



ANSI Z359.14 Class B

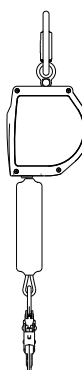
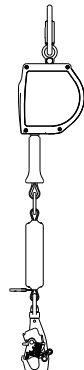


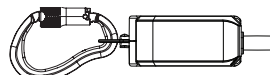
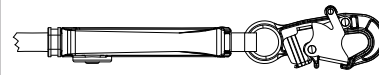



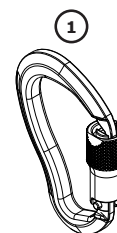
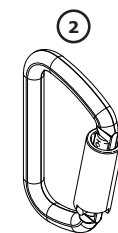
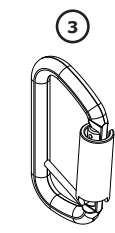
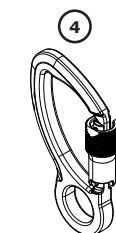

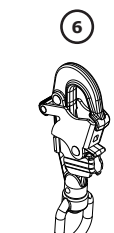

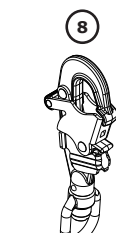

OSHA 1926.502

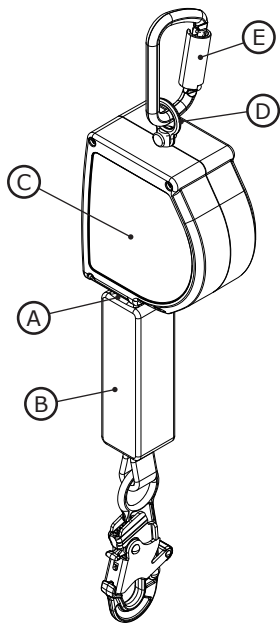
OSHA 1910.140

Nano-Lok XL SELF-RETRACTING DEVICE

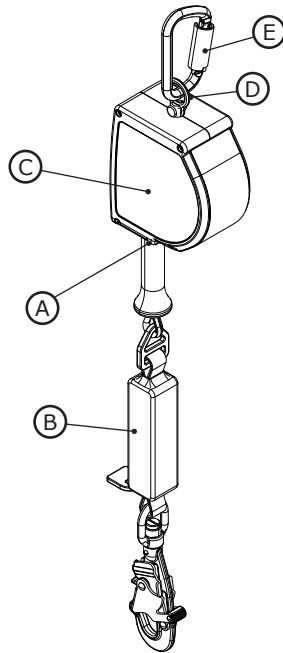
INSTRUCTION MANUAL 5908304 REV. A

Fall Protection

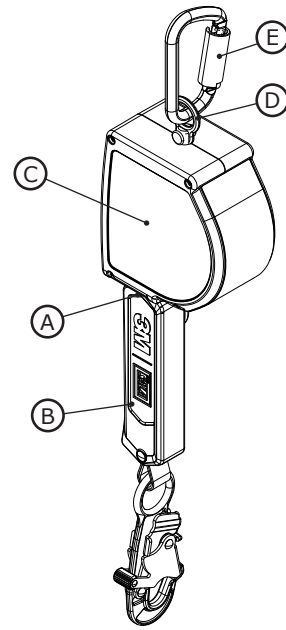
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 1			 2			 3			Arc-Flash ASTM F887 											 LL	 x 1 ANSI	 x 1 OSHA
2000025 1	2000112 2	2000127 3	2000023 4	2100044 5	2100045 6	9502116 7	9502194 8	9502195 9														
3103865			3												20 ft (6.1 m)	310 lbs (140 kg)	420 lbs (190 kg)					
3103866			3												20 ft (6.1 m)	310 lbs (140 kg)	420 lbs (190 kg)					
3103872			3			✓			✓						20 ft (6.1 m)	310 lbs (140 kg)	420 lbs (190 kg)					
3103873			3						✓			✓			20 ft (6.1 m)	310 lbs (140 kg)	420 lbs (190 kg)					
3101684			1			✓			✓						11 ft (3.35 m)	310 lbs (140 kg)	420 lbs (190 kg)					
3501694			2						✓						15 ft (4.57 m)	310 lbs (140 kg)	420 lbs (190 kg)					
3501695			2						✓			✓			15 ft (4.57 m)	310 lbs (140 kg)	420 lbs (190 kg)					
 1															 2	 3	 4	 5	 6	 7	 8	 9



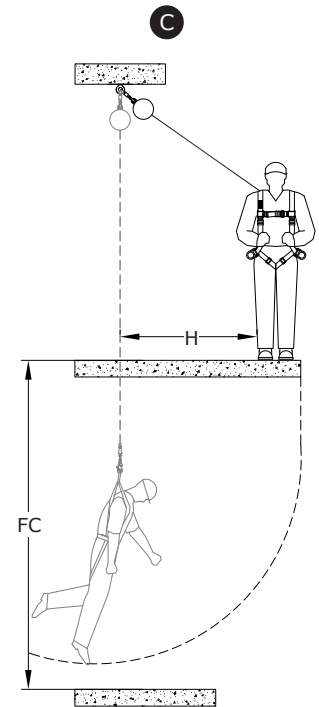
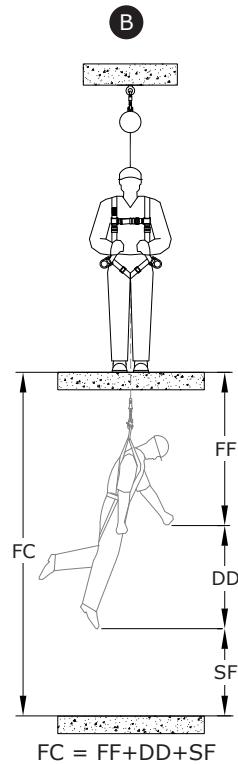
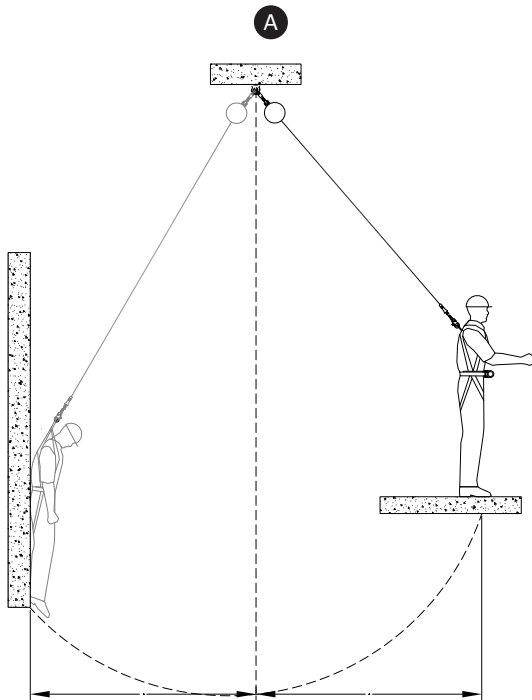
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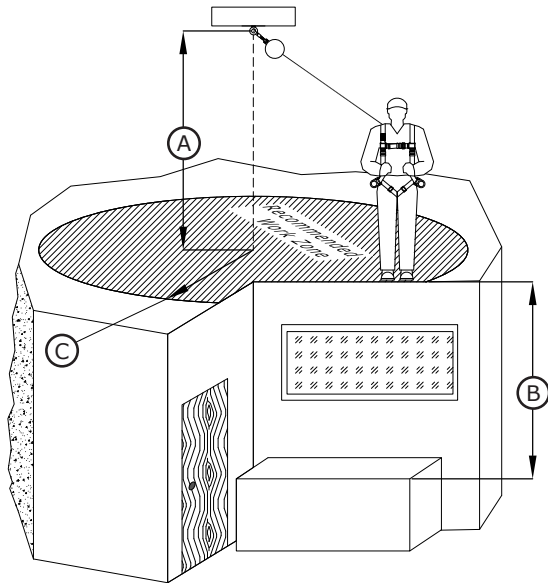


