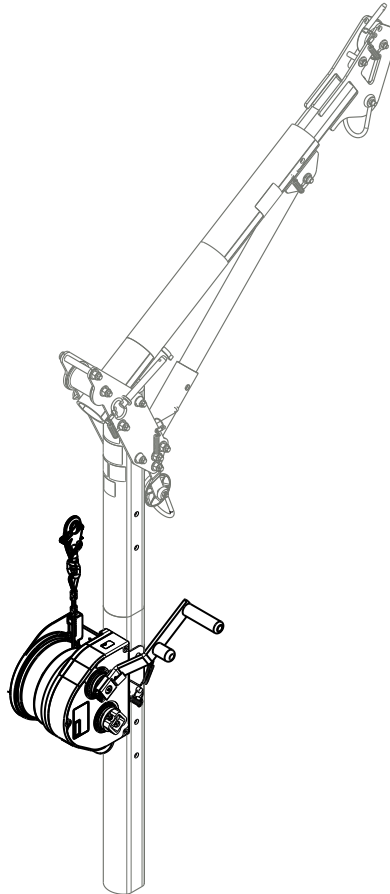


**DIGITAL WINCH
AND CONTINUOUS FEED WINCH
Confined Space Entry/Rescue**

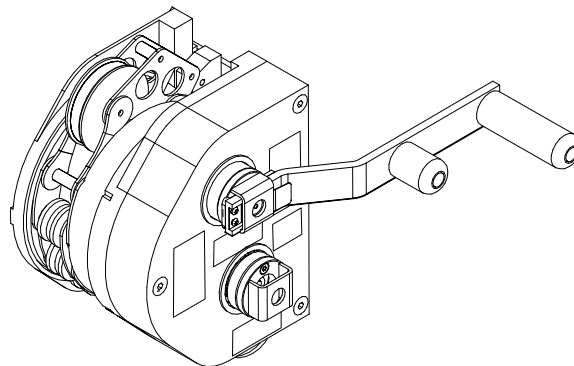
**USER INSTRUCTION MANUAL
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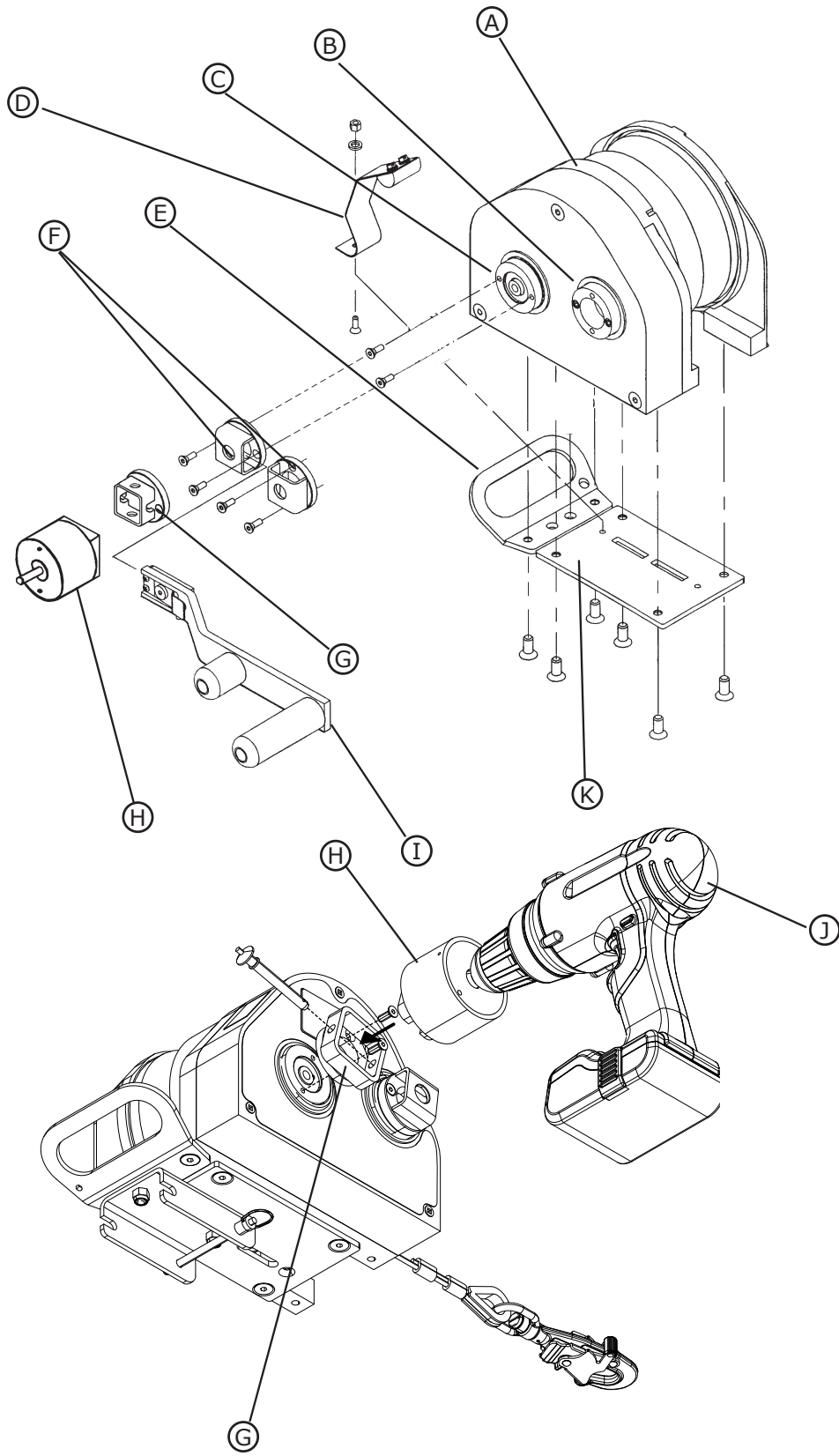
