



Fall Protection

ANSI/ASSP Z359.14-2021 (Class 1)

OSHA 29 CFR 1910.140

OSHA 29 CFR 1926.502

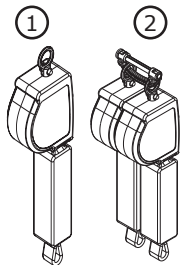
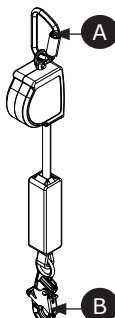
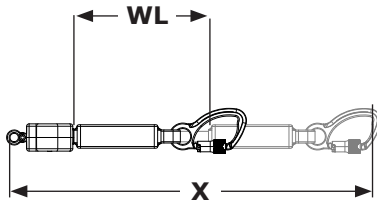

# 3M™ NANO-LOK® SELF-RETRACTING DEVICES

## USER INSTRUCTIONS

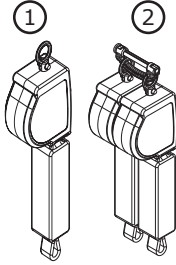
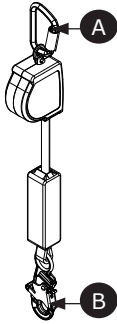
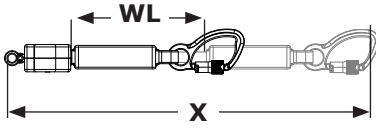
5908117 Rev. A

☑ For identification of product codes, refer to Table 1. See "Table 1 - Product Specifications" for more product information.

**Figure 1 - Product Overview**

							
Model		Connectors		Housing Size	Lifeline	Extended Length (X)	Working Length (WL)
		A	B				
<b>3100590</b>	①	C2	C7	Size A	DP1	11 ft. (3.35 m)	9.3 ft. (2.8 m)
<b>3100591</b>	①	C2	C5	Size A	DP1	11 ft. (3.35 m)	9.3 ft. (2.8 m)
<b>3100592</b>	①	C1	C5	Size A	DP1	11 ft. (3.35 m)	9.3 ft. (2.8 m)
<b>3100593</b>	①	C3	C7	Size A	DP1	11 ft. (3.35 m)	9.3 ft. (2.8 m)
<b>3100594</b>	①	C3	C13	Size A	DP1	11 ft. (3.35 m)	9.3 ft. (2.8 m)
<b>3100595</b>	①		C5	Size A	DP1	11 ft. (3.35 m)	9.3 ft. (2.8 m)
<b>3100596</b>	①	C1	C12	Size A	DP1	11 ft. (3.35 m)	9.3 ft. (2.8 m)
<b>3100597</b>	①	C2	C13	Size A	DP1	11 ft. (3.35 m)	9.3 ft. (2.8 m)
<b>3100598</b>	①	C6	C5	Size A	DP1	11 ft. (3.35 m)	9.3 ft. (2.8 m)
<b>3100599</b>	①	C2	C8	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100600</b>	①	C2	C11	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100601</b>	①	C2	C9	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100602</b>	①	C2	C4	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100603</b>	①	C1	C9	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100604</b>	①	C1	C4	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100605</b>	①	C3	C8	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100606</b>	①	C3	C11	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100607</b>	①	C1	C5	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)

**Figure 1 - Product Overview**

							
Model		Connectors		Housing Size	Lifeline	Extended Length (X)	Working Length (WL)
		A	B				
<b>3100608</b>	①	C2	C10	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100609</b>	②	C2	C5	Size A	DP1	11 ft. (3.35 m)	9.3 ft. (2.8 m)
<b>3100610</b>	②	C2	C7	Size A	DP1	11 ft. (3.35 m)	9.3 ft. (2.8 m)
<b>3100611</b>	②	C2	C13	Size A	DP1	11 ft. (3.35 m)	9.3 ft. (2.8 m)
<b>3100612</b>	②	C2	C8	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100613</b>	②	C2	C11	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100614</b>	②	C2	C9	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100615</b>	②	C2	C4	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)
<b>3100616</b>	②	C2	C10	Size A	DP1	9.0 ft. (2.7 m)	7.1 ft. (2.1 m)

# SAFETY INFORMATION

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**Please read, understand, and follow all safety information contained in these instructions, prior to the use of this product. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.**

**These instructions must be provided to the user of the equipment. Retain these instructions for future reference.**

## Intended Use:

This product is used as part of a complete Fall Protection system.

Use in any other application including, but not limited to, material handling, recreational or sports-related activities, or other activities not described in these instructions, is not approved by 3M and could result in serious injury or death.

This product is only to be used by trained users in workplace applications.



## WARNING

This product is used as part of a complete Fall Protection system. All users must be fully trained in the safe installation and operation of their complete Fall Protection system. **Misuse of this product could result in serious injury or death.** For proper selection, operation, installation, maintenance, and service, refer to all instruction manuals and manufacturer recommendations. For more information, see your supervisor or contact 3M Technical Services.

- **To reduce the risks associated with using a Self-Retracting Device which, if not avoided, could result in serious injury or death:**
  - Inspect the product before each use and after any fall event, in accordance with the procedures specified in these instructions.
  - If inspection reveals an unsafe or defective condition, remove the product from service immediately and clearly tag it "DO NOT USE". Destroy or repair the product as required by these instructions.
  - Any product that has been subject to fall arrest or impact force must be immediately removed from service. Destroy or repair the product as required by these instructions.
  - Ensure that Fall Protection systems assembled from components made by different manufacturers are compatible and meet all applicable Fall Protection regulations, standards, or requirements. Always consult a Competent or Qualified Person before using these systems.
  - Ensure the product is kept free from all hazards including, but not limited to: entanglement with users, other workers, moving machinery, other surrounding objects, or impact from overhead objects that could fall onto the product or users.
  - Do not twist, tie, knot, or allow slack in the lifeline.
  - Avoid trip hazards with legs of the lifeline. Attach any unused lifeline legs to the lanyard parking elements on your full body harness, if present.
  - Do not exceed the number of allowable users specified in these instructions.
  - Do not use in applications that have an obstructed fall path. A clear path is required to lock the SRD. Working on slowly shifting materials (e.g. sand or grain), or within confined spaces or limited spaces, may not allow the worker to reach sufficient speed to lock the SRD.
  - Avoid sudden or quick movements during work operation because this may cause the SRD to unintentionally lock.
  - Use caution when installing, using, or moving the product as moving parts may create pinch points.
  - Use appropriate edge protection when the product may contact sharp edges or abrasive surfaces.
  - Ensure the product is configured and installed properly for safe operation as described in these instructions.
  - Immediately remove the product from service if it has been used in a descent.
  - Before use, ensure the descent path and landing area are clear of any obstructions or hazards.
- **To reduce the risks associated with working at height which, if not avoided, could result in serious injury or death:**
  - Your health and physical condition must allow you to safely work at height and to withstand all forces associated with a fall arrest event. Consult your doctor if you have questions regarding your ability to use this equipment.
  - Never exceed allowable capacity of your Fall Protection equipment.
  - Never exceed the maximum free fall distance specified for your Fall Protection equipment.
  - Do not use any Fall Protection equipment that fails inspection, or if you have concerns about the use or suitability of the equipment. Contact 3M Technical Services with any questions.
  - Some subsystem and component combinations may interfere with the operation of this equipment. Only use compatible connections. Contact 3M Technical Services before using this equipment in combination with components or subsystems other than those described in these instructions.
  - Use extra precautions when working around moving machinery, electrical hazards, extreme temperatures, chemical hazards, explosive or toxic gases, sharp edges, abrasive surfaces, or below overhead materials that could fall onto you or your Fall Protection equipment.
  - Ensure use of your product is rated for the hazards present in your work environment.
  - Ensure there is sufficient fall clearance when working at height.
  - Never modify or alter your Fall Protection equipment. Only 3M, or persons authorized in writing by 3M, may make repairs to 3M equipment.
  - Before using Fall Protection equipment, ensure a written rescue plan is in place to provide prompt rescue if a fall incident occurs.
  - If a fall incident occurs, immediately seek medical attention for the fallen worker.
  - Only use a full body harness for Fall Arrest applications. Do not use a body belt.
  - Minimize swing falls by working as directly below the anchorage point as possible.
  - A secondary Fall Protection system must be used when training with this product. Trainees must not be exposed to an unintended fall hazard.
  - Always wear appropriate Personal Protective Equipment when installing, using, or inspecting the product.
  - Never work below a suspended load or worker.
  - Always maintain 100% tie-off.

☑ Always ensure you are using the latest revision of your 3M instruction manual. Visit [www.3m.com/userinstructions](http://www.3m.com/userinstructions) or contact 3M Technical Services for updated instruction manuals.

## PRODUCT OVERVIEW:

Figure 1 illustrates the product models covered by this instruction. Self-Retracting Devices (SRDs) are drum-wound lifelines that retract into solid housings.

The following SRD types are covered by this instruction:

- **Class 1 Self-Retracting Device (Figures 1 and 2):** Class 1 Self-Retracting Devices (SRDs) are suitable for applications where the lifeline remains generally vertical during use. This type may be used for Fall Arrest or Restraint applications.

