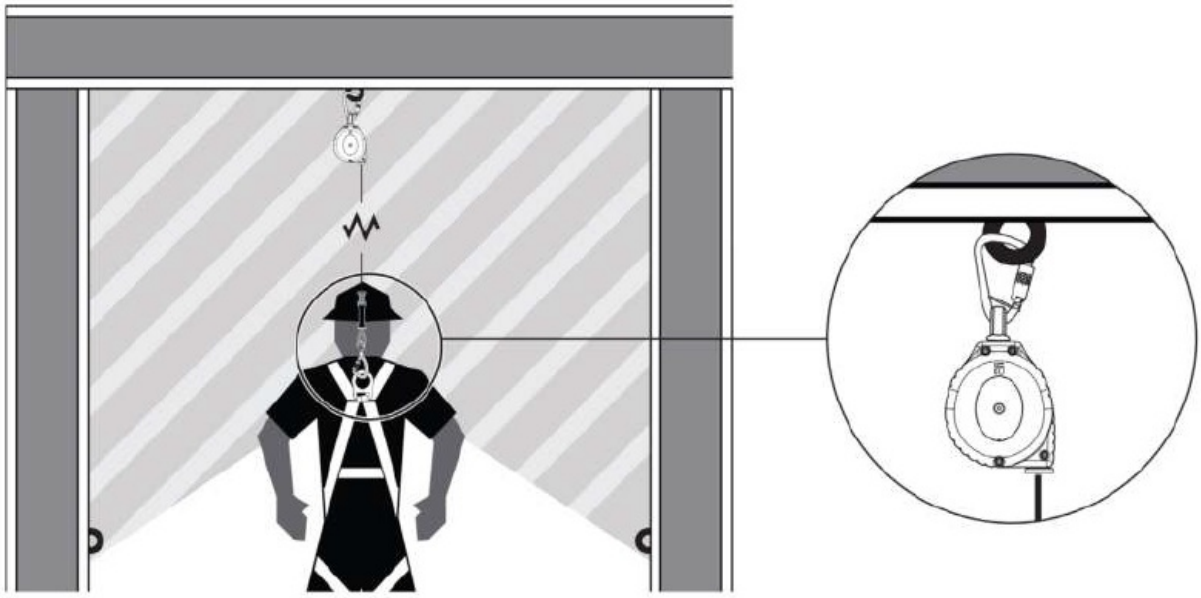
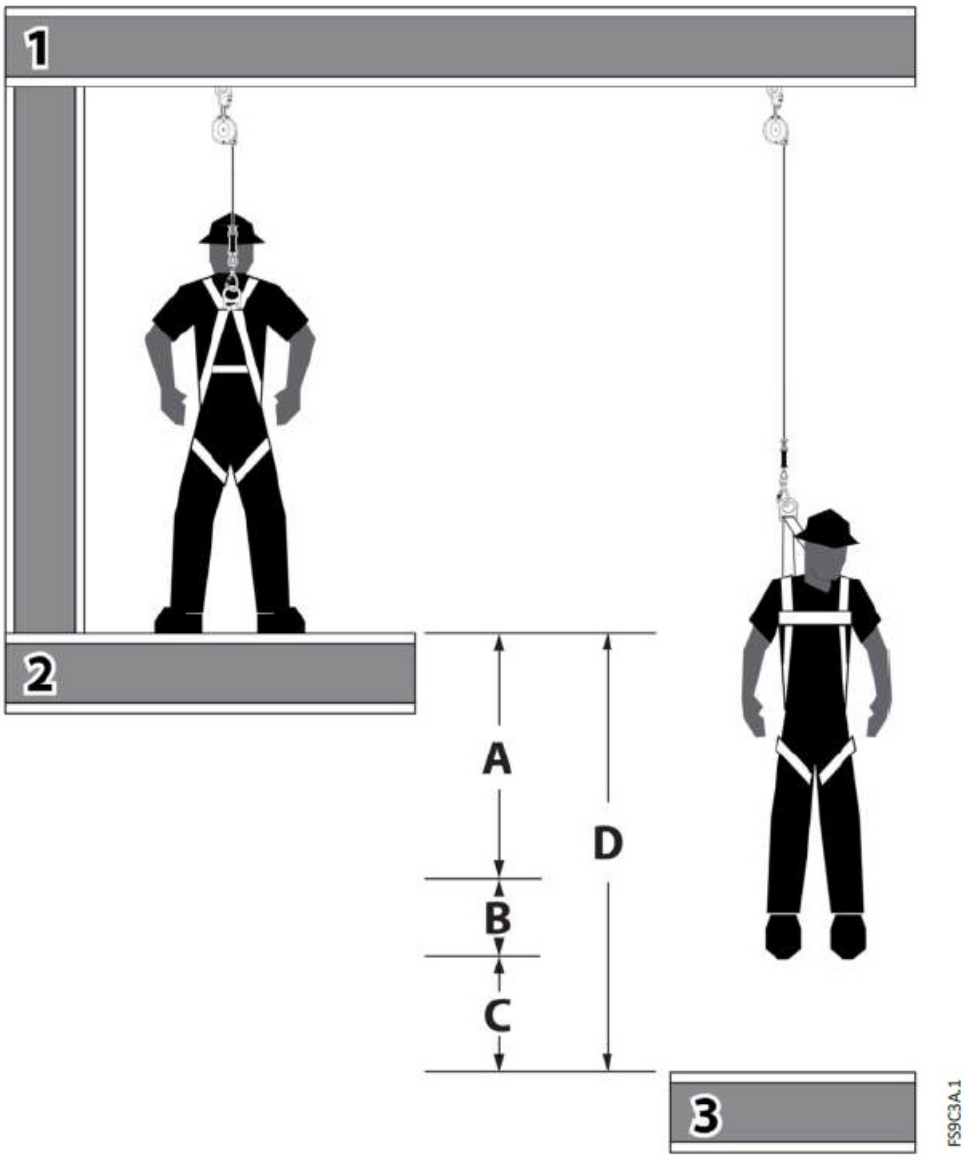