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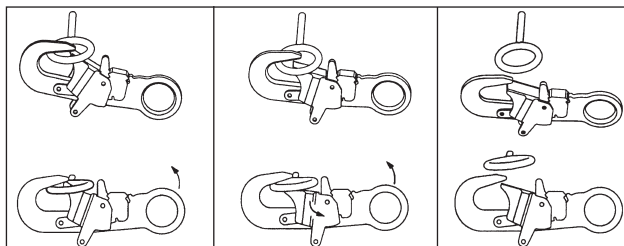
Web SRD: 130-310 lbs (59-140 kg)		B				
		<6 ft (1.8 m)	6 ft (1.8 m)	7 ft (2.1 m)	8 ft (2.4 m)	≥9 ft (2.7 m)
A	8 ft (2.4 m)		0 ft (0m)	2.6 ft (0.8 m)	3.9 ft (1.2 m)	5.1 ft (1.6 m)
	10 ft (3 m)		0 ft (0m)	3.3 ft (1.0 m)	4.8 ft (1.5 m)	6.1 ft (1.9 m)
	15 ft (4.6 m)		0 ft (0m)	4.5 ft (1.4 m)	6.6 ft (2.0 m)	8.2 ft (2.5 m)
	20 ft (6.1 m)		0 ft (0m)	5.5 ft (1.7 m)	8 ft (2.4 m)	9.9 ft (3.0 m)
	25 ft (7.6 m)		0 ft (0m)	6.4 ft (1.9 m)	9.1 ft (2.8 m)	11.3 ft (3.4 m)
C						

Web SRD: 311-420 lbs (141-191 kg)		B				
		<8 ft (2.4 m)	8 ft (2.4 m)	9 ft (2.7 m)	10 ft (3.0 m)	≥11 ft (3.4 m)
A	8 ft (2.4 m)		0 ft (0m)	2.6 ft (0.8 m)	3.9 ft (1.2 m)	5.1 ft (1.6 m)
	10 ft (3 m)		0 ft (0m)	3.3 ft (1.0 m)	4.8 ft (1.5 m)	6.1 ft (1.9 m)
	15 ft (4.6 m)		0 ft (0m)	4.5 ft (1.4 m)	6.6 ft (2.0 m)	8.2 ft (2.5 m)
	20 ft (6.1 m)		0 ft (0m)	5.5 ft (1.7 m)	8 ft (2.4 m)	9.9 ft (3.0 m)
	25 ft (7.6 m)		0 ft (0m)	6.4 ft (1.9 m)	9.1 ft (2.8 m)	11.3 ft (3.4 m)
C						

AF & Cable SRD: 130-310 lbs (59-140 kg)		B				
		<6 ft (1.8 m)	6 ft (1.8 m)	7 ft (2.1 m)	8 ft (2.4 m)	≥9 ft (2.7 m)
A	8 ft (2.4 m)		0 ft (0m)	2.5 ft (0.8 m)	3.8 ft (1.2 m)	4.9 ft (1.5 m)
	10 ft (3 m)		0 ft (0m)	3.1 ft (0.9 m)	4.6 ft (1.4 m)	5.9 ft (1.8 m)
	15 ft (4.6 m)		0 ft (0m)	4.4 ft (1.3 m)	6.3 ft (1.9 m)	7.9 ft (2.4 m)
	20 ft (6.1 m)		0 ft (0m)	5.4 ft (1.6 m)	7.7 ft (2.3 m)	9.6 ft (2.9 m)
C						

AF & Cable SRD: 311-420 lbs (141-191 kg)		B				
		<8 ft (2.4 m)	8 ft (2.4 m)	9 ft (2.7 m)	10 ft (3.0 m)	≥11 ft (3.4 m)
A	8 ft (2.4 m)		0 ft (0m)	2.5 ft (0.8 m)	3.8 ft (1.2 m)	4.9 ft (1.5 m)
	10 ft (3 m)		0 ft (0m)	3.1 ft (0.9 m)	4.6 ft (1.4 m)	5.9 ft (1.8 m)
	15 ft (4.6 m)		0 ft (0m)	4.4 ft (1.3 m)	6.3 ft (1.9 m)	7.9 ft (2.4 m)
	20 ft (6.1 m)		0 ft (0m)	5.4 ft (1.6 m)	7.7 ft (2.3 m)	9.6 ft (2.9 m)
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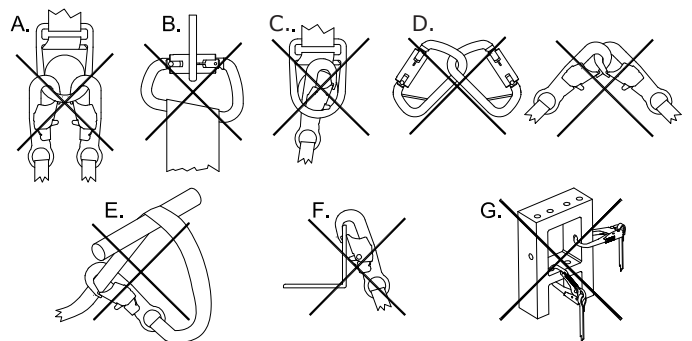