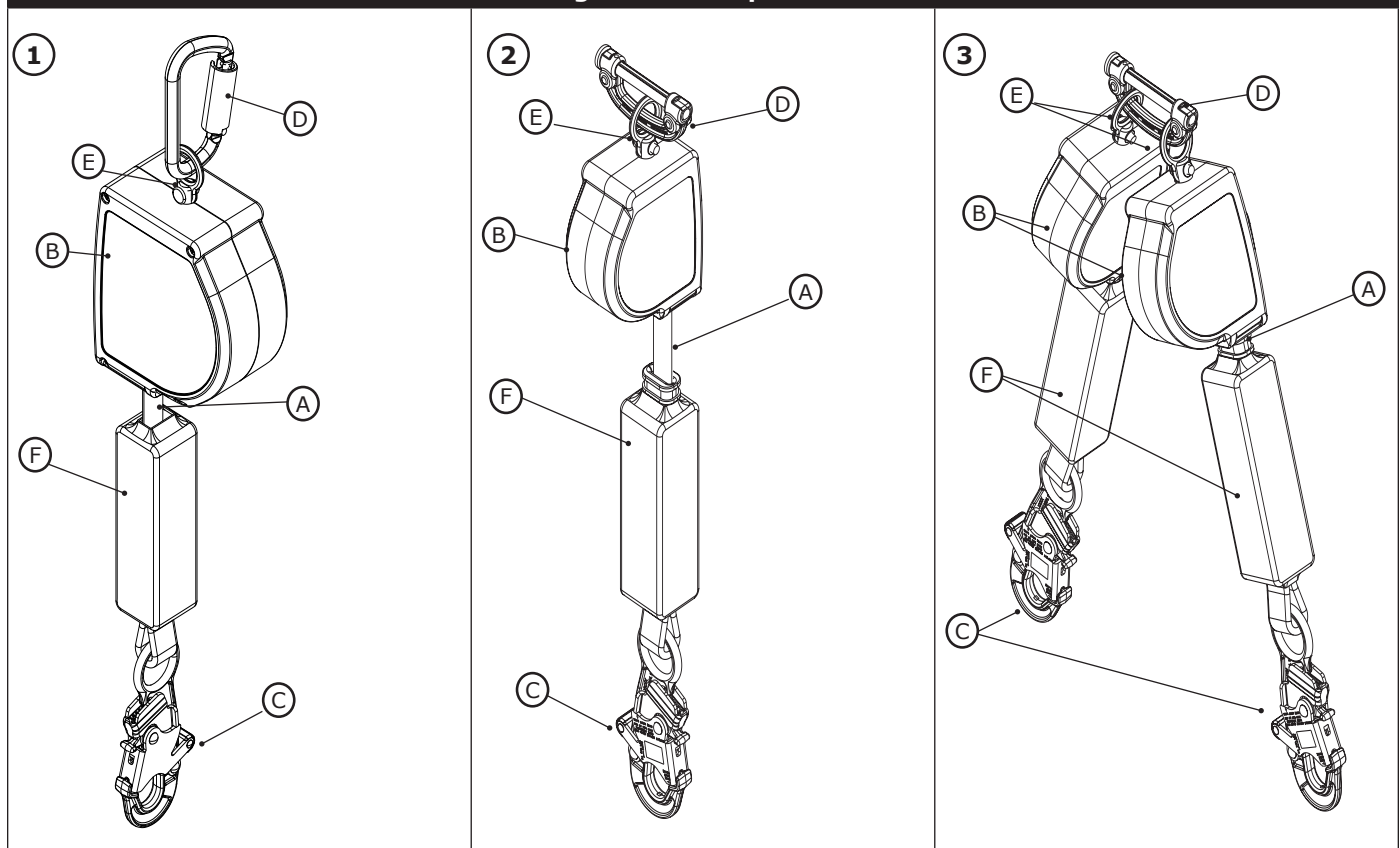
Figure 2 identifies key components of the available SRD models. In a standard SRD, the Lifeline (A) extends and retracts from within the Housing (B). The Top Connector (D) secures the SRD to its mounting point and is connected to the SRD by means of the Swivel Eye (E). The Bottom Connector (C) is secured at the end of the Lifeline. Depending on system configuration, the Bottom Connector will attach to either the designated attachment element of the user's full body harness or to the system's anchorage point. Energy Absorbers (F) dissipate kinetic energy and limit deceleration forces during fall arrest.

SRD models are available in single-SRD and twin-SRD configurations. Twin-SRD models (Figure 2.3) include a single Top Connector (D) to be shared between the two SRDs. These connectors are designed to interface with harnesses so that the Twin-SRD model may be worn on the user's back. Twin-SRD models may be used to maintain 100-percent tie-off when transferring between anchorage points.

☑ Twin Connections shall only be made for the purposes of 100% tie-off transitions

Each product model has its own particular size and its own combination of components as listed in Figure 1. See Table 1 for more information on Component Specifications.

**Figure 2 - Components**



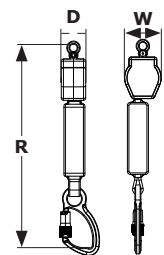
☒ Before using this equipment, record the product identification information from the ID label in the 'Inspection and Maintenance Log' at the back of this manual.

**Table 1 – Product Specifications**

<b>System Specifications:</b>				
<b>Anchorage:</b>	Anchorage structure requirements vary with the system application and whether it is a certified anchorage or non-certified anchorage. The anchorage structure must sustain static loads applied in the directions permitted by the anchorage connector.			
	<b>System Application</b>	<b>Certified Anchorage</b>	<b>Non-Certified Anchorage</b>	<b>Defined by</b>
	Fall Arrest	2 times maximum arresting force	5,000 lbf (22.2 kN)	OSHA, ANSI
	Restraint	2 times foreseeable force	1,000 lbf (4.4 kN) per ANSI 5,000 lbf (22.2 kN) per OSHA	OSHA, ANSI
	Work Positioning	2 times foreseeable force	3,000 lbf (13.3 kN)	OSHA, ANSI
	Rescue	5 times applied load	3,000 lbf (13.3 kN)	ANSI
When more than one system is attached to an anchorage, the strengths stated above must be multiplied by the number of systems attached to the anchorage. See ANSI/ASSP Z359.2 for more information.				
<input checked="" type="checkbox"/> Anchorage must be approved by a Qualified Person.				
<b>Service Temperature:</b>	-40°F to 130°F (-40°C to 54.4°C)			
<b>Standards:</b>	Each product model is certified to, or conforms with, the applicable standards and regulations listed within Figure 1. If none are specified, then all standards and regulations listed on the cover apply.			

<b>Component Specifications:</b>		
<b>Figure 2 Reference</b>	<b>Component</b>	<b>Materials</b>
(A)	Lifeline	(see Lifeline Specifications)
(B)	Housing	Nylon
(C)	Bottom Connector	(see Connector Specifications)
(D)	Top Connector	(see Connector Specifications)
(E)	Swivel Eye	Zinc-Plated Steel
(F)	Energy Absorber	Vinyl cover with Vectran lifeline
<input checked="" type="checkbox"/> <b>Internal Components:</b> Internal SRD components are made from a combination of Stainless Steel, Steel, and Aluminum.		

<b>Performance - SRDs</b>	<b>ANSI/OSHA Models</b>	<b>OSHA Models</b>
<b>Capacity Range:</b>	130 lb. - 310 lb. (59 kg - 140 kg)	311 lb. - 420 lb. (141 - 191 kg)
<b>Maximum Arresting Force:</b>	1800 lb. (8kN)	1800 lb. (8kN)
<b>Average Arresting Force:</b>	1125 lb. (5kN)	1125 lb. (5kN)
<b>Maximum Arrest Distance:</b> <i>*Assumes the SRD is mounted directly above the user.</i>	42 in. (1.07 m)	48 in. (1.22 m)
<b>Minimum Fall Clearance Required:</b> <i>*Assumes the SRD is mounted directly above the user.</i>	5 ft. (1.52 m)	5.5 ft. (1.68 m)
<b>Maximum Free Fall:</b> <i>*SRD must be mounted above user's D-ring.</i>	2 ft. (0.6 m)	2 ft. (0.6 m)

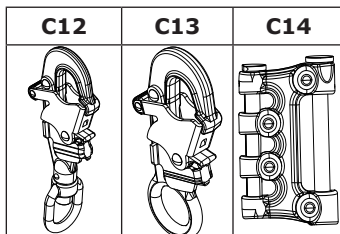
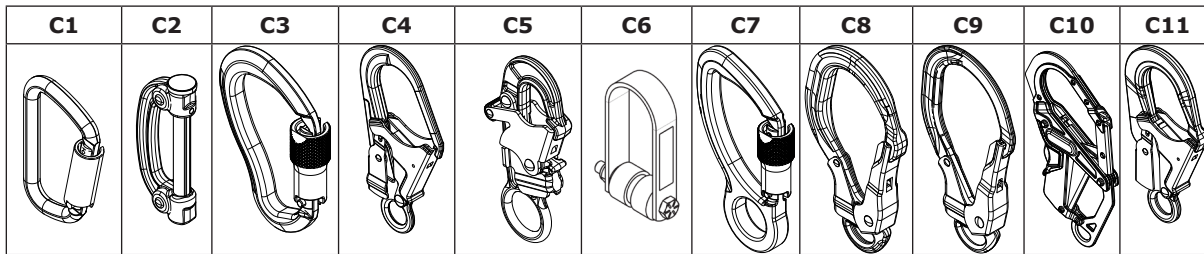
<b>Dimensions:</b>				
<b>Figure 1 Reference</b>	<b>D</b>	<b>W</b>	<b>R</b>	
<b>Size A</b>	2.13 in. (5 cm)	4.18 in. (11 cm)	25.0 in. (63.5 cm)	

**Table 1 – Product Specifications**

**Connector Specifications:**

Figure 1 Reference	Model Number	Description	Material	Gate Opening	Gate Strength
C1	2000112	Carabiner	Zinc-Plated Steel	0.69 in. (17 mm)	3,600 lbf (16 kN)
C2	3100197	Harness Interface	Zinc-Plated Steel	2 in. (51 mm)	3,600 lbf (16 kN)
C3	2000025	Carabiner	Aluminium	0.81 in. (20 mm)	3,600 lbf (16 kN)
C4	2109193	Rebar Hook	Zinc-Plated Steel	2.5 in. (63 mm)	3,600 lbf (16 kN)
C5	9502116	Snap Hook	Zinc-Plated Steel	0.75 in. (19 mm)	3,600 lbf (16 kN)
C6	3100247	Cab Mount	Stainless Steel	1-5/8 in. (51 mm)	
C7	2000023	Carabiner	Aluminum	0.75 in. (19 mm)	3,600 lbf (16 kN)
C8	2000209	Rebar Hook	Aluminum, Steel	2.5 in. (63 mm)	3,600 lbf (16 kN)
C9	2000210	Rebar Hook	Zinc-Plated Steel	2.24 in (57 mm)	3,600 lbf (16 kN)
C10	2000214	Rebar Hook	Aluminum, Steel	2.5 in. (63 mm)	3,600 lbf (16 kN)
C11	9502058	Rebar Hook	Aluminum, Steel	2.24 in (57 mm)	3,600 lbf (16 kN)
C12	9502195	Swivel Snap Hook	Zinc-Plated Steel	0.75 in. (19 mm)	3,600 lbf (16 kN)
C13	9505254	Snap Hook	Aluminum, Steel	0.75 in. (19 mm)	3,600 lbf (16 kN)
C14	3100196	Dual-Pin SRD Connector	Aluminum, Steel	2 in. (51 mm)	3,600 lbf (16 kN)

☒ **Tensile Strength:** The tensile strength of each of the connectors listed above is 22.2 kN (5,000 lbf).