Figure 2A: 9’ Cable SRD Orientation and Acceptable Anchorage Range SRD Attached to FBH

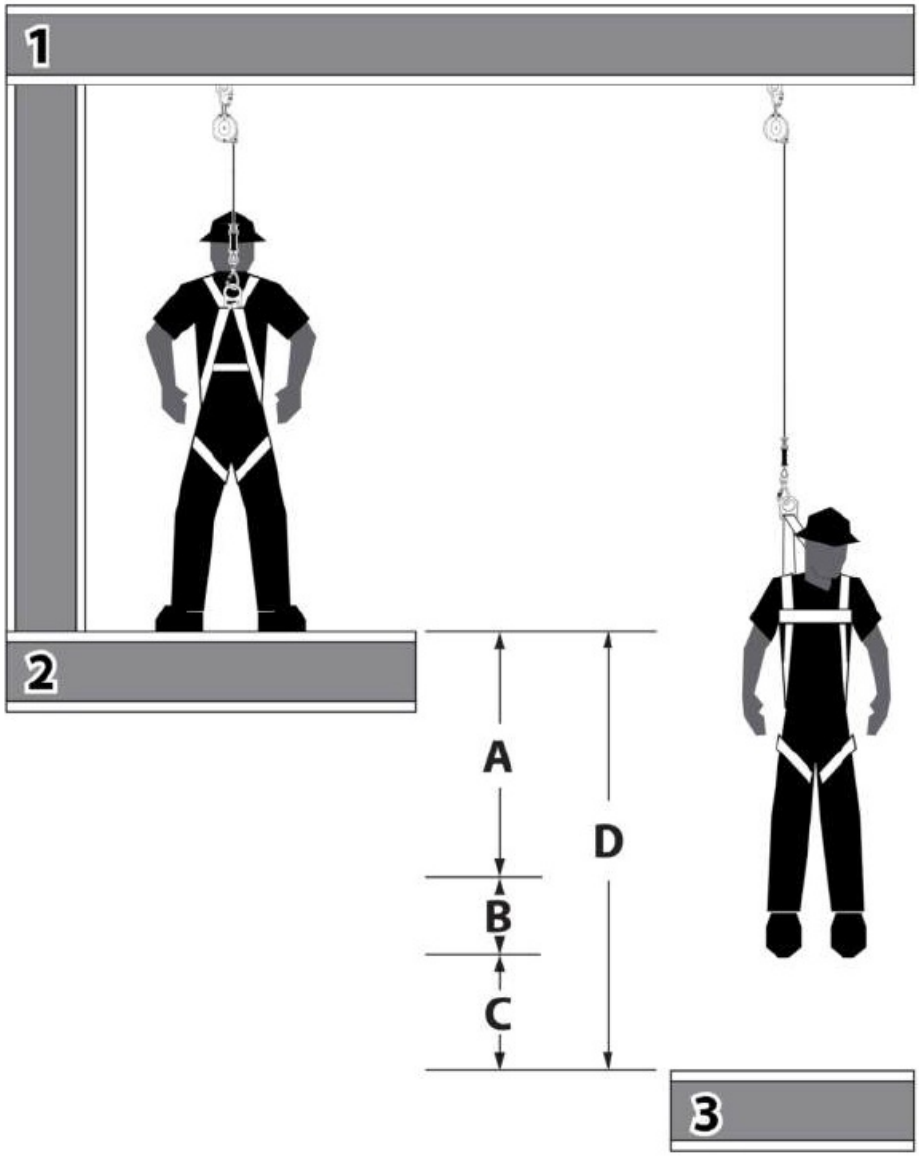
Figure 2B: 9’ Cable SRD Orientation and Acceptable Anchorage Range SRD Attached to Anchor



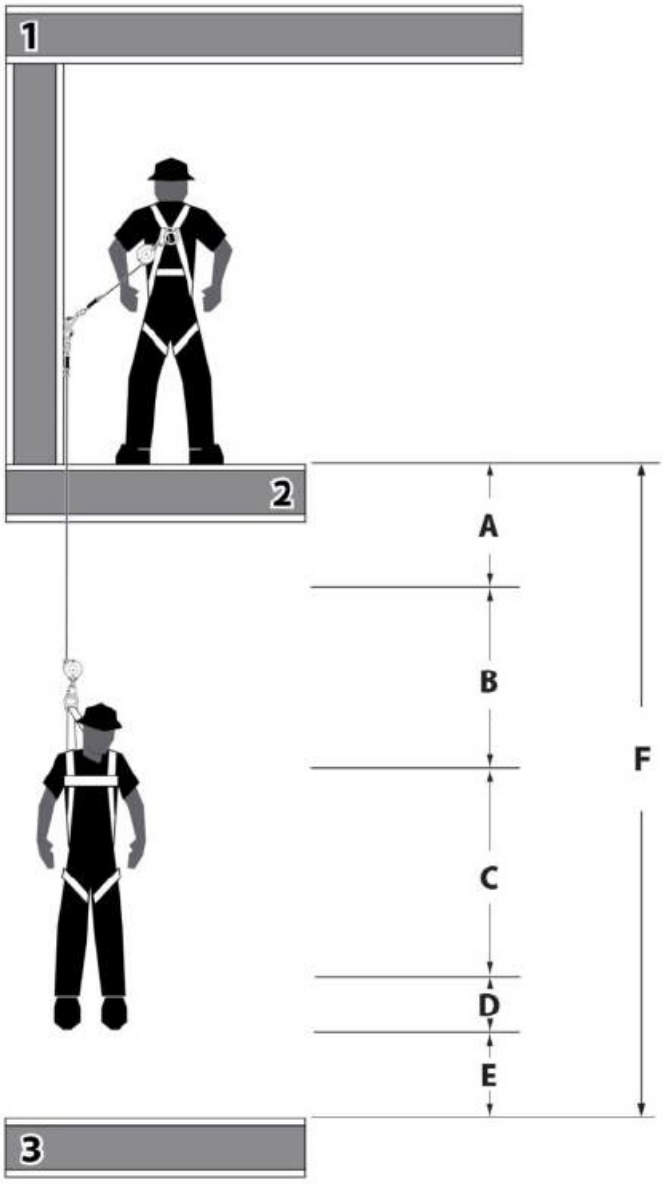
Shaded area indicates Range of Allowable Connection from: Directly Overhead to as low as 2’ Below Dorsal D-ring for 310 lb User