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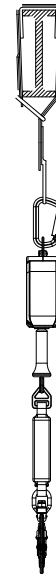
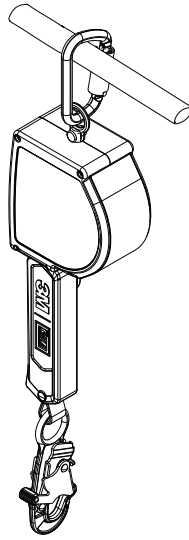
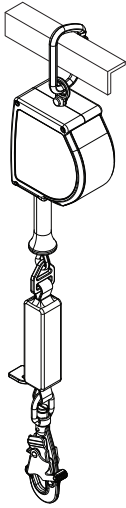
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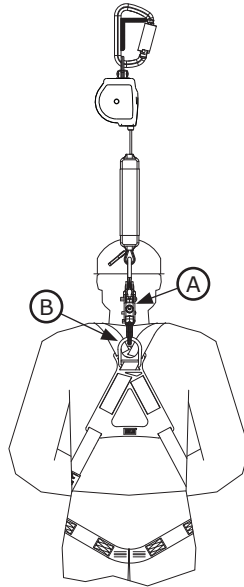
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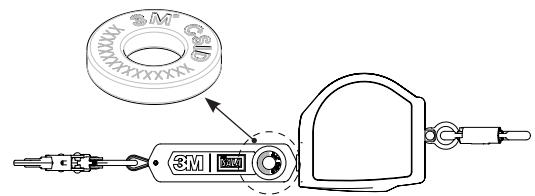
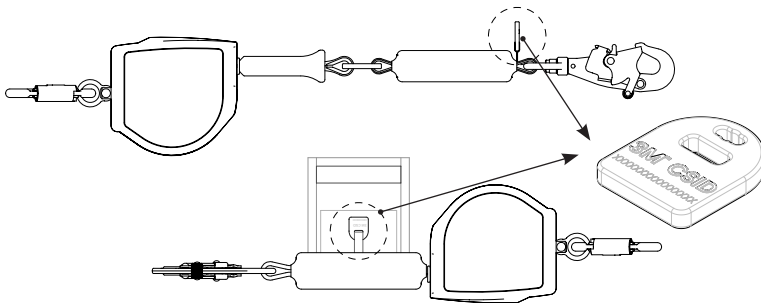
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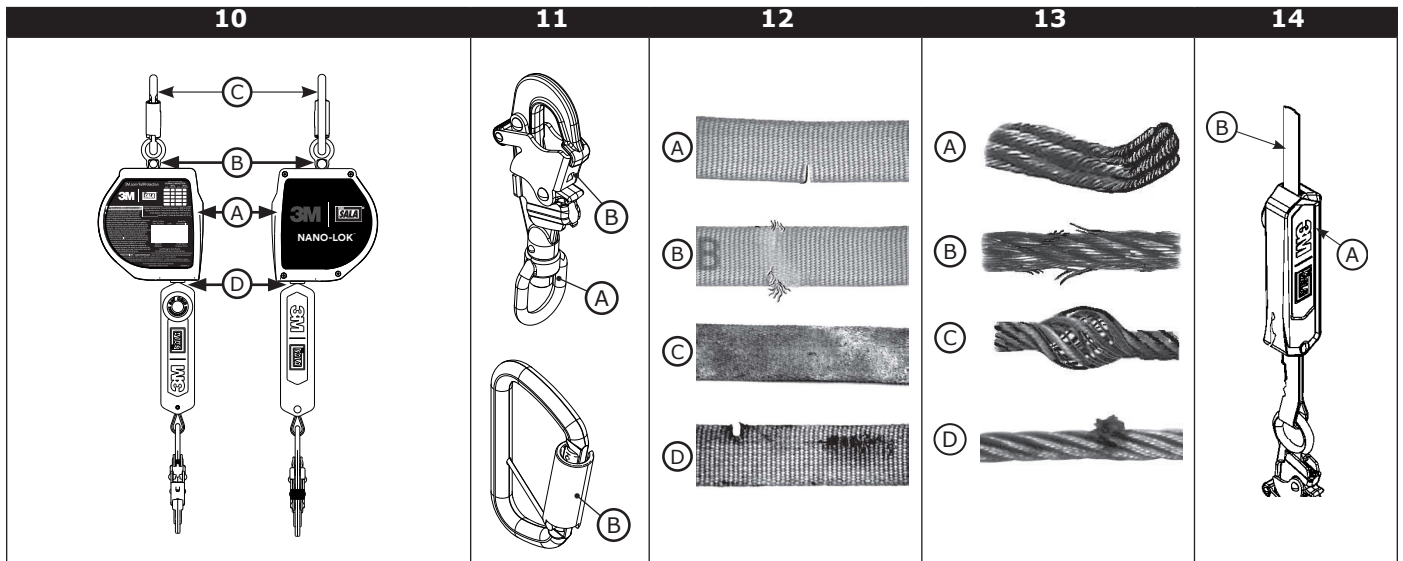


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NANO-LOK™

ARC
FLASH

3M.com/FallProtection

INSPECTION LOG JOURNAL D'INSPECTION			
INITIAL	DATE	INITIAL	DATE

WARNING / AVERTISSEMENT

Not for leading edge applications. Always refer to User Instructions for acceptable anchor locations. Suitable for use with approved horizontal lifelines. Test device for locking and retraction before use. Examine at least annually. For single user only. Avoid lanyard contact with sharp edges & abrasive surfaces. Follow all manufacturer's instructions included at time of shipping. Inspect for ruptured or torn webbing extending from load indicator cover. Ruptured or torn webbing is an indicator that an impact has occurred and the unit must be removed from service. / Ne convient pas en présence de bords tranchants. Consultez toujours le mode d'emploi pour connaître les emplacements d'ancrage acceptables. Convient à l'utilisation avec les systèmes horizontaux approuvés. Tester le blocage et la rétraction du dispositif avant utilisation. Inspecter au moins annuellement. Ne connecter qu'un seul utilisateur au dispositif. Éviter tout contact entre la sangle et les bords coupants ou les surfaces abrasives. Suivre toutes les instructions du fabricant fournies avec le dispositif lors de sa livraison. Vérifiez s'il y a une rupture ou déchirement de la sangle qui dépasse du couvercle de l'indicateur de charge. Une rupture ou un déchirement de la sangle indique qu'un impact s'est produit et qu'on doit mettre le dispositif hors de service.