**Lifeline Specifications:**

Figure 1 Reference	Description
<b>DP1</b>	.781 in. width x .052 in. thick, Dyneema polyester with polyester thread; minimum tensile strength 4,946 lbf (22kN)

## 1.0 PRODUCT APPLICATION

- 1.1 PURPOSE:** 3M Self-Retracting Devices (SRDs) are designed for use as a connecting subsystem in a Fall Protection system. Once anchored, the lifeline extends and retracts automatically as the worker moves. If a fall occurs, a sensing mechanism activates the device and arrests the fall. For more information on system applications, refer to the "Product Overview" and Table 1.
- 1.2 SUPERVISION:** Use of this equipment must be supervised by a Competent Person.
- 1.3 STANDARDS:** Your product conforms to the national or regional standards identified on the front cover of these instructions. If this product is resold outside the original country of destination, the re-seller must provide these instructions in the language of the country in which the product will be used.

*For more information on certification or conformance requirements, refer to the applicable standards and regulations listed for your product (e.g. the ANSI/ASSP Z359 Fall Protection codes).*

- 1.4 TRAINING:** This equipment must be installed and used by persons trained in its correct application. These instructions are to be used as part of an employee training program as required by national, regional, or local standards. It is the responsibility of the users and installers of this equipment to ensure they are familiar with these instructions, trained in the correct care and use of this equipment, and are aware of the operating characteristics, application limitations, and consequences of improper use of this equipment.
- 1.5 RESCUE PLAN:** When using this equipment and connecting subsystems, the employer must have a written rescue plan and the means to implement and communicate that plan to users, authorized persons, and rescuers. A trained, on-site rescue team is recommended. Team members should be provided with the equipment and techniques necessary to perform a successful rescue. Training should be provided on a periodic basis to ensure rescuer proficiency. Rescuers should be provided with these instructions. There should be visual contact or means of communication with the person being rescued at all times during the rescue process.

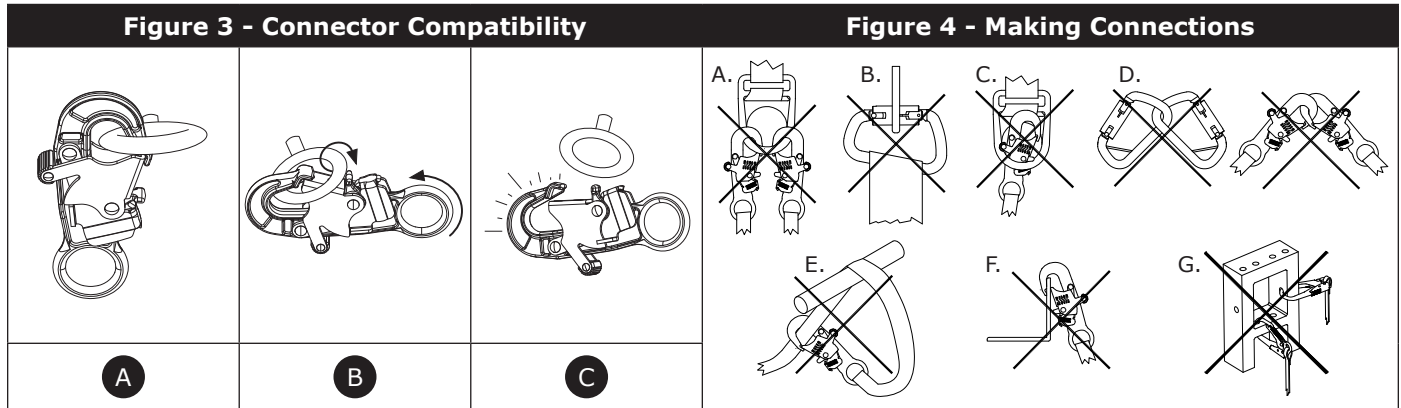
## 2.0 SYSTEM REQUIREMENTS

- 2.1 ANCHORAGE:** Anchorage requirements vary with the Fall Protection application. The mounting structure on which the equipment is placed must meet the Anchorage specifications defined in Table 1.
- 2.2 CAPACITY:** The user capacity of a complete Fall Protection system is limited by its lowest rated maximum capacity component. For example, if your connecting subsystem has a capacity that is less than your harness, you must comply with the capacity requirements of your connecting subsystem. See the manufacturer instructions for each component of your system for capacity requirements.
- 2.3 ENVIRONMENTAL HAZARDS:** Use of this equipment in areas with environmental hazards may require additional precautions to prevent injury to the user or damage to the equipment. Hazards may include, but are not limited to: high heat, chemicals, corrosive environments, high voltage power lines, explosive or toxic gases, moving machinery, sharp edges, or overhead materials that may fall and contact the user or equipment. Contact 3M Technical Services for further clarification.
- 2.4 LIFELINE HAZARDS:** Ensure the lifeline is kept free from all hazards including, but not limited to: entanglement with users, other workers, moving machinery, other surrounding objects, or impact from overhead objects that could fall onto the lifeline or users.
- 2.5 FALL PATH AND SRD LOCKING SPEED:** Do not use in applications that have an obstructed fall path. A clear path is required to lock the SRD. Working on slowly shifting materials (e.g. sand or grain), or within limited spaces, may not allow the worker to reach sufficient speed to lock the SRD.
- 2.6 COMPONENT COMPATIBILITY:** 3M equipment is designed for use with 3M equipment. Use with non-3M equipment must be approved by a Competent Person. Substitutions made with non-approved equipment may jeopardize equipment compatibility and may affect the safety and reliability of your Fall Protection system. Read and follow all instructions and warnings for all equipment prior to use.
- 2.7 CONNECTOR COMPATIBILITY:** Connectors are compatible with connecting elements when the size and shape of either component does not cause the connector to inadvertently open, regardless of orientation. Connectors must comply with applicable standards. Connectors must be fully closed and locked during use.

3M Connectors (snap hooks and carabiners) are designed to be used only as specified in each instruction manual. Ensure connectors are compatible with the system components to which they are connected. Do not use equipment that is non-compatible. Use of non-compatible components may cause the connector to unintentionally disengage (see Figure 3). If the connecting element to which a connector attaches is undersized or irregular in shape, a situation could occur where the connecting element applies a force to the gate of the connector (A). This force could then cause the gate to open (B), disengaging the connector from the connecting element (C).

**2.8 MAKING CONNECTIONS:** All connections must be compatible in size, shape, and strength. See Figure 4 for examples of inappropriate connections. Do not attach snap hooks and carabiners:

- A. To a D-Ring to which another connector is attached.
- B. In a manner that would result in a load on the gate. Large-throat snap hooks should not be connected to D-Rings or other connecting elements, unless the snap hook has a gate strength of 16 kN (3,600 lbf) or greater.
- C. In a false engagement, where size or shape of the connector or connecting element is not compatible and, without visual confirmation, would seem to be fully engaged.
- D. To each other.
- E. Directly to webbing or rope lanyard or tie-back material, unless the instruction manuals for both the lanyard and connector specifically allow such a connection.
- F. To any object whose size or shape does not allow the connector to fully close and lock, or that could cause connector roll-out.
- G. In a manner that does not allow the connector to align properly while under load.







### 3.0 INSTALLATION

**3.1 OVERVIEW:** Installing this product requires effective planning and knowledge of fall clearance requirements. In the event of a fall, there must be enough fall clearance present to safely arrest the user.

**3.2 PLANNING:** Plan your Fall Protection system before starting your work. Account for all factors that may affect your safety before, during, and after a fall. Consider all requirements and limitations specified in these instructions.

**A. SHARP EDGES:** Avoid working where system components may be in contact with, or scrape against, unprotected sharp edges and abrasive surfaces. All sharp edges and abrasive surfaces should be covered with protective material.

☒ Only SRD-LEs may be used for applications with unprotected sharp edges or abrasive surfaces.

**3.3 FALL CLEARANCE:** It is critical that the user is aware of fall clearance and its requirements before using this product.

**A. DEFINITION:** Fall clearance is the measure of distance between a user and the next obstruction below them. Before use of this product, the user should determine how much fall clearance is required to prevent them from striking an obstruction should they fall.

A user's **Required Fall Clearance (FC)** is the sum of **Free Fall (FF)**, **Deceleration Distance (DD)**, **Harness Stretch (HS)**, and a **Safety Factor (SF)**. See Figure 5.1 for reference.

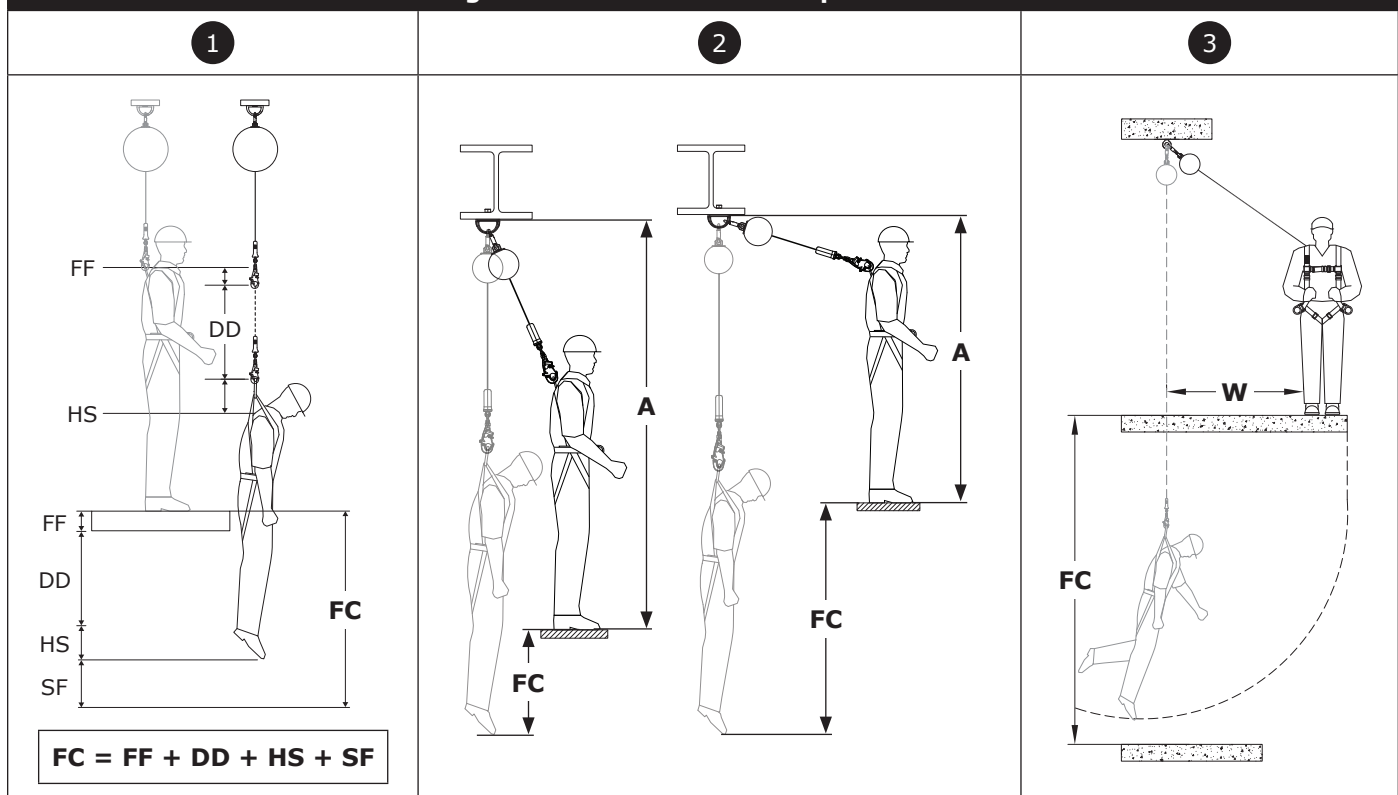
- **Free Fall (FF)** is the distance the user travels before activation of the deceleration device.
- **Deceleration Distance (DD)** is the distance the user falls measured from activation of the deceleration device until stopping.
- **Harness Stretch (HS)** is the amount of slack extending from the user's harness when the user is suspended by their harness attachment element.
- **Safety Factor (SF)** is a set amount of distance added to fall clearance to ensure user safety.