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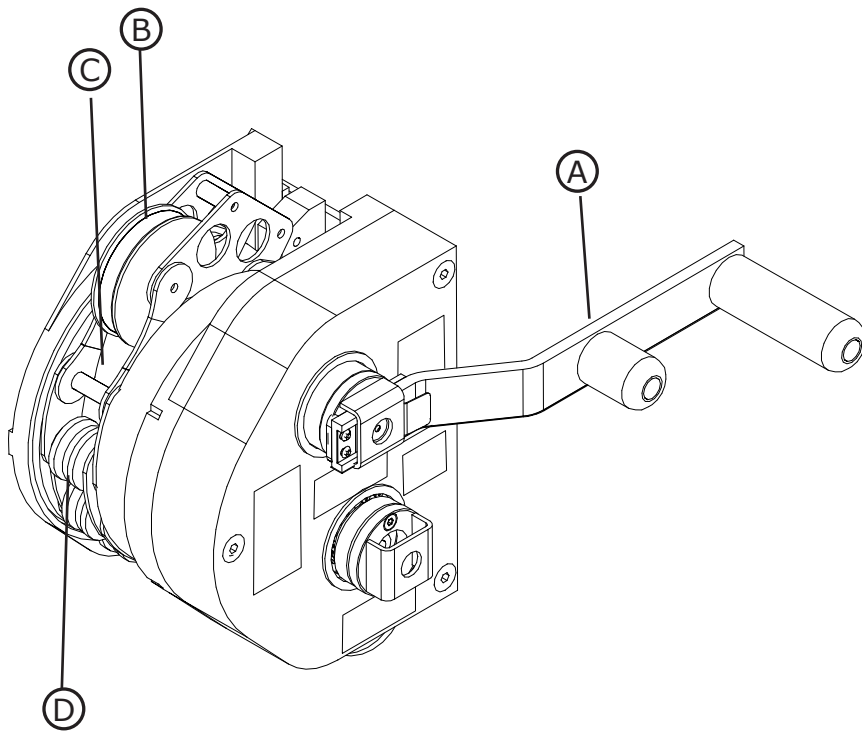
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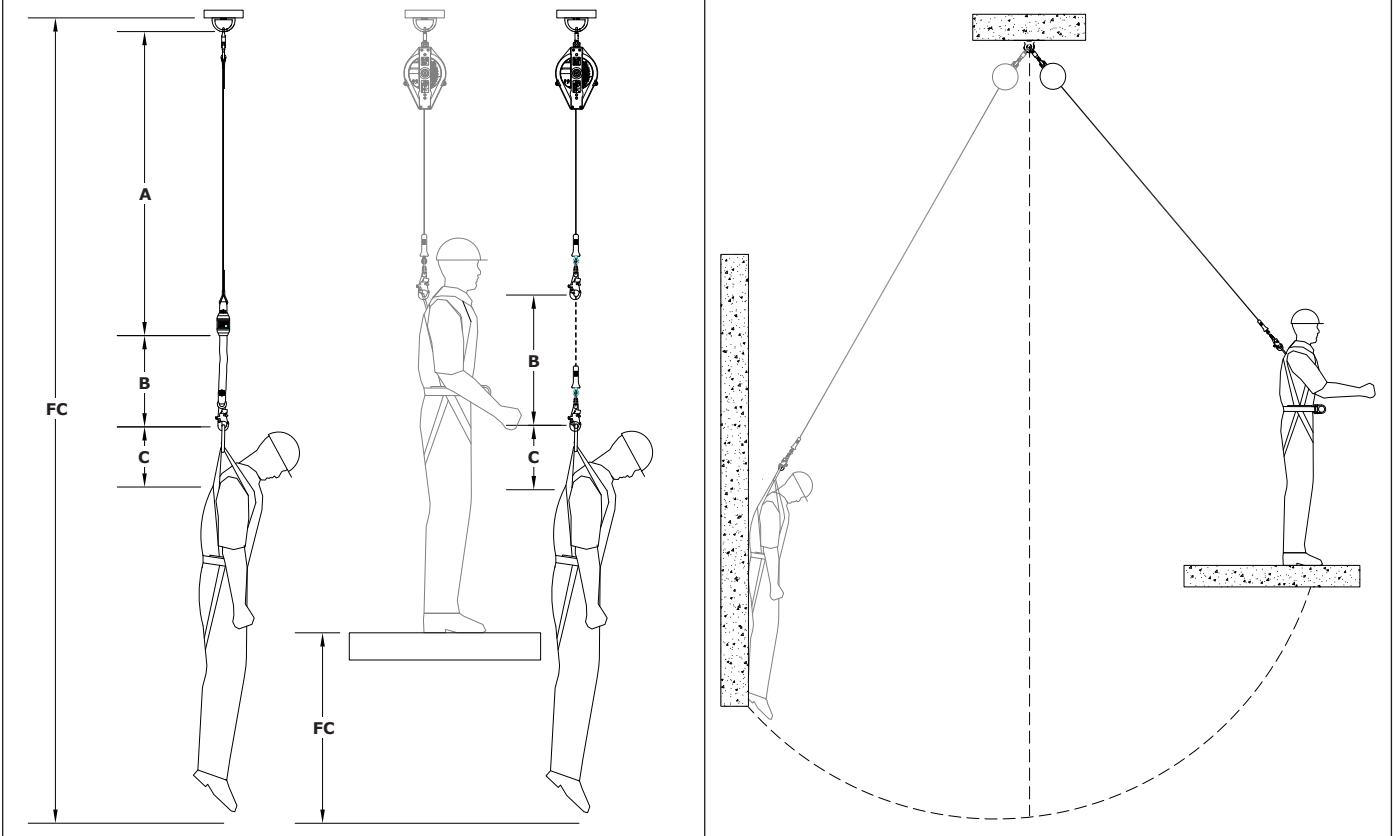


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