SPECIFICATIONS / CARACTÉRISTIQUES: Lifeline: 3/16" (5 mm) 7 x 19 galvanized cable (G), stainless steel cable (S), Dyneema web 20 mm (.781") x 1.3 mm (.052") (D), or Kevlar web 20 mm (.781") x 2.4 mm (.093") (K).
Corde d'assurance: galvanisé (G) 7 x 19 d'un diamètre de 3/16 po (5 mm) ou câble en acier inoxydable (S) ou sangle en Dyneema 20 mm (0,781 po) x 1,3 mm (0,052 po) (D) ou sangle en Kevlar 20 mm (0,781 po) x 2,4 mm (0,093 po) (K).

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16

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NANO-LOK™

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INSPECTION LOG JOURNAL D'INSPECTION			
INITIAL	DATE	INITIAL	DATE

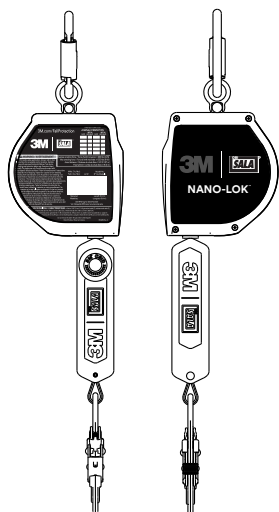
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SPECIFICATIONS / CARACTÉRISTIQUES: Lifeline: 3/16" (5 mm) 7 x 19 galvanized cable (G), stainless steel cable (S), Dyneema web 20 mm (.781") x 1.3 mm (.052") (D), or Kevlar web 20 mm (.781") x 2.4 mm (.093") (K).
Corde d'assurance: galvanisé (G) 7 x 19 d'un diamètre de 3/16 po (5 mm) ou câble en acier inoxydable (S) ou sangle en Dyneema 20 mm (0,781 po) x 1,3 mm (0,052 po) (D) ou sangle en Kevlar 20 mm (0,781 po) x 2,4 mm (0,093 po) (K).

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INSPECTION LOG

JOURNAL D'INSPECTION

INITIAL

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Average arresting force / Force d'arrêt moyenne: ≤ 900 lbs (4 kN)

Max arresting force / Force d'arrêt maximale: ≤ 1350 lbs (6 kN)

Arrest distance / Distance de chute libre: 3 1/2 ft (1.07 m)

Free fall limit / Limite de chute libre: 0 ft (0 m)

Mfrd. (Yr. Mo):

Fabr. (An. Mo):

Lot #:

Model No:

N° De Modèle:

Material:

Matériau:

Length (ft/m):

Longueur (ft/m):

See RFID tag for Serial Number

Voir l'étiquette RFID pour le numéro de série

SPECIFICATIONS / CARACTÉRISTIQUES: Lifeline: 3/16" (5 mm) 7 x 19 galvanized cable (G), stainless steel cable (S).

Dyneema web 20 mm (L7817) x 1.3 mm (L0527) (D), or Kevlar web 20 mm (L7817) x 2.4 mm (L0597) (K).

Cordé d'assurance galvanisé (G) 7 x 19 d'un diamètre de 3/16 po (5 mm) ou câble en acier inoxydable (S) ou sangle en Dyneema 20 mm (L781 po) x 1,3 mm (L0,052 po) (D) ou sangle en Kevlar 20 mm (L781 po) x 2,4 mm (L0,093 po) (K).

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9514262 Rev. C

SAFETY INFORMATION

Please read, understand, and follow all safety information contained in these instructions prior to the use of this Self-Retracting Device (SRD). FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.

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

Intended Use:

This Self-Retracting Device is intended for use as part of a complete personal 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 the User Instructions, is not approved by 3M and could result in serious injury or death.

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

! WARNING

This Self-Retracting Device is part of a personal fall protection system. It is expected that all users be fully trained in the safe installation and operation of their personal fall protection system. **Misuse of this device could result in serious injury or death.** For proper selection, operation, installation, maintenance, and service, refer to these User Instructions including all manufacturer recommendations, see your supervisor, or contact 3M Technical Services.