There may be additional factors affecting Required Fall Clearance within your Fall Arrest system, such as D-ring extension length and anchorage deflection. For coverage of these factors, and others not outlined above, refer to the manufacturer instructions for each component of your Fall Arrest system. Additional factors, when provided, should be added to the fall clearance values in this instruction.

**B. MINIMIZING REQUIREMENTS:** The user should always position their Fall Arrest system to minimize fall potential and potential fall distance. To keep fall clearance requirements to a minimum, it is recommended that the user work as directly below their anchorage point as possible.

- **ANCHORAGE HEIGHT:** The Required Fall Clearance (FC) for a user increases as Anchorage Height (A) decreases. The user experiences a greater amount of free fall when connected to an anchorage point below them, since the user will have to travel that much farther should they fall. See Figure 5.2 for reference.
- **SWING FALLS:** The Required Fall Clearance (FC) for a user increases as User Work Radius (W) increases. Swing falls occur when the anchorage point is not directly above the user when a fall occurs. See Figure 5.3 for reference.

**Figure 5 - Fall Clearance Requirements**

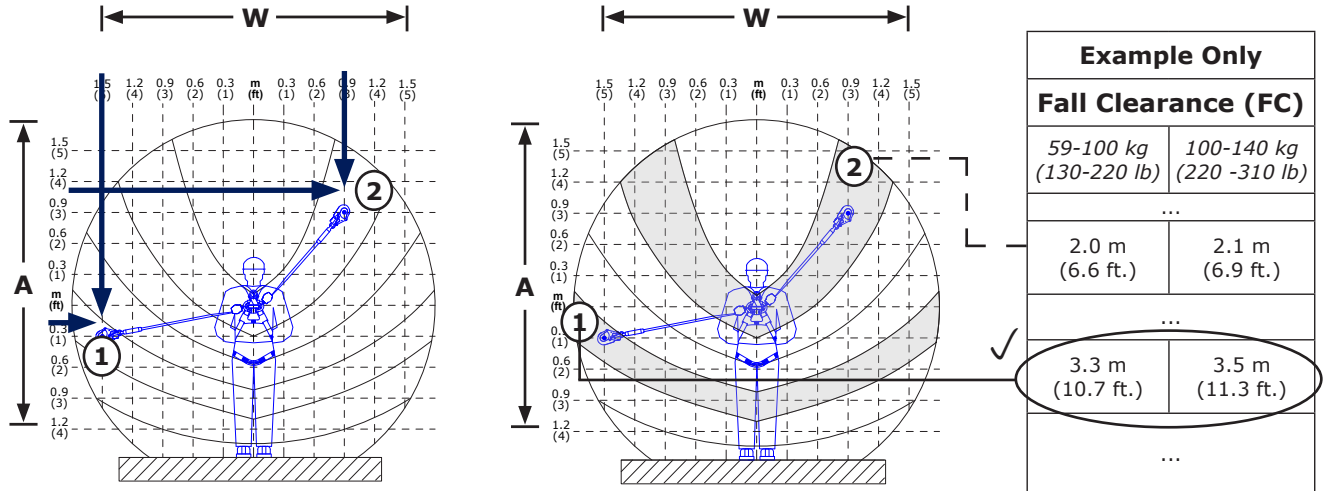


## FALL CLEARANCE CHARTS

**Required Fall Clearance has been provided within the charts below. To determine Required Fall Clearance:**

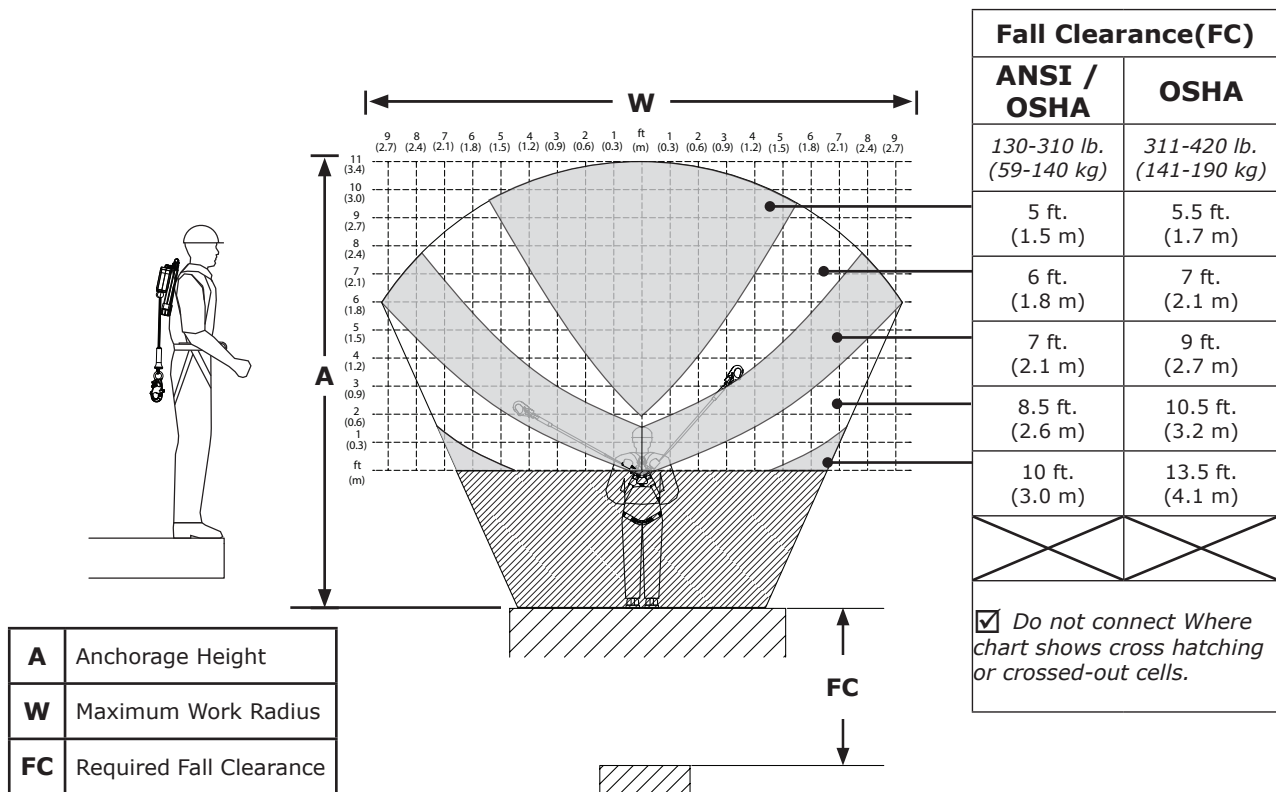
- 1. Locate your first connector (1).** Measure the Anchorage Height (A) and Maximum Work Radius (W) of your connector, relative to the height of your D-ring. Place your first connector in the chart where these intersect.
- 2. Locate your second connector (2).** Use the same method from Step 1 to place your second connector in the chart.
- 3. Find your Required Fall Clearance (FC).** Locate the chart "wing" each connector falls into, then locate the corresponding fall clearance in the table to the right. The fall clearance table is divided into columns, depending on capacity. Select the value within the column matching your total user capacity (including clothing, tools, etc.).

☒ If your connectors are in different wings, you must use the greater fall clearance requirement between them.



☒ A Safety Factor of 0.5 ft. (0.15 m) and a user height of 6.0 ft. (1.8 m) were used for all values listed. Kneeling or crouching will reduce the position of the user above the platform and will require an additional 3 ft. 3 in. (1.0 m) of fall clearance.

☒ Required Fall Clearance is calculated with the assumption that each leg of the SRD is extended a minimal distance behind the user, from wherever they may be positioned in the chart. The assumption of minimum setback distance ensures the user has enough fall clearance regardless of their actual setback distance.



**3.4 CONNECTING TO ANCHORAGE:** Figure 6 illustrates typical SRD anchorage connections. The Anchorage (A) should be directly overhead to minimize free fall and swing fall hazards (see Section 3.3.B). Select an anchorage capable of sustaining the static loads defined in Table 1. Depending on system and product configuration, the SRD may be mounted on the anchorage point or on the user's full body harness.

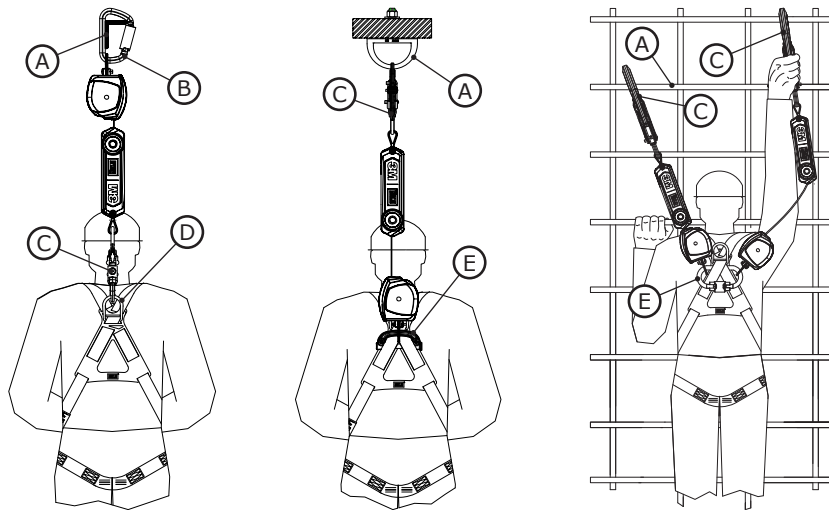
- A. ANCHORAGE MOUNTING:** Single-SRD models may be mounted on anchorage points as long as they are installed properly and have the right connectors for securing on an anchorage point. The top connector must be a carabiner. To secure an SRD overhead, first secure the Top Connector (B) to the anchorage point. Then, secure the Bottom Connector (C) directly to the dorsal D-ring (D) of your harness.