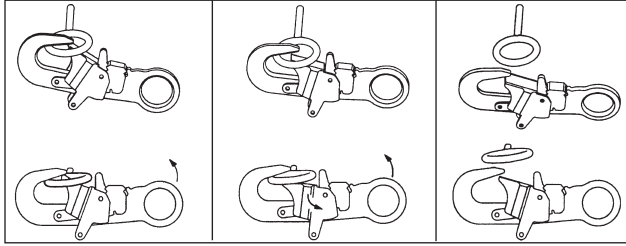


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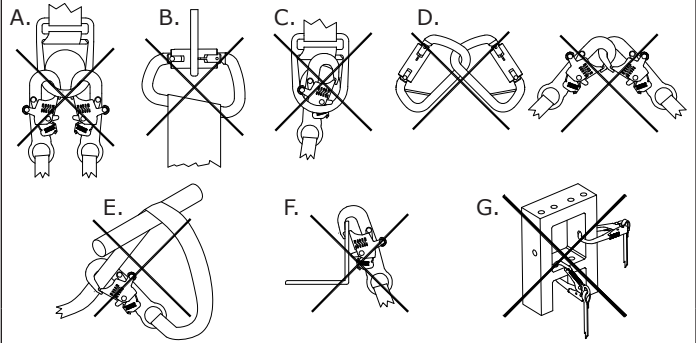


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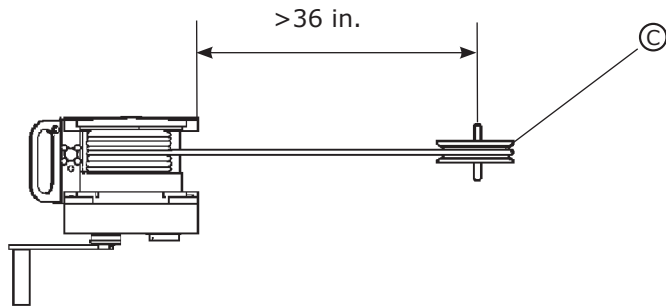
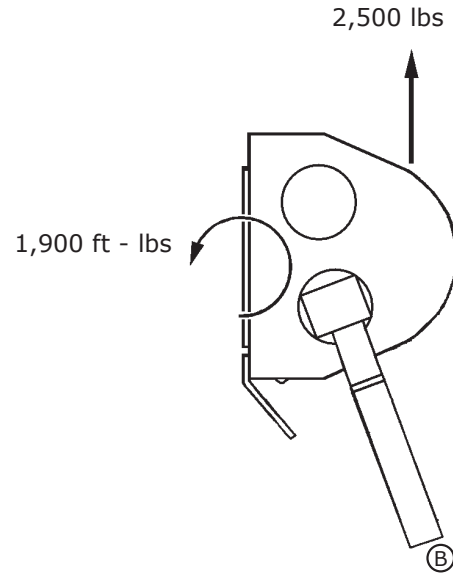