1
2
A
B
C
D
3
F59C3A.1

310 lbs Maximum User Capacity		Overhead Anchorage
Figure 3A: **Calculating Minimum Required Fall Clearance 9’ Cable SRD**		
A	**3** ft	**Deceleration Distance** Maximum allowable length of cable that may payout from the SRD once deceleration of the user has begun, and after a fall event occurs
B	**1** ft	**Dorsal D-Ring Shift and FBH Stretch** Combined amount of Dorsal D-ring up-shift and harness webbing elongation during entire fall event
C	**1½ ft**	**Safety Factor** Added length to account for other factors such as an improperly adjusted harness, actual worker height, or worker weight
D	**5½ ft**	**Sub Total- Minimum Required Fall Clearance** for direct overhead use of SRD with No Swing Fall (sum of A, B, and C only)
E*		***Additional Fall Clearance Calculation** due to Swing Fall (using Chart 1)
F		**Total Required Fall Clearance** Including sub-total D and Swing Fall E (from Chart 1)
1. Overhead Anchorage 2. Walking/Working Surface 3. Nearest Lower Level or Obstruction		


1
2
A
B
C
D
3

310 lbs Maximum User Capacity		Non-Overhead Anchorage
Figure 3B: **Calculating Minimum Required Fall Clearance 9’ Cable SRD**		
A	**2** ft	**Free Fall Distance** due to the below D-ring Anchorage Condition
B	**3** ft	**Deceleration Distance** Maximum allowable length of cable that may payout from the SRD once deceleration of the user has begun, and after a fall event occurs
C	**3½ ft**	**Additional Deceleration Distance** due to the below D-ring Anchorage Condition
D	**1** ft	**Dorsal D-Ring Shift and FBH Stretch** Combined amount of Dorsal D-ring up-shift and harness webbing elongation during entire fall event
E	**1½ ft**	**Safety Factor** Added length to account for other factors such as an improperly adjusted harness, actual worker height, or worker weight
F	**11** ft	**Sub Total- Minimum Required Fall Clearance** for non-overhead use of SRD with No Swing Fall (sum of A thru E only)
G*		***Additional Fall Clearance Calculation** due to Swing Fall (using Chart 1)
H		**Total Required Fall Clearance** Including sub-total F and Swing Fall G (from Chart 1)
1. Overhead Anchorage 2. Walking/Working Surface 3. Nearest Lower Level or Obstruction		


1
2
3
A
B
C
D
E
F

310 lbs Maximum User Capacity		Non-Overhead Anchorage
Figure 3B: **Calculating Minimum Required Fall Clearance 9’ Cable SRD**		
A	**2** ft	**Free Fall Distance** due to the below D-ring Anchorage Condition
B	**3** ft	**Deceleration Distance** Maximum allowable length of cable that may payout from the SRD once deceleration of the user has begun, and after a fall event occurs
C	**3½ ft**	**Additional Deceleration Distance** due to the below D-ring Anchorage Condition
D	**1** ft	**Dorsal D-Ring Shift and FBH Stretch** Combined amount of Dorsal D-ring up-shift and harness webbing elongation during entire fall event
E	**1½ ft**	**Safety Factor** Added length to account for other factors such as an improperly adjusted harness, actual worker height, or worker weight
F	**11** ft	**Sub Total- Minimum Required Fall Clearance** for non-overhead use of SRD with No Swing Fall (sum of A thru E only)
G*		***Additional Fall Clearance Calculation** due to Swing Fall (using Chart 1)
H		**Total Required Fall Clearance** Including sub-total F and Swing Fall G (from Chart 1)
1. Overhead Anchorage 2. Walking/Working Surface 3. Nearest Lower Level or Obstruction		

If a potential Swing Fall Hazard condition is also present, additional Fall Clearance is needed in the above calculation; see Chart 1 for calculating this additional required distance.

If a potential Swing Fall Hazard condition is also present, additional Fall Clearance is needed in the above calculation; see Chart 1 for calculating this additional required distance.