☒ *Large-throat snap hooks must never be secured to D-rings or other connecting elements unless they have a gate strength of 16 kN (3,600 lbf) or greater.*

- B. HARNESS MOUNTING:** Harness-mounted SRDs are secured to the full body harness directly by their Harness Interface (E). The user then secures to anchorage connection points using their Bottom Connectors (C). Twin-SRD models enable the user to maintain 100-percent tie-off when transferring between anchorage points.

☒ *Certain SRD models in this instruction must never be anchored below one's dorsal D-ring. See the "Fall Clearance Charts" for more information on anchorage height restrictions.*

**Figure 6 - Connecting to Anchorage**



**3.5 INSTALLING A HARNESS-MOUNTED SELF-RETRACTING DEVICE:** Single- and Twin-SRD models with harness web interfaces as their top connector may be installed directly onto the user's full body harness. This format enables easier transportation of the SRD and ensures that the SRD is within reach when moving between anchorage points. The methods for mounting an SRD on a harness vary with SRD model and the interface provided.

☒ *Harness interfaces may also be used in coordination with specific features of full body harnesses to secure the Single- or Twin-SRD to the harness. Examples include the pSRD Link and the molded X100 SRD Interface Loop present on some 3M harness models. The following instructions provide a general method for how each harness interface should be used. See the manufacturer instructions of your full body harness for more information on specific features for interfacing with SRDs.*

- A. CAB MOUNTING:** Figure 7 illustrates the installation of the Cab Mount Nano-Lok SRD. These are designed to be mounted overhead in the cab of an Order Picker or similar equipment. They must be used with a Full Body Harness as part of a complete fall arrest system. Select anchorage capable of sustaining the loads defined in Table 1 and attach the Nano-Lok SRD as follows:

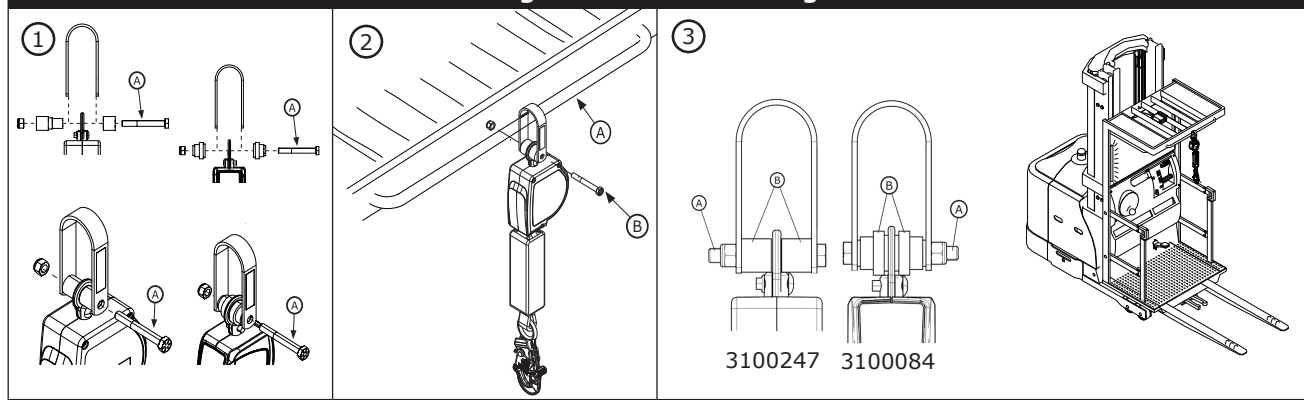
1. Remove the bolt (A) from the Cab Mount and disassemble the Cab Mount.
2. Reassemble the Cab Mount on the SRD eyebolt over the end rung (A) of the can top. Ensure that the Cab Mount is assembled as shown, with the spacers facing the correct direction. Reinsert the bolt (B) to hold the Bracket together. Torque the assembly to 150 in.-lb. (16.95 N-m).

☒ *Use a 1/2 in. socket and wrench when installing the Cab Mount.*

3. Confirm that the SRD and the Cab Mount connection are installed correctly. Three or four threads (A) of the bolt should be visible past the end of the locking nut. If three or four threads are not visible, confirm that the spacers (B) are correctly oriented and adjust if necessary.

☒ *Confirm the Swivel Eye of the SRD does not become caught in between the spacers of the Cab Mount. The smaller portion of each spacer, where the spacers meet, should be threaded through the Swivel Eye completely. Confirm the Swivel Eye is able to rotate freely after installation.*

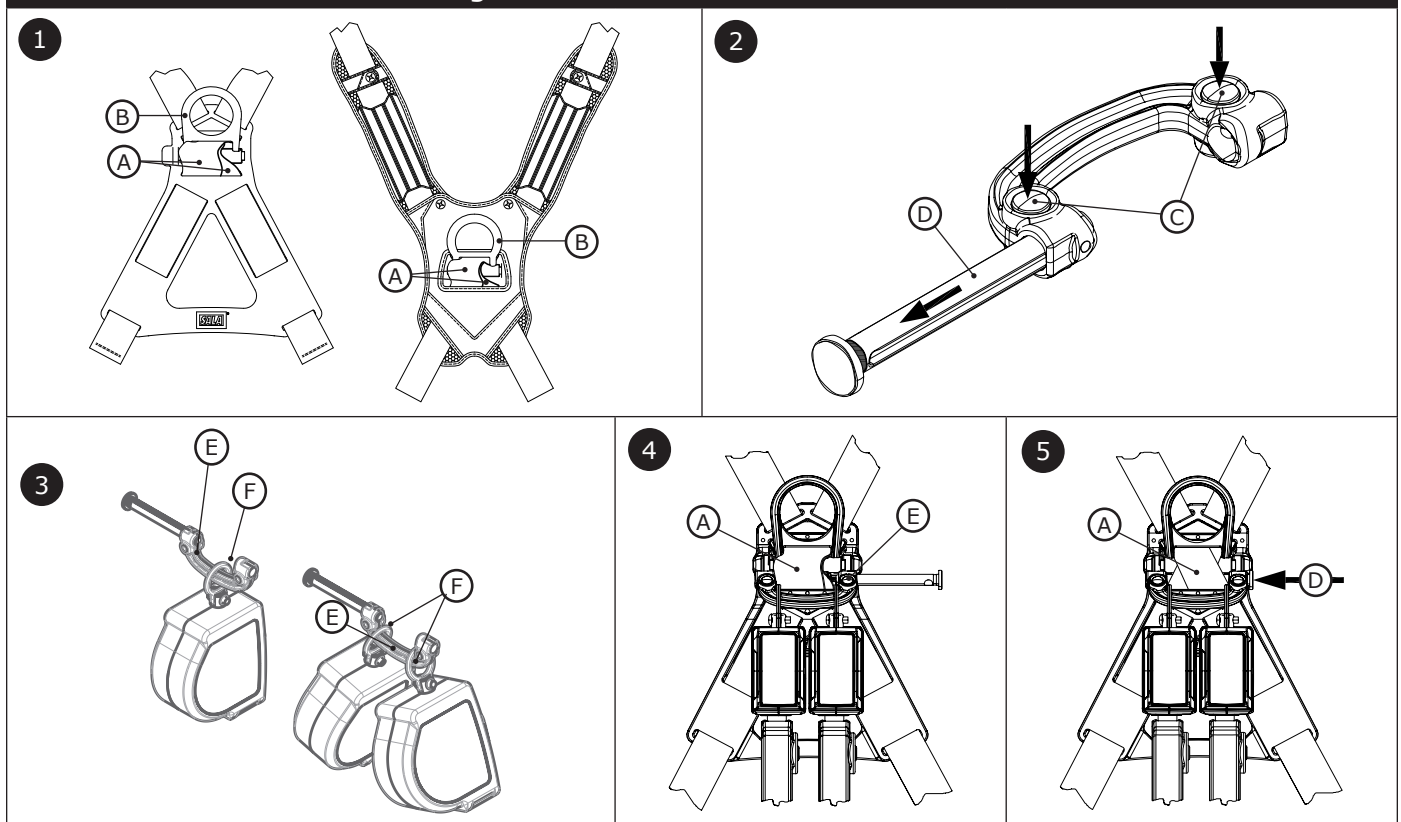
**Figure 7 - Cab Mounting**



**B. STANDARD HARNESS WEB INTERFACE:** See Figure 8 for reference. To mount the SRD on a Full Body Harness with SRD Harness Interface:

1. Loosen the harness webbing. Pull out on the Web Straps (A) where they pass through the bottom of the Dorsal D-ring (B) until there is enough space to slide the harness web interface through.
2. Open the harness web interface. Push down on the two Locking Buttons (C) to slide the Locking Pin (D) out.
3. Position the SRD on the Harness Web Interface (E). Thread the open harness web interface through the Swivel Eye (F) of your SRD. The SRD should hang from the backbone of the harness interface. If using a twin-SRD, position the SRDs such that one SRD is on the right side and the other is on the left side.
4. Position the open gate of the Harness Web Interface (E) around the loosened web straps of the harness.
5. Close the harness web interface. Push the Locking Pin (D) behind the loosened Web Straps (A), between the straps and the back pad of the harness. Push the Locking Pin through until it locks into place. Once closed, pull the Web Straps back through the harness to secure the harness web interface.