- **To reduce the risks associated with working with an SRD which, if not avoided, could result in serious injury or death:**
 - Before each use, inspect the SRD and check for proper locking and retraction.
 - If inspection reveals an unsafe or defective condition, remove the device from service and repair or replace according to the User Instructions.
 - If the SRD has been subjected to fall arrest or impact force, immediately remove the SRD from service and label the device 'UNUSABLE'.
 - Ensure the lifeline is kept free from any and all obstructions including, but not limited to; entanglement with moving machinery or equipment (e.g., the top drive of oil rigs), other workers, yourself, surrounding objects, or impact from overhead objects that could fall onto the lifeline or the worker.
 - Never allow slack in the lifeline. Do not tie or knot the lifeline.
 - Attach the unused leg(s) of the Harness Mounted SRD to the parking attachment(s) of the harness if equipped.
 - Do not use in applications that have an obstructed fall path. Working on slowly shifting material, such as sand or grain, or within confined or cramped spaces, may not allow the worker to reach sufficient speed to cause the SRD to lock. A clear path is required to assure positive locking of the SRD.
 - Avoid sudden or quick movements during normal work operation. This may cause the device to lock up.
 - Ensure that fall protection systems/subsystems assembled from components made by different manufacturers are compatible and meet the requirements of applicable standards, including the ANSI Z359 or other applicable fall protection codes, standards, or requirements. Always consult a Competent and/or Qualified Person before using these systems.
- **To reduce the risks associated with working at height which, if not avoided, could result in serious injury or death:**
 - Ensure your health and physical condition allow you to safely withstand all of the forces associated with working at height. Consult with your doctor if you have any questions regarding your ability to use this equipment.
 - Never exceed allowable capacity of your fall protection equipment.
 - Never exceed maximum free fall distance of your fall protection equipment.
 - Do not use any fall protection equipment that fails pre-use or other scheduled inspections, or if you have concerns about the use or suitability of the equipment for your application. Contact 3M Technical Services with any questions.
 - Some subsystem and component combinations may interfere with the operation of this equipment. Only use compatible connections. Consult 3M prior to using this equipment in combination with components or subsystems other than those described in the User Instructions.
 - Use extra precautions when working around moving machinery (e.g. top drive of oil rigs) electrical hazards, extreme temperatures, chemical hazards, explosive or toxic gases, sharp edges, or below overhead materials that could fall onto you or your fall protection equipment.
 - Use Arc Flash or Hot Works devices when working in high heat environments.
 - Avoid surfaces and objects that can damage the user or equipment.
 - Ensure there is adequate fall clearance when working at height.
 - Never modify or alter your fall protection equipment. Only 3M or parties authorized in writing by 3M may make repairs to the equipment.
 - Prior to use of fall protection equipment, ensure a rescue plan is in place which allows for prompt rescue if a fall incident occurs.
 - If a fall incident occurs, immediately seek medical attention for the worker who has fallen.
 - Do not use a body belt for fall arrest applications. Use only a Full Body Harness.
 - Minimize swing falls by working as directly below the anchorage point as possible.
 - If training with this device, a secondary fall protection system must be utilized in a manner that does not expose the trainee to an unintended fall hazard.
 - Always wear appropriate personal protective equipment when installing, using, or inspecting the device/system.

☒ 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.

DESCRIPTION:

3M™ DBI-SALA® Nano-Lok XL Self-Retracting Devices (SRDs) are designed for overhead applications where the SRD is mounted above and the lifeline remains vertical during use.

Figure 2 identifies key components of the 3M™ DBI-SALA® Nano-Lok XL Self-Retracting Devices (SRDs). Nano-Lok XL SRDs are drum wound Lifelines (A) with an in-line Energy Absorber (B) that retracts into a Nylon Housing (C). A Swivel Eye (D) on the top of the Housing allows attachment to a valid anchorage connection point with a Carabiner (E). Figure 1 identifies available Nano-Lok XL models and their connector configurations. See Table 1 for Nano-Lok XL SRD and connector specifications.

☒ **Arc Flash:** SRD models designed for "Arc Flash" meet the test requirements of the ASTM F887 standard and are designed for use in Environments where potential for an arc flash (electrical explosion) exists.

Table 1 – Specifications

Component Specifications:

SRD Housings	Nylon		
Drum	Arc Flash: Nylon		
	Standard: Nylon		
	Cable: Aluminum		
Internal Components	Stainless Steel, Zinc Plated Steel and Aluminum		
Swivel	Zinc Plated Steel		
Lifeline	Material		
Arc Flash SRDs	Kevlar Nomex		
Web SRDs	Dyneema Polyester		
Cable SRDs	3/16" diameter Galvanized Steel or Stainless Steel		
Energy Absorber	Web Material	Cover Material	Stitching Material
Arc Flash SRDs	Polyester Vectron	Kevlar Nomex, Cotton, and Protex	Kevlar Thread
Web SRDs	Polyester Vectron	Rubber	Polyester/Nylon Thread
Cable SRDs	Polyester Vectron	Vinyl	Polyester/Nylon Thread

Connector Specifications:

Figure 1 Reference	Model Number	Description	Material	Gate Opening	Gate Strength
①	2000025	Carabiner	Aluminum	3/4 in (19 mm)	3,600 lbs (16 kN)
②	2000112	Carabiner	Steel	11/16 in (17 mm)	3,600 lbs (16 kN)
③	2000127	Carabiner	Stainless Steel	11/16 in (17 mm)	3,600 lbs (16 kN)
④	2000023	Carabiner	Aluminum	3/4 in (19 mm)	3,600 lbs (16 kN)
⑤	2100044	Swivel Self-locking Snap Hook	Stainless Steel	3/4 in (19 mm)	3,600 lbs (16 kN)
⑥	2100045	Swivel Self-locking Snap Hook	Stainless Steel	3/4 in (19 mm)	3,600 lbs (16 kN)
⑦	9502116	Self-Locking Snap Hook	Steel	3/4 in (19 mm)	3,600 lbs (16 kN)
⑧	9502194	Swivel Self-locking Snap Hook	Steel	3/4 in (19 mm)	3,600 lbs (16 kN)
⑨	9502195	Swivel Self-locking Snap Hook	Steel	3/4 in (19 mm)	3,600 lbs (16 kN)

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

Performance Specifications:

SRL Specifications (Z359.14 Class B)	ANSI/OSHA Models	OSHA Models
Capacity Range	130 lbs - 310 lbs (59 kg - 140 kg)	311 lbs - 420 lbs (141 kg - 190 kg)
Maximum Arresting Force	1,350 lbs (6 kN)	1,350 lbs (6 kN)
Average Arresting Force	900 lbs (4 kN)	900 lbs (4 kN)
Arrest Distance	42 in (1.07 m)	42 in (1.07 m)
Minimum Fall Clearance Required¹	6.0 ft (1.83 m)	8.0 ft (2.44 m)
Maximum Free Fall²	2 ft (0.6 m)	2 ft (0.6 m)

1 - Assumes the SRD is mounted directly above (overhead) the end user.

2 - SRD must be mounted above user D-ring.