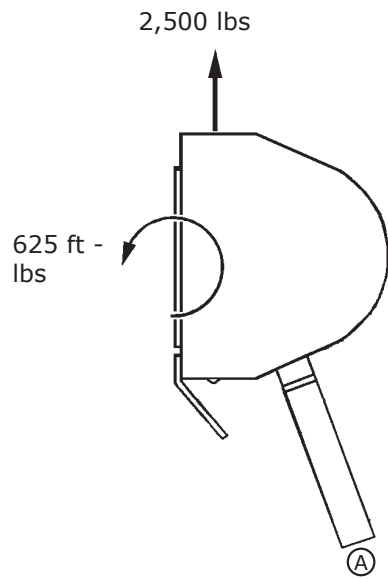
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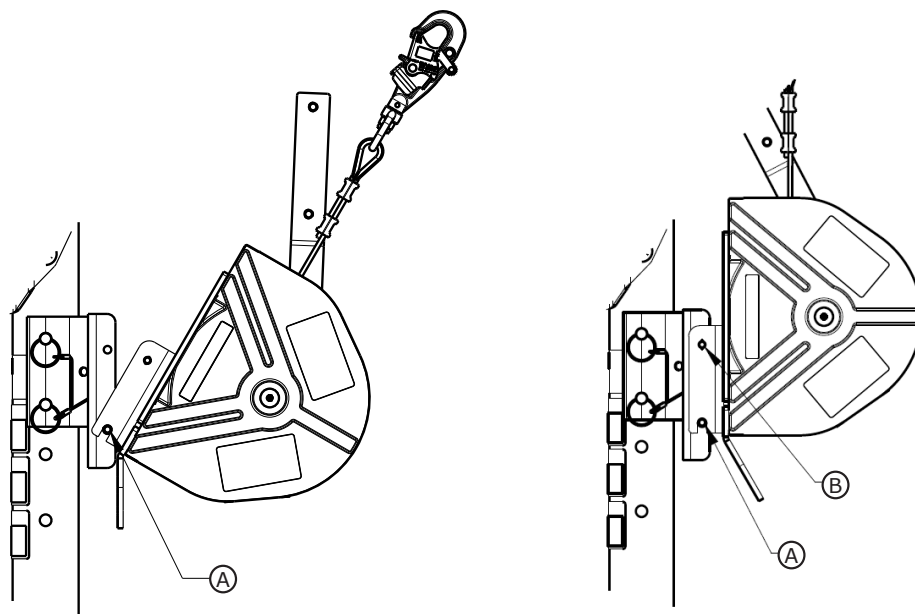
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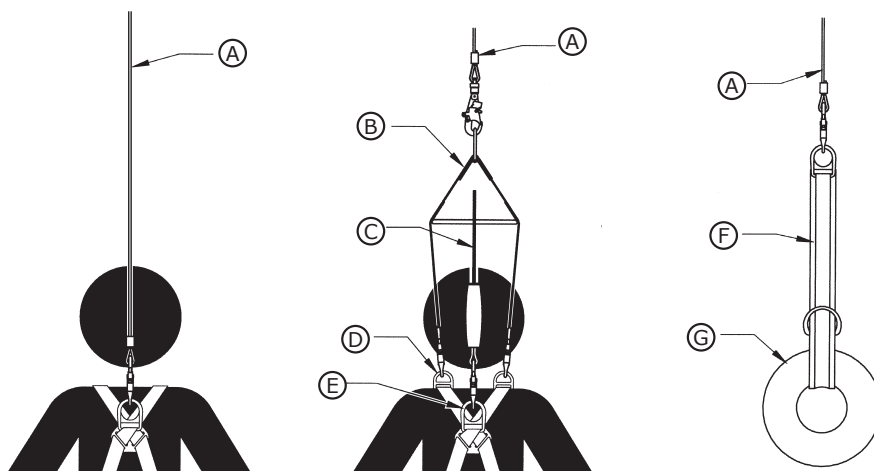