Figure 4A: Swing Fall Hazards

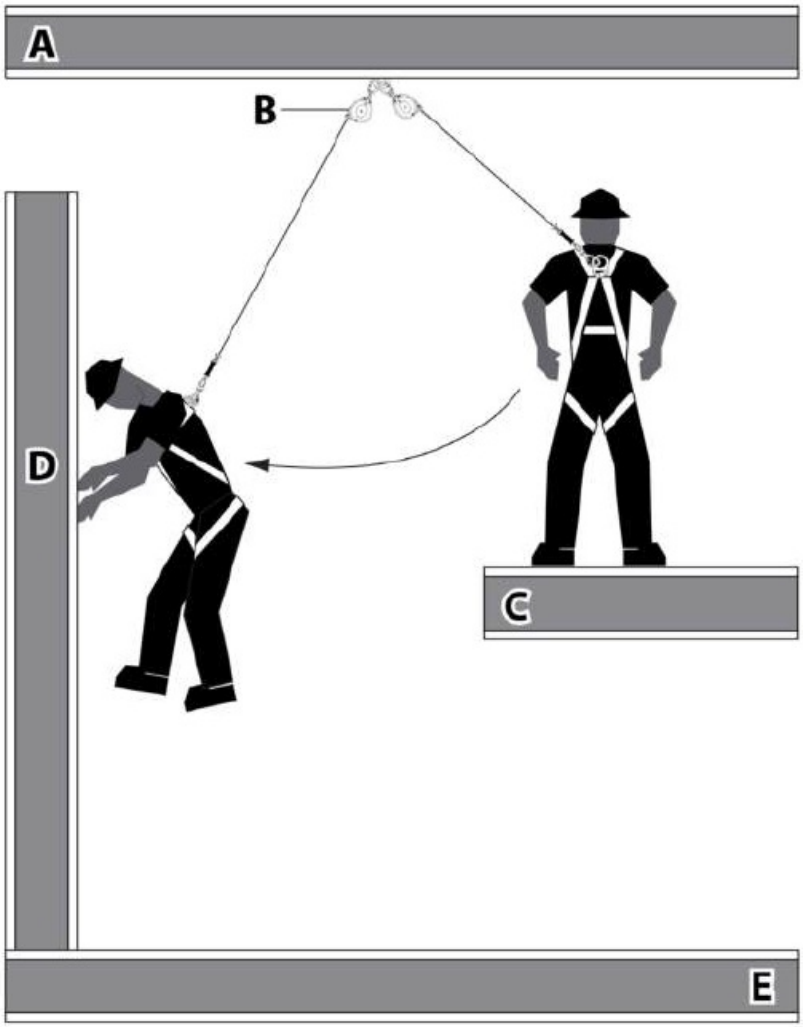


Figure 4A: **Swing Fall Hazards Overhead Anchorage**	
A	Anchorage
B	Self-Retracting Lifeline
C	Walking/Working Surface
D	Swing Fall Impact After Fall Event
E	Next Lower Level or Obstruction
See Chart 1 for additional Swing Fall Hazard due to increased fall distance; for use with Figures 3A and 3B	

Overhead Anchorage

Figure 4B: Swing Fall Hazards
Non-overhead Anchorage

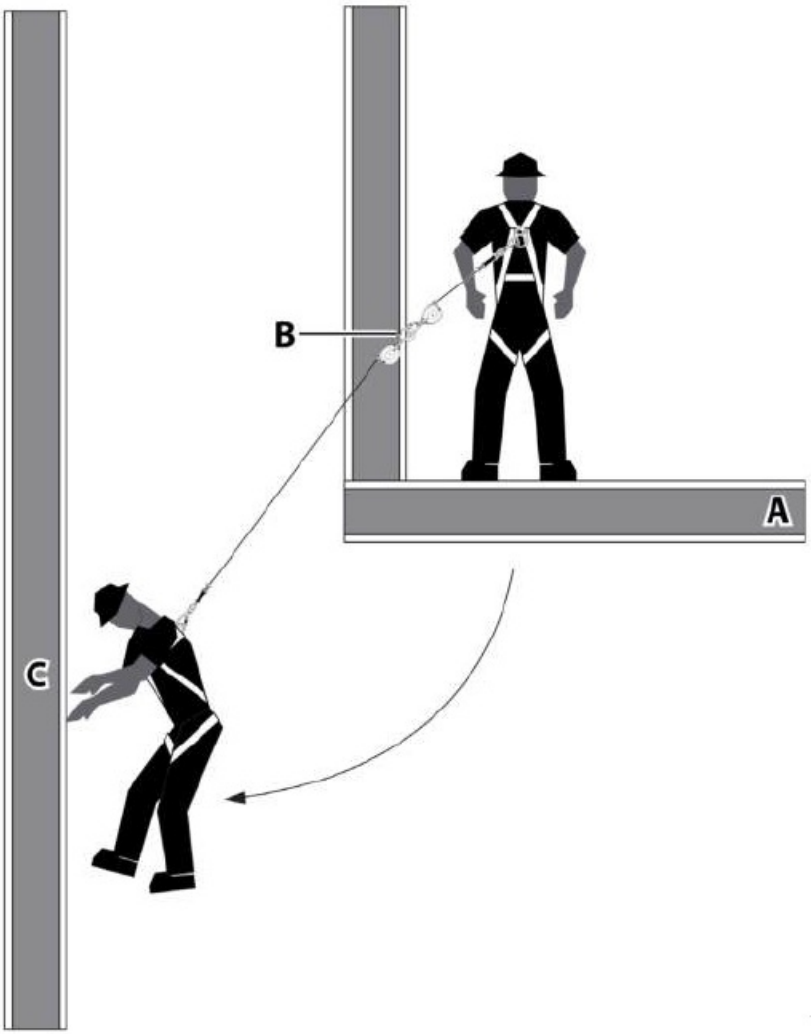
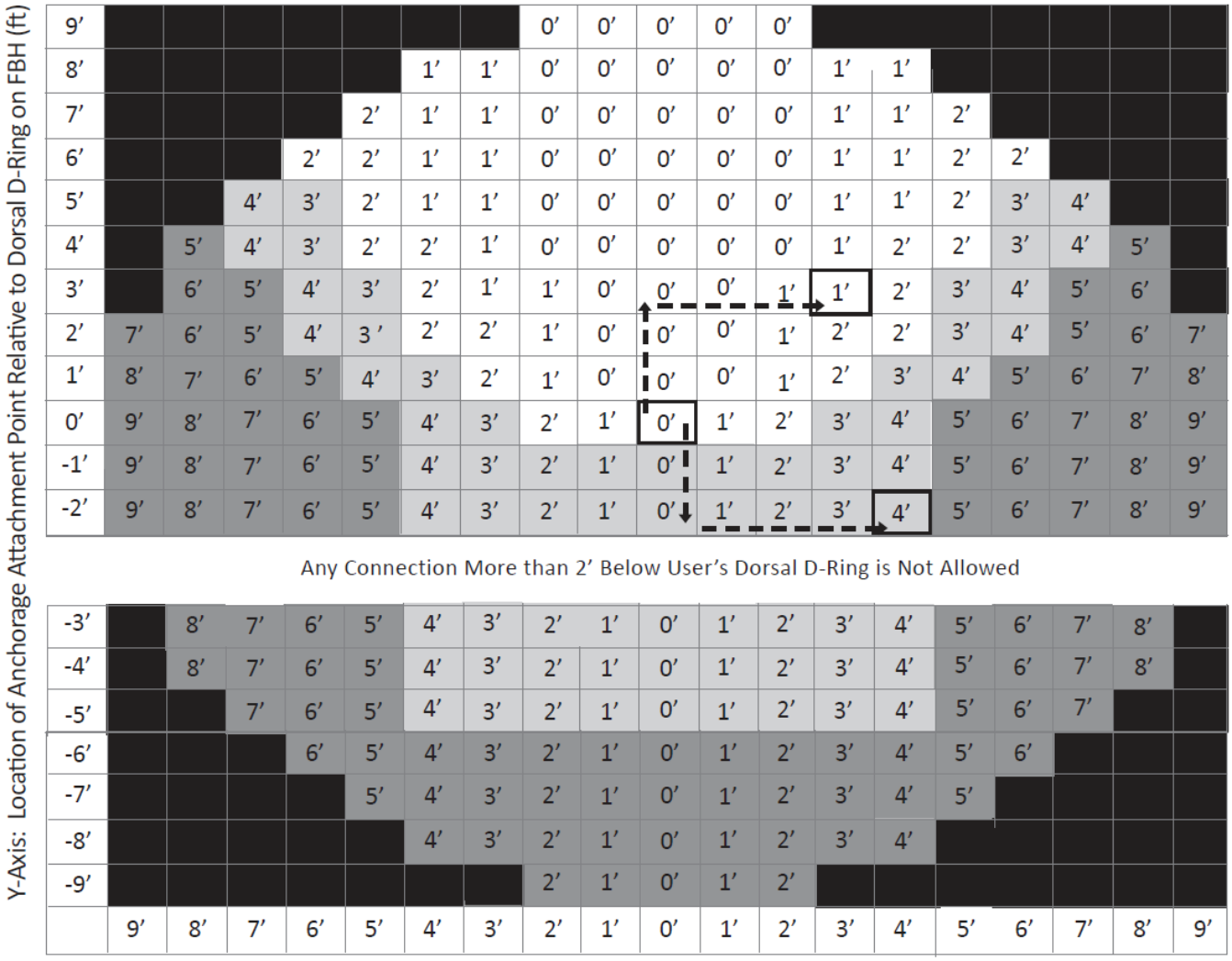