1.0 APPLICATIONS

- 1.1 PURPOSE:** Self-Retracting Devices (SRDs) are designed to be a component in a personal fall arrest system (PFAS). Figure 1 illustrates SRDs covered by this instruction manual. They may be used in most situations where a combination of worker mobility and fall protection is required (i.e. inspection work, general construction, maintenance work, oil production, confined space work, etc.).
- 1.2 STANDARDS:** Your SRD conforms to the national or regional standard(s) identified on the front cover of these instructions. Refer to the local, state, and federal (OSHA) requirements governing occupational safety for additional information regarding Personal Fall Protection.
- 1.3 TRAINING:** This equipment is intended to be used by persons trained in its correct application and use. It is the responsibility of the user to assure they are familiar with these instructions and are trained in the correct care and use of this equipment. Users must also be aware of the operating characteristics, application limits, and the consequences of improper use.
- 1.4 LIMITATIONS:** Always consider the following limitations when installing or using this equipment:

- **Capacity:** SRDs are for use by one person with a combined weight (clothing, tools, etc.) meeting the *Capacity Range* specified in Table 1 for your standard(s). Make sure all of the components in your system are rated to a capacity appropriate to your application.
- **Anchorage:** Anchorages selected for fall arrest systems shall have a strength capable of sustaining static loads applied in the directions permitted by the system of at least:
 1. 5,000 lbs. (22.2 kN) for non-certified anchorages, or
 2. Two times the maximum arresting force for certified anchorages.

When more than one fall arrest system is attached to an anchorage, the strengths set forth in (1) and (2) above shall be multiplied by the number of systems attached to the anchorage.

FROM OSHA 1926.500 AND 1910.104: Anchorages used for attachment of personal fall arrest systems shall be independent of any anchorage being used to support or suspend platforms, and capable of supporting at least 5,000 lbs. per user attached, or be designed, installed, and used as part of a complete personal fall arrest systems which maintains a safety factor of at least two, and is under the supervision of a qualified person.

- **Locking Speed:** Situations which do not allow for an unobstructed fall path should be avoided. Working in confined or cramped spaces may not allow the body to reach sufficient speed to cause the SRD to lock if a fall occurs. Working on slowly shifting material, such as sand or grain, may not allow enough speed buildup to cause the SRD to lock. A clear path is required to assure positive locking of the SRD.
- **Free Fall:** Properly using an SRD in overhead applications will minimize free fall distance. To prevent an increased free fall distance, follow the instructions below:
 - Never clamp, knot, or otherwise prevent the lifeline from retracting or staying taut.
 - Avoid any slack in the lifeline of the SRD.
 - Do not work above the level of your anchorage.
 - Do not lengthen SRDs by connecting a lanyard or similar component without consulting 3M.

For product-specific information relating to free fall and fall clearance values, please refer to Table 1 of this instruction.

- **Swing Falls:** Swing Falls occur when the anchorage point is not directly above the point where a fall occurs. The force of striking an object in a swing fall may cause serious injury (see Figure 3A). Minimize swing falls by working as directly below the anchorage point as possible (Figure 3B).
- **Fall Clearance:** Figure 3B illustrates Fall Clearance Calculation. Fall Clearance (FC) is the sum of Free Fall (FF), Deceleration Distance (DD) and a Safety Factor (SF): $FC = FF + DD + SF$. D-Ring Slide and Harness Stretch are included in the Safety Factor. Fall Clearance values have been calculated and are charted in Figure 4. A Safety Factor of 1 m (3.28 ft) was used for all values in Figure 4.

For falls from a standing position where the SRD is anchored directly overhead (Figure 3B), SRD Fall Arrest Systems should have the minimum Fall Clearances specified in Table 1. Falls from a kneeling or crouching position will require an additional 1 m (3 ft) of Fall Clearance. In a swing fall situation (Figure 3C), the total vertical fall distance will be greater than if the user had fallen directly below the anchorage point and may require additional Fall Clearance. Figure 4 and the accompanying table define the Maximum Work Radius (C) for various SRD Anchorage Heights (A) and Fall Clearances (B). The Recommended Work Zone is limited to the area located within the Maximum Work Radius.

- **Hazards:** Use of this equipment in areas where surrounding hazards exist may require additional precautions to reduce the possibility of injury to the user or damage to the equipment. Hazards may include, but are not limited to: high heat, caustic chemicals, corrosive environments, high voltage power lines, explosive or toxic gases, moving machinery, or overhead materials that may fall and contact the user or fall arrest system. Avoid working where your lifeline may cross or tangle with that of another worker. Avoid working where an object may fall and strike the lifeline; resulting in loss of balance or damage to the lifeline. Do not allow the lifeline to pass under arms or between legs.
- **Sharp Edges:** Avoid working where the lifeline will be in contact with or abrade against unprotected sharp edges. Where contact with a sharp edge is unavoidable, cover the edge with a protective material.

2.0 Use

- 2.1 FALL PROTECTION AND RESCUE PLAN:** The employer must have a Fall Protection and Rescue Plan in place that meets *ANSI Z359.2 Minimum Requirements for a Comprehensive Managed Fall Protection Program*. The plan should provide guidelines and requirements for an employer's managed fall protection program, including policies, duties and training; fall protection procedures; eliminating and controlling fall hazards; rescue procedures; incident investigations; and evaluating program effectiveness.
- 2.2 INSPECTION FREQUENCY:** SRDs shall be inspected by the authorized person¹ or rescuer² before each use (See Table 3). Additionally, inspections shall be conducted by a competent person³ other than the user. Extreme working conditions (harsh environment, prolonged use, etc.) may necessitate more frequent competent person inspections. The competent person shall use the *Inspection Schedule (Table 2)* to determine appropriate inspection intervals. Inspection procedures are described in the *Inspection & Maintenance Log (Table 3)*. Results of the Competent Person inspection should be recorded in the *Inspection and Maintenance Log* or recorded with the Radio Frequency Identification (RFID) system (see *Section 5*).
- 2.3 NORMAL OPERATIONS:** Normal operation will allow the lifeline to extend and retract with no hesitation or slack as the worker moves at normal speeds. If a fall occurs, a speed sensing brake system will activate, stopping the fall and absorbing much of the energy created. Sudden or quick movements should be avoided during normal work operation, as this may cause the SRD to lock up. For falls which occur near the end of the lifeline travel, a reserve lifeline system or Energy Absorber has been incorporated to reduce the fall arrest forces.
- 2.4 BODY SUPPORT:** A Full Body Harness must be used with the Self-Retracting Device. The harness connection point must be above the user's center of gravity. A body belt is not authorized for use with the Self-Retracting Device. If a fall occurs when using a body belt it may cause unintentional release or physical trauma from improper body support.
- 2.5 COMPATIBILITY OF COMPONENTS:** Unless otherwise noted, 3M equipment is designed for use with 3M approved components and subsystems only. Substitutions or replacements made with non approved components or subsystems may jeopardize compatibility of equipment and may affect safety and reliability of the complete system.
- 2.6 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 3M if you have any questions about compatibility. Connectors (hooks, carabiners, and D-rings) must be capable of supporting at least 5,000 lbs. (22.2 kN). 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 (see Figure 5). Connectors must be compatible in size, shape, and strength. Self-locking snap hooks and carabiners are required. If the connecting element to which a snap hook or carabiner attaches is undersized or irregular in shape, a situation could occur where the connecting element applies a force to the gate of the snap hook or carabiner (A). This force may cause the gate to open (B), allowing the snap hook or carabiner to disengage from the connecting point (C).
- 2.7 MAKING CONNECTIONS:** Snap hooks and carabiners used with this equipment must be self-locking. Ensure all connections are compatible in size, shape and strength. Do not use equipment that is not compatible. Ensure all connectors are fully closed and locked. 3M connectors (snap hooks and carabiners) are designed to be used only as specified in each product's user's instructions. See Figure 6 for examples of inappropriate connections. Do not connect 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 standard size D-rings or similar objects which will result in a load on the gate if the hook or D-ring twists or rotates, unless the snap hook is equipped with a 3,600 lb (16 kN) gate.
 - C. In a false engagement, where size or shape of the mating connectors are not compatible and, without visual confirmation, the connectors seem fully engaged.
 - D. To each other.
 - E. Directly to webbing or rope lanyard or tie-back (unless the manufacturer's instructions for both the lanyard and connector specifically allows such a connection).
 - F. To any object which is shaped or dimensioned such that the snap hook or carabiner will not close and lock, or that roll-out could occur.
 - G. In a manner that does not allow the connector to align properly while under load.