**Figure 8 - Standard Harness Interface**

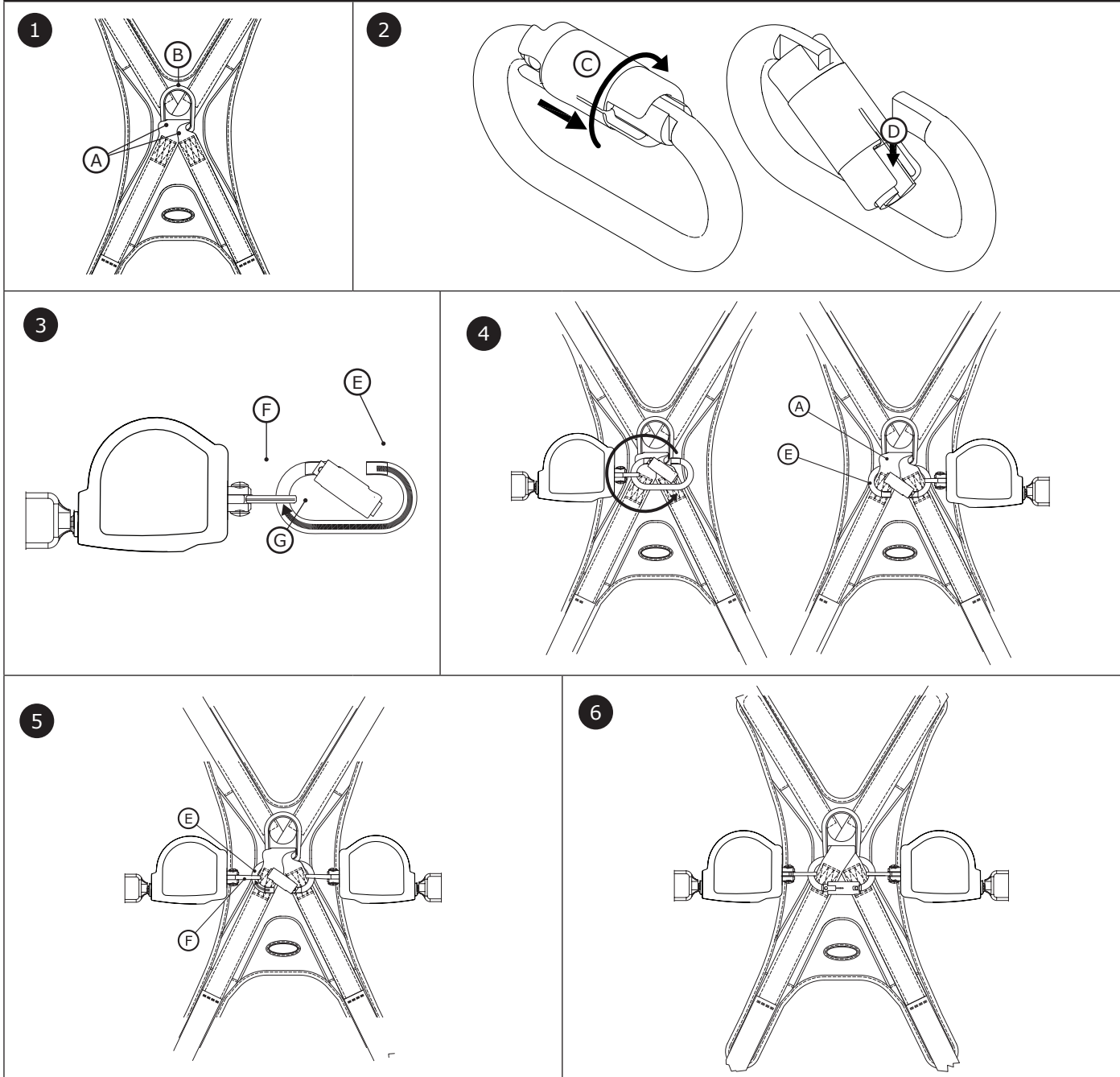


**C. CARABINER INTERFACE:** See Figure 9 for reference. These instructions apply to Triple Action Carabiner 2000159 when used with specific Full Body Harness models. No other carabiners may be substituted in place of 2000159.

1. Loosen the harness webbing. Pull out on the Web Straps (A) where they pass through the bottom of the Dorsal D-ring (B) until there is enough space to slide the carabiner through.
2. Open the Triple Action Carabiner. With the carabiner oriented as illustrated, push the Locking Sleeve (C) to the right, then turn clockwise to unlock the Gate (D). Push the Gate (D) down to open.

3. Thread the first SRD onto the carabiner. Insert the Nose (E) of the carabiner through the Swivel Eye (F) of the SRD, then loop the SRD through to the Gate End (G) of the carabiner.
4. Position the carabiner around the web straps. Insert the Nose (E) of the carabiner behind the loosened Web Straps (A), between the straps and the back pad of the harness. Rotate the carabiner until it surrounds the loosened straps.
5. Thread the second SRD onto the carabiner. Slide the Swivel Eye (F) of the SRD over the Nose (E) of the carabiner. Position the SRD along the nose end of the carabiner.
6. Close the carabiner. Release the gate and allow the carabiner to rotate back to its locked position. Once closed, pull the the Web Straps back through the harness to secure the carabiner.

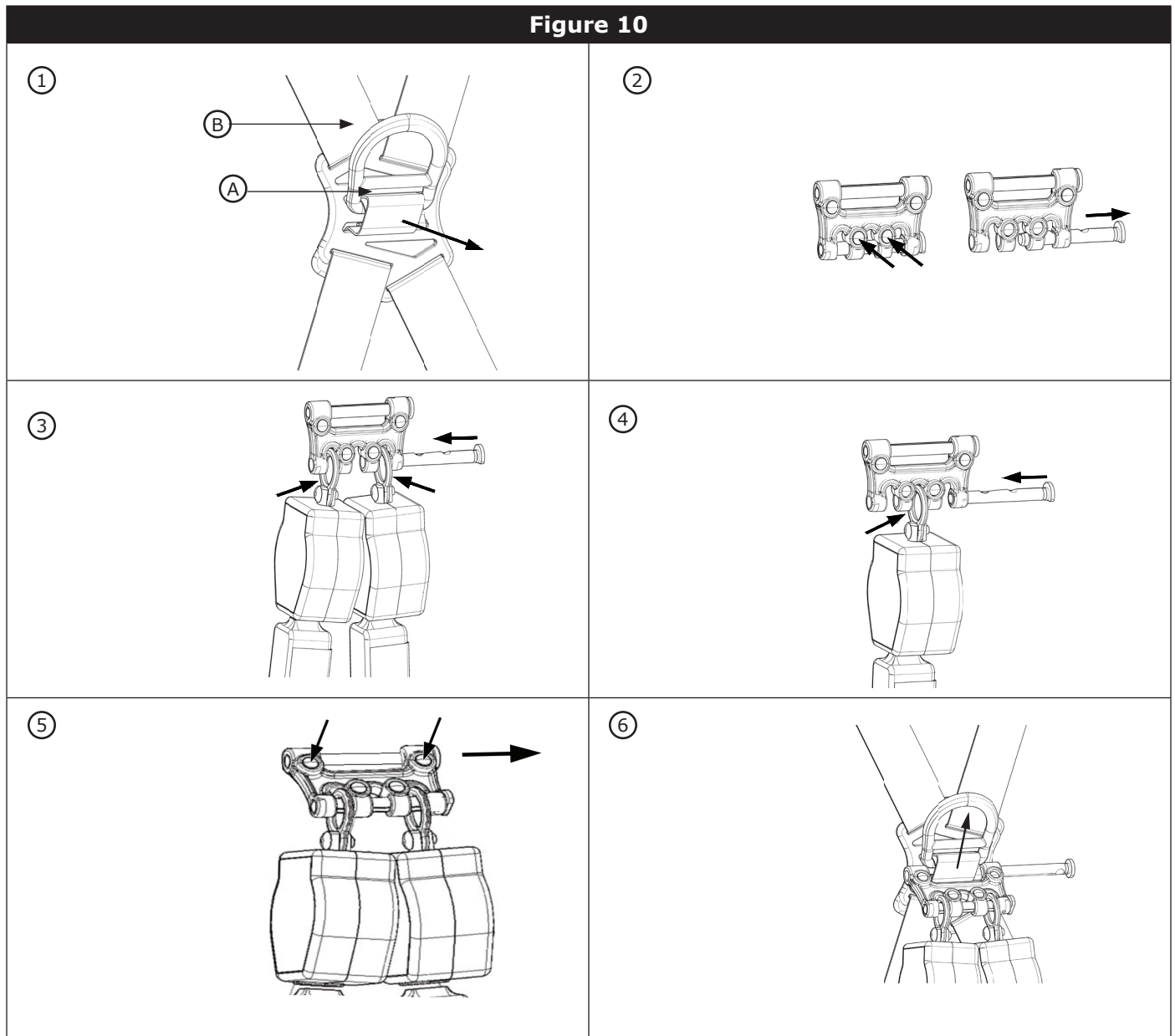
**Figure 9 - Carabiner Interface**



**D. Twin Pin Carabiner:** These instructions apply to Carabiner 3100196 when used with specific Full Body Harness models to mount one Nano-Lok SRL, or two Nano-Lok SRLs in climbing applications where 100% tie-off is required. See Figure 10:

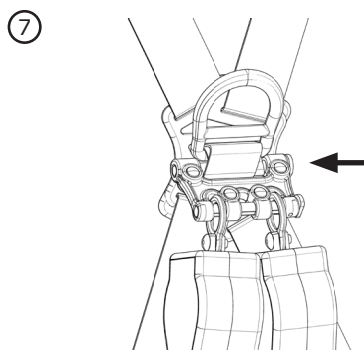
1. Loosen the harness webbing. Pull out on the Web Straps (A) where they pass through the bottom of the Dorsal D-Ring (B) until there is sufficient space to slide the Twin Leg Interface between the Web Straps and D-Ring Pad.
2. Simultaneously depress the two buttons on the bottom side of the connector while sliding the pin out to the right. Sliding this pin out creates an open space to insert the SRL swivel eye(s).
3. For twin configuration: place the swivel eye of one SRL in the open space closest to the pin and one SRL in the open space farthest from the pin. Slide the pin back in place until you hear a click. The pin should be firmly locked in place.
4. For single configuration: Place the swivel eye of a single SRL in the center open space. Slide the pin back in place until you hear a click. The pin should be firmly locked in place.
5. Simultaneously depress the two buttons on the harness side of the connector while sliding the pin out. Sliding this pin out creates an open space.
6. Pull up a small amount of slack in the webbing directly beneath the dorsal D-Ring on your harness. Place the harness side of the connector beneath the D-Ring.
7. Slide the pin back in place ensuring that the pin remains beneath both layers of harness webbing until you hear a click. The pin should be firmly locked in place.

**Figure 10**





**Figure 10**



#### **4.0 USE**

- 4.1 BEFORE EACH USE:** Verify that your work area and Fall Protection system meet all criteria defined in these instructions. Verify that a formal Rescue Plan is in place. Inspect the product per the 'User' inspection points defined in the "Inspection and Maintenance Log". If inspection reveals an unsafe or defective condition, or if there is any doubt about its condition for safe use, remove the product from service immediately. Clearly tag the product "DO NOT USE". See Section 5 for more information.
- 4.2 AFTER A FALL:** If this equipment is subjected to fall arrest or impact force, remove it from service immediately. Clearly tag it "DO NOT USE". See Section 5 for more information.
- 4.3 OPERATION:** Before using an SRD, the worker will need to secure the SRD to an anchorage connection point and an attachment element on their full body harness. Once secured, the worker may move within the established safe working area at normal speeds. During use, always allow the SRD lifeline to recoil back into the device under control.
- 4.4 TAGLINES:** Depending on the worksite and system configuration, the user may not always be able to reach the SRD at its anchor point. In these situations, a tagline may be necessary. A tagline is a long piece of cord that loops through the bottom connector of the SRD before looping back in on itself. When connected in this way, the user can raise or lower the bottom connector of the SRD to their location by pulling on the tagline.