Figure 4B: **Swing Fall Hazards Non-overhead Anchorage**	
A	Self-Retracting Lifeline
B	Anchorage
C	Walking/Working Surface
D	Swing Fall Impact After Fall Event
E	Next Lower Level or Obstruction
See Chart 1 for additional Swing Fall Hazard due to increased fall distance; for use with Figures 3A and 3B	

Chart 1: Additional Required Fall Clearance Due to Swing Fall (ft)
Limited to 310 lb Max User Weight


Y-Axis: Location of Anchorage Attachment Point Relative to Dorsal D-Ring on FBH (ft)
9′ 8′ 7′ 6′ 5′ 4′ 3′ 2′ 1′ 0′ -1′ -2′ -3′ -4′ -5′ -6′ -7′ -8′ -9′
9′ 8′ 7′ 6′ 5′ 4′ 3′ 2′ 1′ 0′ 1′ 2′ 3′ 4′ 5′ 6′ 7′ 8′ 9′
Any Connection More than 2′ Below User's Dorsal D-Ring is Not Allowed

Using Chart 1 for Additional Fall Clearance
Key to Work Zone Areas: **= Allowable** Use Area **= Cautionary** Use Area **= Not Allowed** Use Area
Getting Started: Locate the center 0’ cell shown in Chart 1 at the intersection of the X and Y axes; this represents the location of the Dorsal D-Ring on the User’s FBH.
Overhead (above the Dorsal D-Ring) Starting at the center 0’ cell, follow the arrows: **EXAMPLE:** With leg-end snap hook connected to the Dorsal D-ring on FBH, User installs a 9’ SRD unit 3’ overhead (up the Y axis) and 3’ laterally (along the X axis). This intersection shows 1’ of additional Fall Clearance needed which is caused by Swing Fall. This additional 1’ must be added to the MRFC f or Overhead Use shown in **Figure 3A**
Non-Overhead (below the Dorsal D-Ring) Starting at the 0’ cell, follow the arrows: **EXAMPLE:** With leg-end snap hook connected to the Dorsal D-ring on FBH, User installs the 9’ SRD unit 2’ below the dorsal d-ring (down the Y axis) and 4’ laterally (along the X axis). This intersection shows 4’ of additio nal Fall Clearance needed which is caused by Swing Fall. This additional 4’ must be added to the MRFC for Non-Overhead Use in **Figure 3B**

Using Chart 1 for Additional Fall Clearance

Getting Started
Locate the center 0’ cell shown in Chart 1 at the intersection of the X and Y axes; this represents the location of the Dorsal D-Ring on the User’s FBH.