Table 2 – Inspection Schedule

Type of Use	Application Examples	Conditions of Use	Inspection Frequency
Infrequent to Light	Rescue and Confined Space, Factory Maintenance	Good Storage Conditions, Indoor or Infrequent Outdoor Use, Room Temperature, Clean Environments	Annually
Moderate to Heavy	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	Commercial Construction, Oil and Gas, Mining	Harsh Storage Conditions, Prolonged or Continuous Outdoor Use, All Temperatures, Dirty Environment	Quarterly to Semi-Annually

¹ **Authorized Person:** A person assigned by the employer to perform duties at a location where the person will be exposed to a fall hazard.

² **Rescuer:** Person or persons other than the rescue subject acting to perform an assisted rescue by operation of a rescue system.

³ **Competent Person:** An individual designated by the employer to be responsible for the immediate supervision, implementation, and monitoring of the employer's managed fall protection program who, through training and knowledge, is capable of identifying, evaluating, and addressing existing and potential fall hazards, and who has the employer's authority to take prompt corrective action with regard to such hazards.

3.0 Installation

- 3.1 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 defined in Section 2.
- 3.2 ANCHORAGE:** Figure 7 illustrates typical SRD anchorage connections. Select an anchorage location with minimal free fall and swing fall hazards (see Section 1). Select a rigid anchorage point capable of sustaining the static loads defined in Section 1.
- 3.3 HARNESS CONNECTION:** A Full Body Harness is required for Fall Arrest applications. Connect the Snap Hook (A) on the SRD Lifeline to the Back Dorsal D-Ring (B) on the Full Body Harness (see Figure 8). For situations such as ladder climbing, it may be useful to connect to the front Sternal D-Ring. Consult the harness manufacturer's instructions for details regarding use of the harness connection points.

4.0 OPERATION

☒ *First time or infrequent users of Self-Retracting Devices (SRDs) should review the "Safety Information" at the beginning of this manual prior to use of the SRD.*

- 4.1 BEFORE EACH USE:** Before each use of this fall protection equipment carefully inspect it to assure it is in good working condition. Check for worn or damaged parts. Ensure all bolts are present and secure. Check that the lifeline is retracting properly by pulling out the line and allowing it to slowly retract. If there is any hesitation in retraction the unit should be removed from service and destroyed. Inspect the lifeline for cuts, frays, burns, crushing and corrosion. Check locking action by pulling sharply on the line. See the Inspection and Maintenance Log (Table 3) for inspection details. Do not use if inspection reveals an unsafe condition.
- 4.2 AFTER A FALL:** Any equipment which has been subjected to the forces of arresting a fall or exhibits damage consistent with the effect of fall arrest forces as described in Table 3, must be removed from service immediately and destroyed.
- 4.3 BODY SUPPORT:** A full body harness must be worn when using 3M SRDs. For general fall protection use, connect to the back Dorsal D-Ring. For situations such as ladder climbing, it may be useful to connect to the front Sternal D-Ring. Consult the harness manufacturer's instructions for details regarding use of the harness connection points.
- 4.4 FALL ARREST CONNECTIONS:** When using a hook to make a connection, ensure roll-out cannot occur (see Figure 5). Do not use hooks or connectors that will not completely close over the attachment object. Do not use non-locking snap hooks. The anchorage must meet the anchorage strength requirements stated in Section 1. Follow the manufacturer's instructions supplied with each system component.
- 4.5 OPERATION:** Prior to use, inspect the SRD per the inspection procedure of Table 3. During use, connect the SRD to a suitable anchorage or anchorage connector as previously described. Connect the Self-Locking Snap Hook on the end of the lifeline to the Dorsal D-Ring on the Full Body Harness (see Figure 8). Ensure connections are compatible in size, shape, and strength. Ensure hook is fully closed and locked. Once attached, the worker is free to move about within the recommended working area at normal speeds. A tag line may be required to extend or retract the lifeline during connection and disconnection operations. A tag line can be used to prevent uncontrolled retraction of the lifeline into the SRD. Depending on the work site environment and conditions, it may be necessary to restrain the free end of the tag line to prevent interference and entanglement with equipment or machinery.
- 4.6 HORIZONTAL SYSTEMS:** In applications where the SRD is used in conjunction with a horizontal system (i.e. Horizontal Lifeline, Horizontal I-Beams Trolley), the SRD and horizontal system components must be compatible. Horizontal systems must be designed and installed under the supervision of a qualified engineer. Consult the horizontal system equipment manufacturer's instructions for details.