☒ *Ensure the free end of the tagline does not become entangled with other workers, equipment, or machinery. If necessary, restrain the free end of the tagline.*

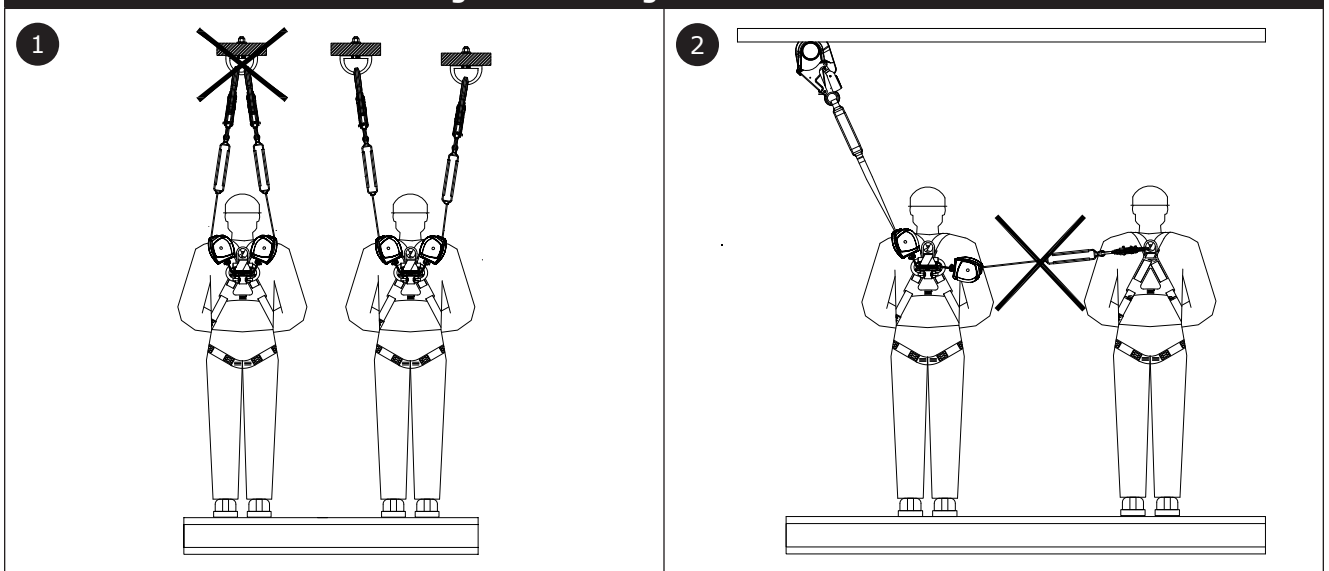
- 4.5 USING TWIN-SRD MODELS:** Twin-SRD models, when mounted on a harness, may be used for Fall Arrest or Restraint applications. Additionally, Twin-SRDs may be used for climbing applications, such as ascending or descending a rebar structure. Twin-SRDs enable the user to maintain 100-percent tie-off when moving between anchorage points. As long as one SRD is secured to an anchorage point, the user may disconnect the other SRD and move it to a different anchorage point. By disconnecting and reconnecting each SRD in turn, the user may travel along a surface and still maintain tie-off during movement.

The user must always consider the following before using a Twin-SRD:

- When in the vicinity of a fall hazard, the user must always have at least one SRD connected to an anchorage point. Never connect both SRDs to the same anchorage point. See Figure 11.1 for reference.
- Each individual anchorage point must be strong enough to meet the anchorage requirements listed in Table 1.
- The individual SRDs must only be used to secure to anchorage points. Never secure two workers via the same system. See Figure 11.2 for reference.
- The lifeline of each SRD must always be kept free from obstructions and entanglement. Do not pass either SRD under arms or between legs during use.



Figure 11 - Using Twin-SRD Models



**4.6 USE WITH HORIZONTAL SYSTEMS:** The SRDs covered in this instruction are compatible for use with horizontal systems, such as Horizontal Lifeline (HLL) systems and horizontal rail systems. See the manufacturer instructions of your horizontal system for more information on its compatibility with SRDs. SRDs may be used with a horizontal system only if both products allow for such use.

☒ *Required Fall Clearance values presented in these instructions are based on use with a rigid, stationary anchorage point. These values do not apply when the product is used with a Horizontal Lifeline (HLL) system. See the manufacturer instructions of your HLL system for fall clearance charts specific to that system, or for additional factors that must be accounted for before using the charts in these instructions.*

## 5.0 INSPECTION

☒ After equipment has been removed from service, it may not be returned to service until a Competent Person confirms in writing that it is acceptable to do so.

- 5.1 INSPECTION FREQUENCY:** The product shall be inspected before each use by a user and, additionally, by a Competent Person other than the user at intervals of no longer than one year. A higher frequency of equipment use and harsher conditions may require increasing the frequency of Competent Person inspections. The frequency of these inspections should be determined by the Competent Person per the specific conditions of the worksite.
- 5.2 INSPECTION PROCEDURES:** Inspect this product per the procedures listed in the "Inspection and Maintenance Log". Documentation of each inspection should be maintained by the owner of this equipment. An inspection and maintenance log should be placed near the product or be otherwise easily accessible to users. It is recommended that the product is marked with the date of next or last inspection.
- 5.3 DEFECTS:** If the product cannot be returned to service because of an existing defect or unsafe condition, or because the product has been exposed to fall arrest or impact force, then the product must be destroyed.
- 5.4 PRODUCT LIFE:** The functional life of the product is determined by work conditions and maintenance. As long as the product passes inspection criteria, it may remain in service.

## 6.0 MAINTENANCE, STORAGE, AND REPAIR

☒ Equipment that is in need of maintenance or scheduled for maintenance should be tagged "DO NOT USE". These equipment tags should not be removed until maintenance is performed.

- 6.1 CLEANING:** Periodically clean the lifeline and the exterior of the product with water and a mild soap solution. Rinse the product thoroughly and air dry. Clean labels as necessary. For more information, please refer to the technical bulletin on our website: <https://www.3M.com/FallProtection/Mechanical-Device-Cleaning>
- 6.2 DISPOSAL:** Cut or otherwise disable the lifeline, then dispose of the product appropriately.
- 6.3 REPAIR:** This product is not repairable. Do not attempt to repair this product.
- 6.4 STORAGE AND TRANSPORT:** Store and transport the product in a cool, dry, clean environment out of direct sunlight. Avoid areas where chemical vapors may exist. Thoroughly inspect components after extended storage.

## 7.0 LABELS and MARKINGS

- 7.1 LABELS:** Figure 13 illustrates labels present on the SRD. Labels must be replaced if they are not present or are not fully legible. Information provided on each label is as follows:

<b>A</b>	Logo Label
<b>B</b>	Identification Label
<b>C</b>	Warning, Use, and Inspection Label

## 8.0 RFID Tag

- 8.1 LOCATION:** 3M product covered in these user instructions is equipped with a Radio Frequency Identification (RFID) Tag. RFID Tags may be used in coordination with an RFID Tag Scanner for recording product inspection results. See Figure 12 for where your RFID Tag is located.
- 8.2 DISPOSAL:** Prior to disposing of this product, remove the RFID Tag and dispose/recycle in accordance with local regulations. For more information, please visit our website: <http://www.3M.com/FallProtection/RFID>

## 9.0 GLOSSARY OF TERMS

- 9.1 DEFINITIONS:** The following terms and definitions are used in these instructions.

☒ For a comprehensive list of terms and definitions, please visit our website: [www.3m.com/FallProtection/ifu-glossary](http://www.3m.com/FallProtection/ifu-glossary)

- **AUTHORIZED PERSON:** A person assigned by the employer to perform duties at a location where the person will be exposed to a fall hazard.
- **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 them.
- **FALL ARREST SYSTEM:** A collection of Fall Protection equipment configured to protect the user in the event of a fall.
- **QUALIFIED PERSON:** A person with a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience has successfully demonstrated their ability to solve or resolve problems relating to Fall Protection and Rescue systems to the extent required by applicable national, regional, and local regulations.
- **RESCUER:** A person using the Rescue system to perform an assisted rescue.
- **RESTRAINT SYSTEM:** A collection of Fall Protection equipment configured to prevent the user from reaching a fall hazard. No free fall is permitted.
- **USER:** A person who performs activities while protected by a Fall Protection system.