Overhead (above the Dorsal D-Ring) Starting at the center 0’ cell, follow the arrows:
EXAMPLE: With leg-end snap hook connected to the Dorsal D-ring on FBH, User installs a 9’ SRD unit 3’ overhead (up the Y axis) and 3’ laterally (along the X axis). This intersection shows 1’ of additional Fall Clearance needed which is caused by Swing Fall. This additional 1’ must be added to the MRFC for Overhead Use shown in Figure 3A

Non-Overhead (below the Dorsal D-Ring) Starting at the 0’ cell, follow the arrows:
EXAMPLE: With leg-end snap hook connected to the Dorsal D-ring on FBH, User installs the 9’ SRD unit 2’ below the dorsal d-ring (down the Y axis) and 4’ laterally (along the X axis). This intersection shows 4’ of additional Fall Clearance needed which is caused by Swing Fall. This additional 4’ must be added to the MRFC for Non-Overhead Use in Figure 3B

Figure 5A: Attaching Single-leg Mini to FBH

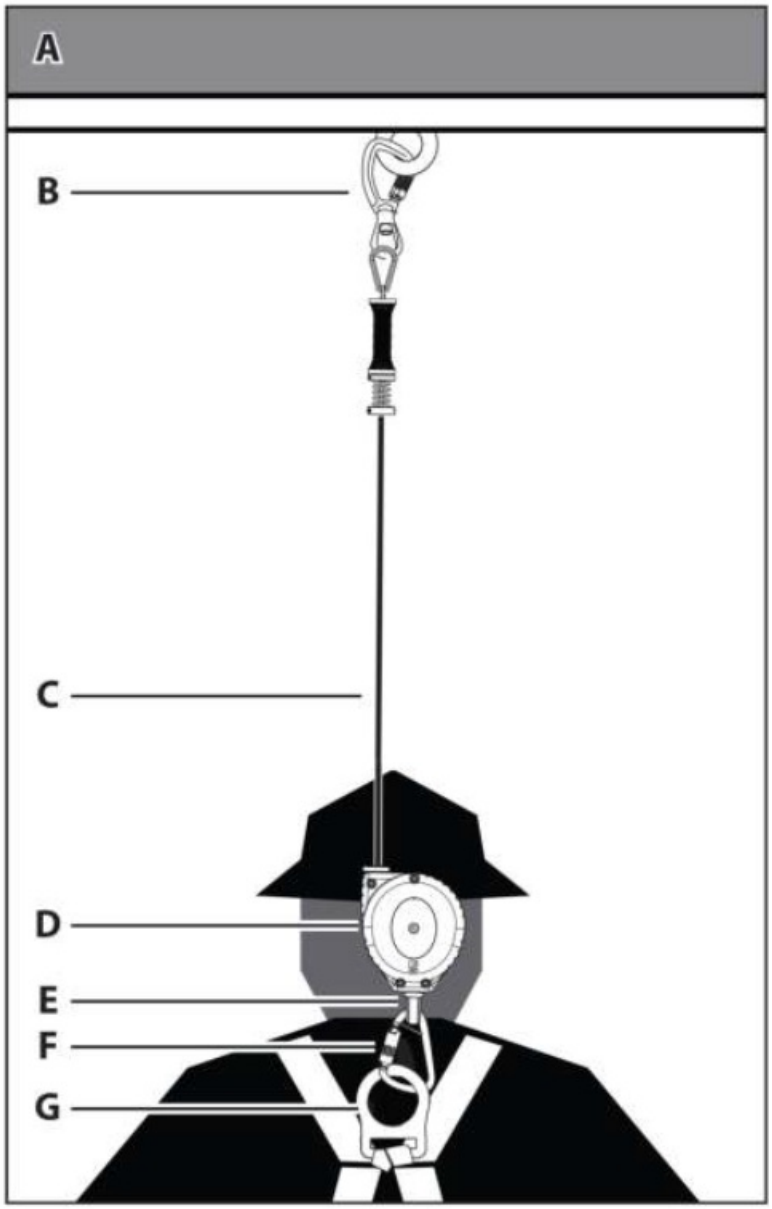


Figure 5A: **Attaching Single-leg Mini to FBH**	
A	Anchorage
B	Leg End Connector
C	Cable Lifeline
D	SRD Body/Housing
E	SRD Integral Swivel Eye
F	Carabiner w/captive pin
G	Dorsal D-ring on FBH

Figure 5B: Attaching Single-leg Mini to Anchor

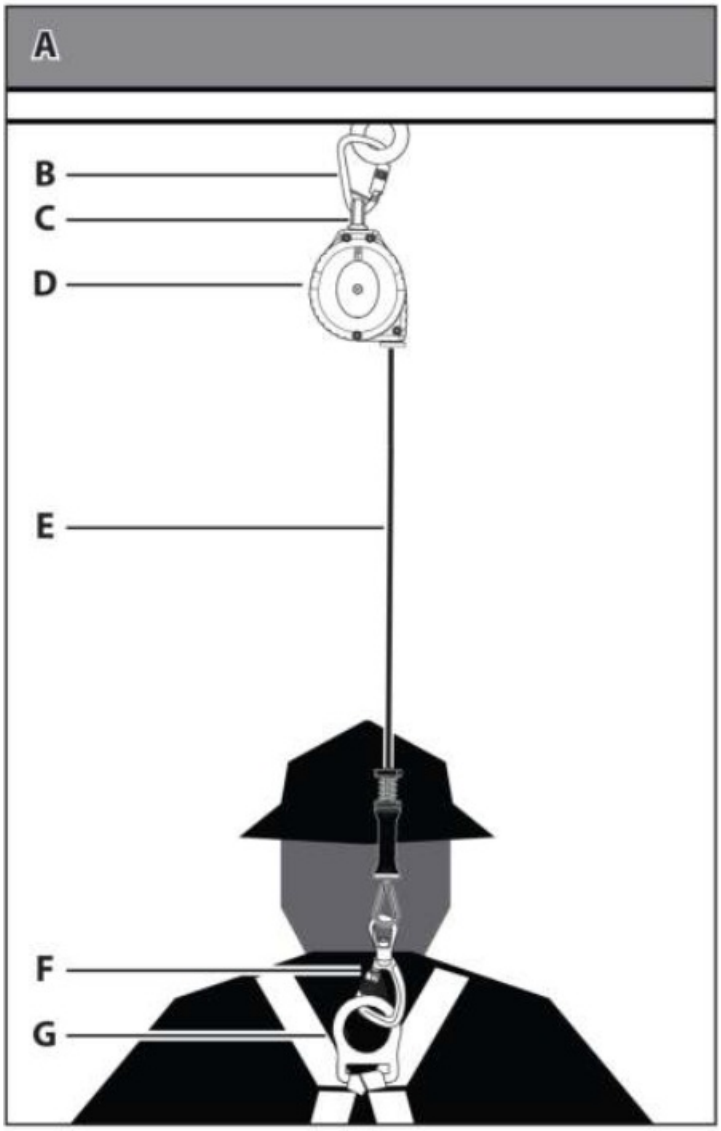


Figure 5B: **Attaching Single-leg Mini to Anchor**	
A	Anchorage
B	Carabiner w/captive pin
C	SRD Integral Swivel Eye
D	SRD Body/Housing
E	Cable Lifeline
F	Leg End Connector
G	Dorsal D-ring on FBH