☒ *Fall Clearance values in Figure 4 are based on anchoring to a rigid, stationary anchor point and do not apply to anchoring to a Horizontal Lifeline (HLL) system. Consult the HLL Instruction Manual and HLL Installer to determine required Fall Clearances.*

5.0 Inspection

- 5.1 RFID TAG:** The Self-Retracting Device includes a Radio Frequency Identification (RFID) tag (see Figure 9). The RFID tag can be used with the handheld reading device and web based portal to simplify inspection and inventory control and provide records for your fall protection equipment. For details, contact a 3M Customer Service representative (see back cover). Follow the instructions provided with your handheld reader, or on the web portal, to transfer your data to your web log.
- 5.2 INSPECTION FREQUENCY:** The Self-Retracting Device must be inspected at the intervals defined in Section 2. Inspection procedures are described in the "Inspection & Maintenance Log" (Table 3).

☒ *Extreme working conditions (harsh environments, prolonged use, etc.) may require increasing the frequency of inspections (see Table 2).*

- 5.3 UNSAFE OR DEFECTIVE CONDITIONS:** If inspection reveals an unsafe or defective condition, remove the SRD from service immediately and discard (see Section 6).

☒ *Only 3M or parties authorized in writing may make repairs to this equipment.*

5.4 PRODUCT LIFE: The functional life of 3M Self-Retracting Devices is determined by work conditions and maintenance. As long as the product passes inspection criteria, it may remain in service.

6.0 MAINTENANCE, SERVICE, and STORAGE

6.1 CLEANING: Cleaning procedures for the SRD are as follows:

- Periodically clean the exterior of the SRD using water and a mild soap solution. Position the SRD so excess water can drain out. Clean labels as required.
- Clean the Lifeline with water and mild soap solution. Rinse and thoroughly air dry. Do not force dry with heat. The lifeline should be dry before allowing it to retract into the housing. An excessive buildup of dirt, paint, etc. may prevent the lifeline from fully retracting back into the housing causing a potential free fall hazard.

6.2 SERVICE: SRDs are not repairable. If the SRD has been subjected to fall force or inspection reveals an unsafe or defective condition, remove the SRD from service and discard (see "*Disposal*").

6.3 STORAGE/TRANSPORT: Store and transport SRDs in a cool, dry, clean environment out of direct sunlight. Avoid areas where chemical vapors may exist. Thoroughly inspect the SRD after any period of extended storage.

6.4 DISPOSAL: Dispose of the SRD if it has been subjected to fall arrest forces or inspection reveals an unsafe or defective condition. Before disposing of the SRD, cut the lifeline in half or otherwise disable the SRD to eliminate the possibility of inadvertent reuse.

7.0 Labels

Figure 15 shows the labels that should be present on the Self-Retracting Devices and their locations. All labels must be present on the SRD. If labels are missing or are not fully legible they must be replaced.

Table 3 – Inspection and Maintenance Log

Serial Number(s):		Date Purchased:	
Model Number:		Date of First Use:	
Inspection Date:		Inspected By:	
Component:	Inspection: (See Section 2 for <i>Inspection Frequency</i>)	User	Competent Person
SRD (Figure 10)	Inspect for loose fasteners and bent or damaged parts.	<input type="checkbox"/>	<input type="checkbox"/>
	Inspect the Housing (A) for distortion, cracks, or other damage.	<input type="checkbox"/>	<input type="checkbox"/>
	Inspect the Swivel (B) and Swivel Eye or Integral Connector (C) for distortion, cracks, or other damage. The Swivel should be attached securely to the SRD, but should pivot freely. The Swivel Eye or Integral Connector should rotate freely in the Swivel.	<input type="checkbox"/>	<input type="checkbox"/>
	The Lifeline (D) should pull out and retract fully without hesitation or creating a slack line condition.	<input type="checkbox"/>	<input type="checkbox"/>
	Ensure the SRD locks up when the Lifeline is jerked sharply. Lockup should be positive with no slipping.	<input type="checkbox"/>	<input type="checkbox"/>
	All labels must be present and fully legible (see Figure 15).	<input type="checkbox"/>	<input type="checkbox"/>
	Inspect the entire SRD for signs of corrosion.	<input type="checkbox"/>	<input type="checkbox"/>
End Connectors (Figure 11)	Table 1 identifies the End Connectors that should be included on your Nano-Lok SRD model. Inspect all Snap Hooks, Carabiners, Rebar Hooks, Interfaces, etc. for signs of damage, corrosion, and proper working condition. Where present: Gates (B) should open, close, lock, and unlock properly, Swivel Eyes (A) should rotate without interference, and Locking Buttons and Locking Pins should function correctly.	<input type="checkbox"/>	<input type="checkbox"/>
Web Lifeline (Figure 12)	Inspect webbing; material must be free of cuts (A), frays (B), or broken fibers. Check for tears, abrasions, heavy soiling (C), mold, burns (D), or discoloration. Inspect stitching; Check for pulled or cut stitches. Broken stitches may be an indication that the device has been impact loaded and must be removed from service.	<input type="checkbox"/>	<input type="checkbox"/>
Wire Rope Lifeline (Figure 13)	Inspect wire rope for cuts, kinks (A), broken wires (B), bird-caging (C), welding splatter (D), corrosion, chemical contact areas, or severely abraded areas. Replace the wire rope assembly if there are six or more randomly distributed broken wires in one lay, or three or more broken wires in one strand in one lay. A "lay" of wire rope is the length of wire rope it takes for a strand (the larger groups of wires) to complete one revolution or twist along the rope. Replace the wire rope assembly if there are any broken wires within 1 inch (25 mm) of the ferrules.	<input type="checkbox"/>	<input type="checkbox"/>
Energy Absorber (Figure 14)	Verify that the integral Energy Absorber has not been activated. An open cover or torn cover (A), webbing pulled out of the cover, torn or frayed webbing (B), ripped stitching, etc. are indicators of an activated Energy Absorber.	<input type="checkbox"/>	<input type="checkbox"/>
Corrective Action/Maintenance:		Approved By:	
		Date:	
Corrective Action/Maintenance:		Approved By:	
		Date:	
Corrective Action/Maintenance:		Approved By:	
		Date:	
Corrective Action/Maintenance:		Approved By:	
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U.S. 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 applicable law, 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 at 800-328-6146 or via email at 3MFallProtection@mmm.com for assistance.

LIMITATION OF LIABILITY: TO THE EXTENT PERMITTED BY APPLICABLE LAW, 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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