Figure 12 - RFID Tag Location

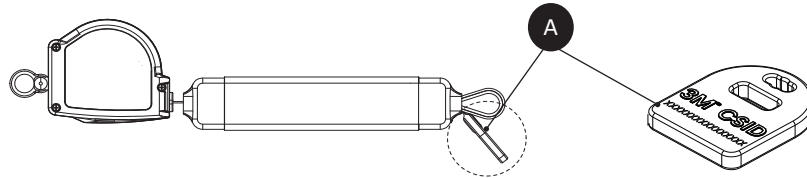
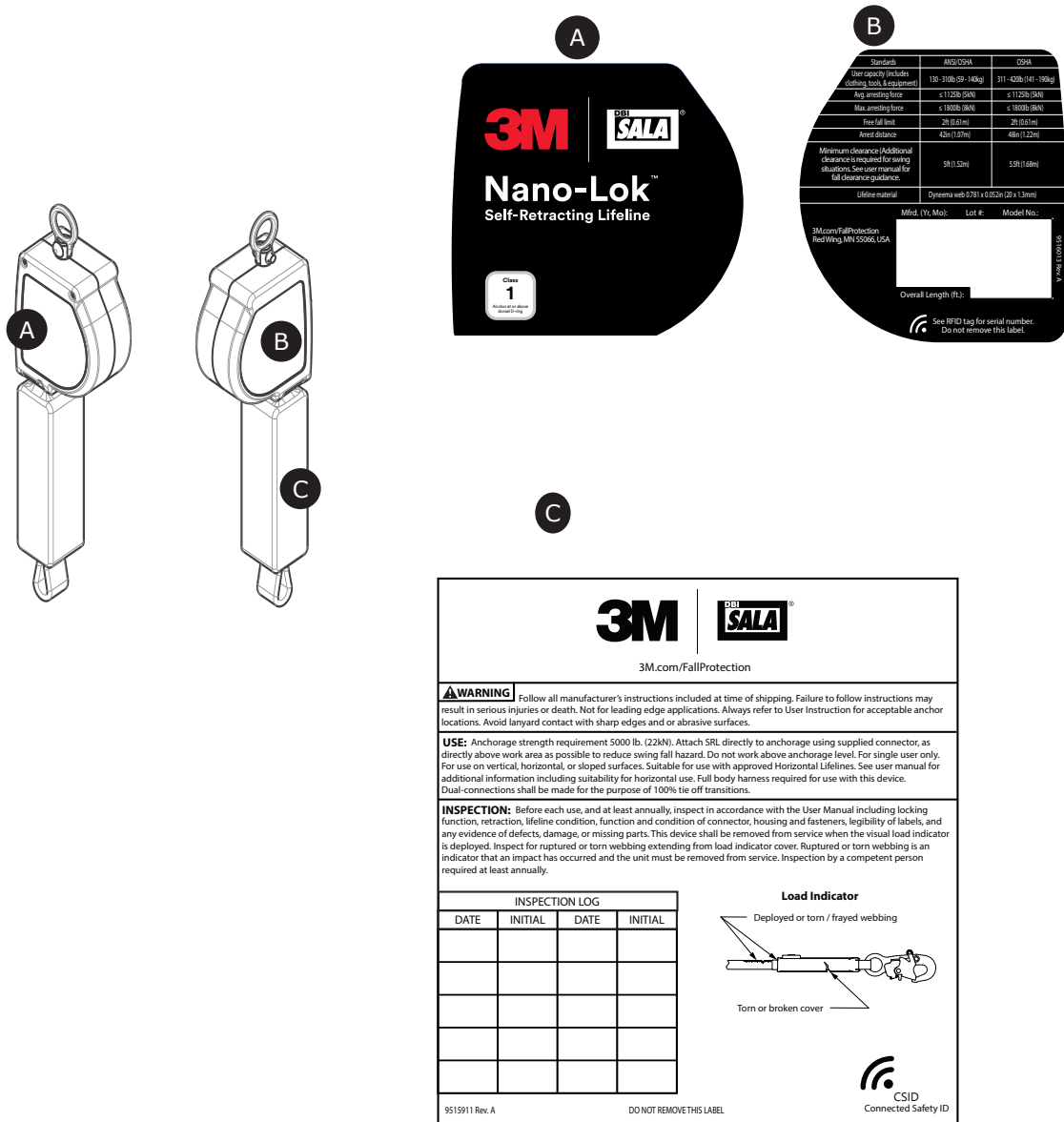


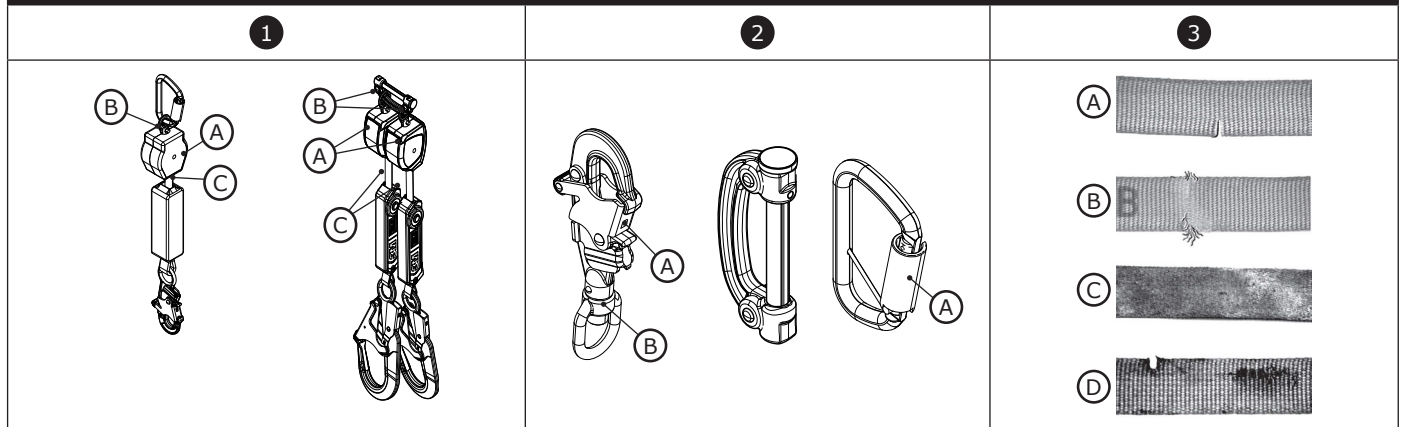
Figure 13 - Product Labels



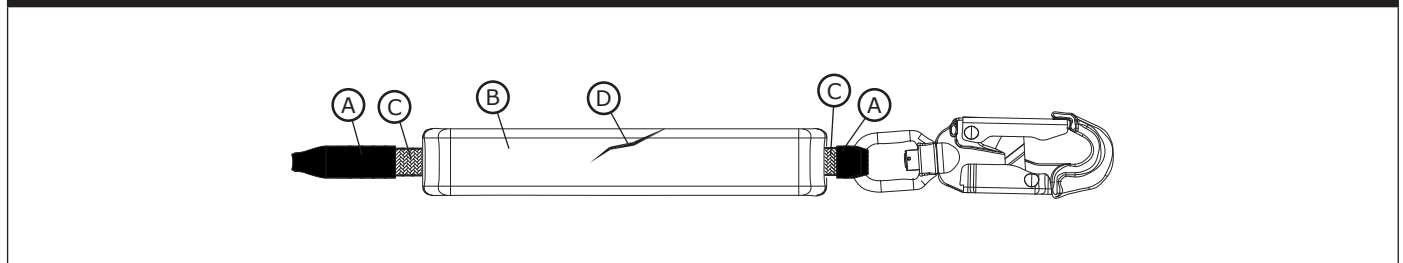
**Table 2 – Inspection and Maintenance Log**

<b>Model Number (Serial Number):</b>					
<b>Date Purchased:</b>			<b>Date of First Use:</b>		
...					
<input checked="" type="checkbox"/> <i>This product must be inspected by the user before each use. Additionally, a Competent Person other than the user must inspect this equipment at least once each year.</i>					
...					
Component	Inspection Procedure	Inspection Result			
		Pass	Fail		
SRD - General (Figure 14.1)	Inspect for loose bolts and bent or damaged parts.	<input type="checkbox"/>	<input type="checkbox"/>		
	Inspect Housing (A) for distortion, cracks, or other damage.	<input type="checkbox"/>	<input type="checkbox"/>		
	Inspect the Swivel Eye (B) for distortion, cracks, or other damage. The Swivel Eye should be attached securely to the SRD, but should pivot freely.	<input type="checkbox"/>	<input type="checkbox"/>		
	The Lifeline (C) should pull out and retract fully without hesitation or creating a slack line condition.	<input type="checkbox"/>	<input type="checkbox"/>		
	Ensure device locks up when lifeline is jerked sharply. Lockup should be positive with no slipping.	<input type="checkbox"/>	<input type="checkbox"/>		
	Look for signs of corrosion on the entire unit.	<input type="checkbox"/>	<input type="checkbox"/>		
Connectors (Figure 14.2)	Inspect all SRD connectors for signs of damage and corrosion. Verify that all connectors are working properly. Where present: Gates (A) should open, close, lock, and unlock properly; Swivel Eyes (B) should rotate without interference; and locking buttons and pins should function correctly.	<input type="checkbox"/>	<input type="checkbox"/>		
Web Lifeline (Figure 14.3)	Inspect the webbing for Cuts (A), Frays (B), broken fibers, tears, abrasion, Heavy Soiling (C), mold, Burns (D), and discoloration. Inspect the lifeline stitching for pulled or cut stitches, since broken stitches may indicate that the product has been impact-loaded and must be removed from service.	<input type="checkbox"/>	<input type="checkbox"/>		
Energy Absorber (Figure 15)	Verify that the integral energy absorber has not been activated. Verify that the Lifeline Cover (A) has not pulled out from the Energy Absorber Cover (B) on either end. None of the Energy Absorber Webbing (C) should be exposed. The Energy Absorber Cover should also be secure and free of Tears (D) or other damage.	<input type="checkbox"/>	<input type="checkbox"/>		
Labels (Figure 13)	All labels are present and fully legible.	<input type="checkbox"/>	<input type="checkbox"/>		
Fall Protection Equipment	Additional Fall Protection equipment that is used with the product is installed and inspected per the manufacturer instructions.	<input type="checkbox"/>	<input type="checkbox"/>		
...					
<input checked="" type="checkbox"/> <i>If the product fails an inspection procedure, then the product fails overall inspection. If the product fails inspection, remove it from service immediately. Clearly tag the product "DO NOT USE". See Section 5 for more information.</i>					
...					
<b>Inspection Type:</b>	<input type="checkbox"/> User	<input type="checkbox"/> Competent Person	<b>Overall Inspection Result:</b>	<input type="checkbox"/> Pass	<input type="checkbox"/> Fail
<b>Inspected By:</b>			<b>Date of Inspection:</b>		
<b>Signature:</b>			<b>Next Inspection Due:</b>		
...					
<b>Additional Notes:</b>					

**Figure 14 - SRD Inspection**



**Figure 15 - Energy Absorber Inspection**



## GLOBAL PRODUCT WARRANTY, LIMITED REMEDY AND LIMITATION OF LIABILITY

**WARRANTY:** THE FOLLOWING IS MADE IN LIEU OF ALL WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Unless otherwise provided by local laws, 3M fall protection products are warranted against factory defects in workmanship and materials for a period of one year from the date of installation or first use by the original owner.

**LIMITED REMEDY:** Upon written notice to 3M, 3M will repair or replace any product determined by 3M to have a factory defect in workmanship or materials. 3M reserves the right to require product be returned to its facility for evaluation of warranty claims. This warranty does not cover product damage due to wear, abuse, misuse, damage in transit, failure to maintain the product or other damage beyond 3M's control. 3M will be the sole judge of product condition and warranty options.

This warranty applies only to the original purchaser and is the only warranty applicable to 3M's fall protection products. Please contact 3M's customer service department in your region for assistance.

**LIMITATION OF LIABILITY:** TO THE EXTENT PERMITTED BY LOCAL LAWS, 3M IS NOT LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES INCLUDING, BUT NOT LIMITED TO LOSS OF PROFITS, IN ANY WAY RELATED TO THE PRODUCTS REGARDLESS OF THE LEGAL THEORY ASSERTED.



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**(European Union and United Kingdom)**