Figure 6A: Inspecting SRD Load-Indicating Leg-end Connectors

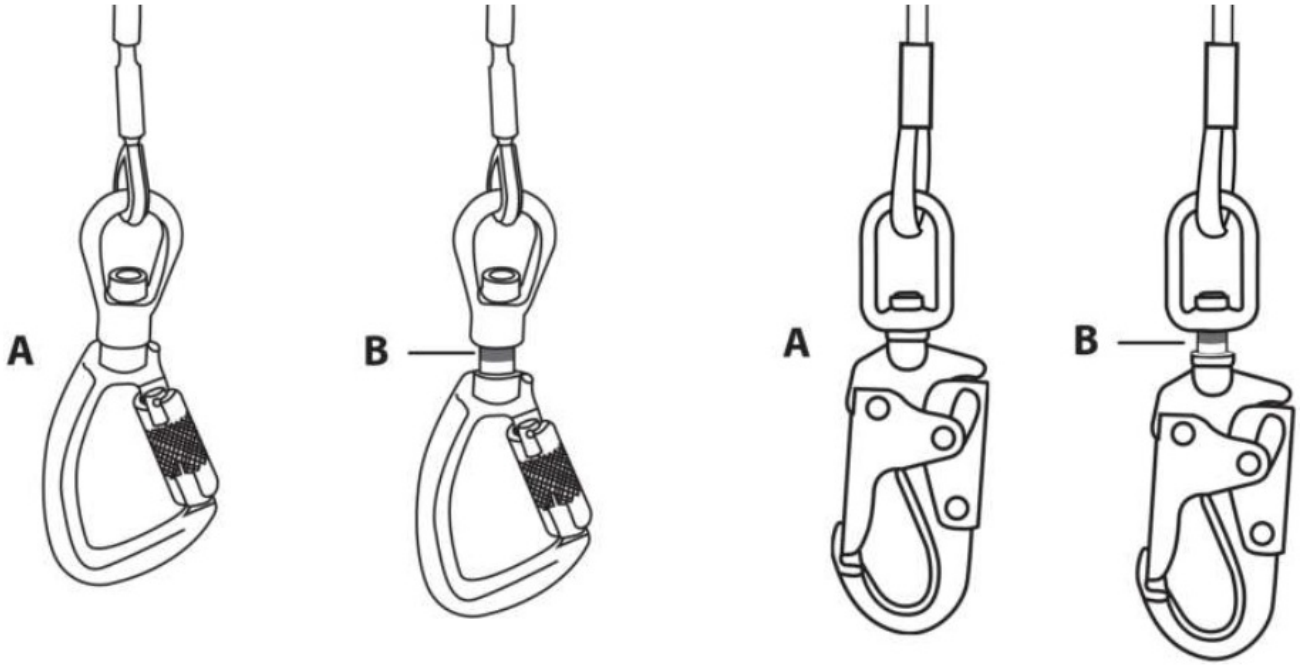


Figure 5B: **Attaching Single-leg Mini to Anchor**	
A	Anchorage
B	Carabiner w/captive pin
C	SRD Integral Swivel Eye
D	SRD Body/Housing
E	Cable Lifeline
F	Leg End Connector
G	Dorsal D-ring on FBH

Figure 6B: Inspecting SRD Line Indicators

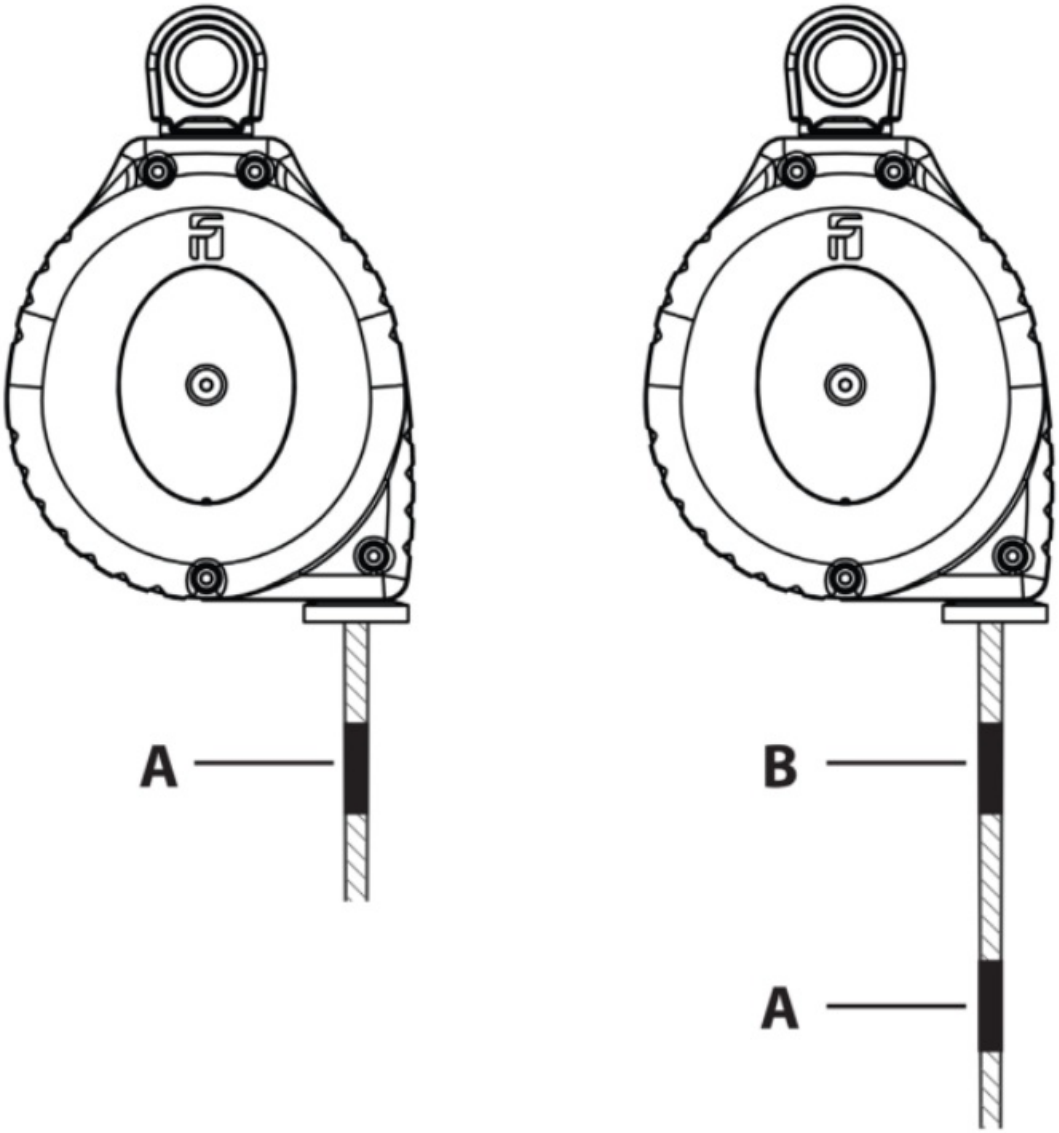


Figure 6B: **Inspecting SRD Line Indicators**	
A	Green Indicator- Regular Safe Operating Condition of Cable Lifeline Length
B	Red Indicator- Reserve Line Unprotected; Remove SRD from Service

Figure 7: Inspection of Constituent Cable

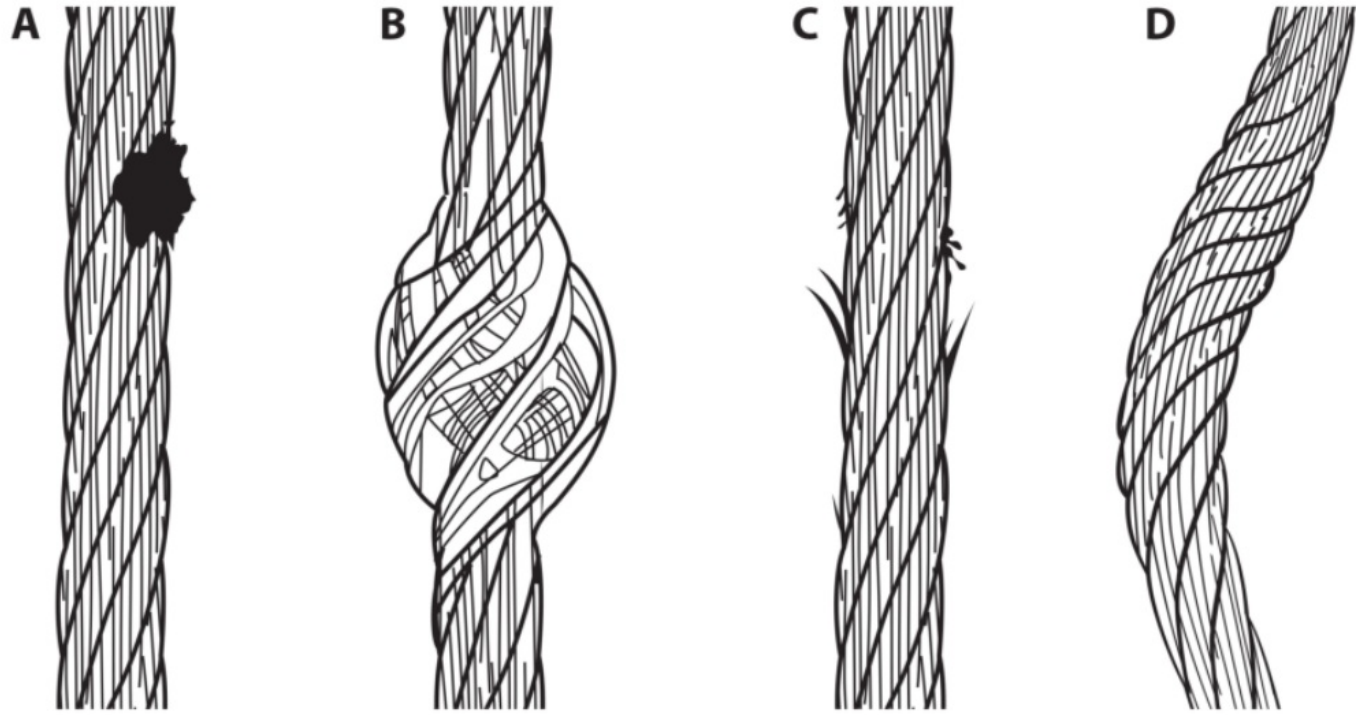


Figure 7: **Inspection of Constituent Cable**	
A	Heat Damage from Weld Spatter or Slag
B	Bird Caged
C	Broken Wires within Strands
D	Curled, Bent or Kinked

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USA|1-800-719-4619 1-323-752-0066
www.FallTech .com

Documents / Resources

	FALLTECH DuraTech 9ft Cable Self Retracting Device [pdf] Instruction Manual MSRD14, DuraTech 9ft Cable Self Retracting Device, DuraTech, 9ft Cable Self Retracting Device, Cable Self Retracting Device, Self Retracting Device, Retracting Device, Device

References

- User Manual