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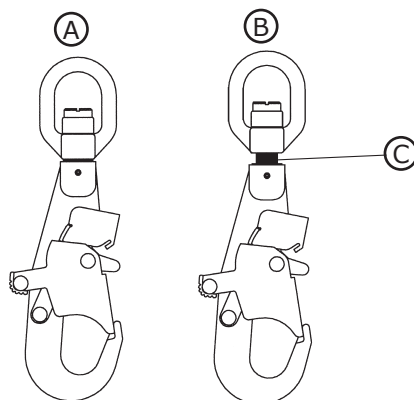
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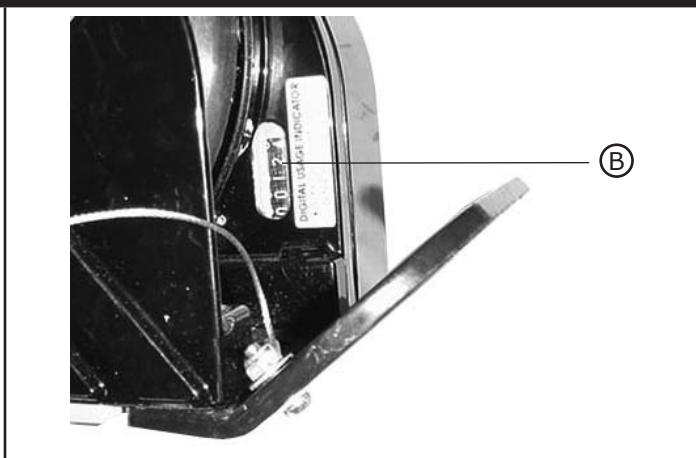
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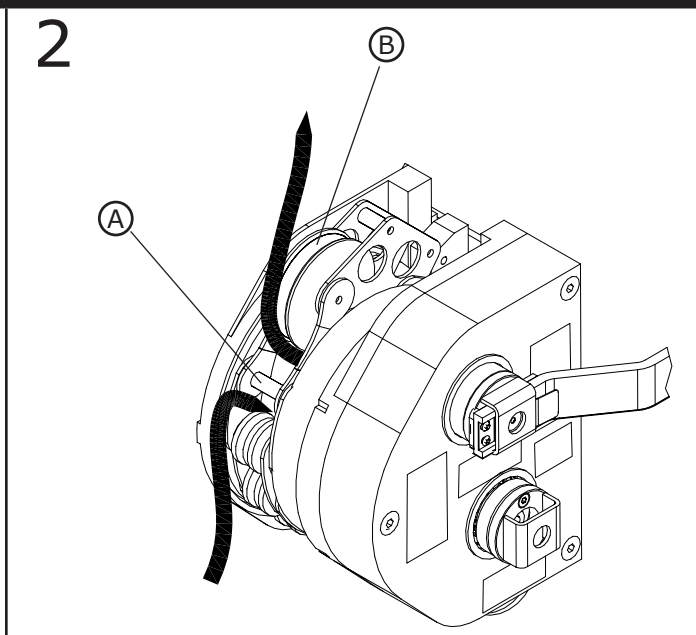
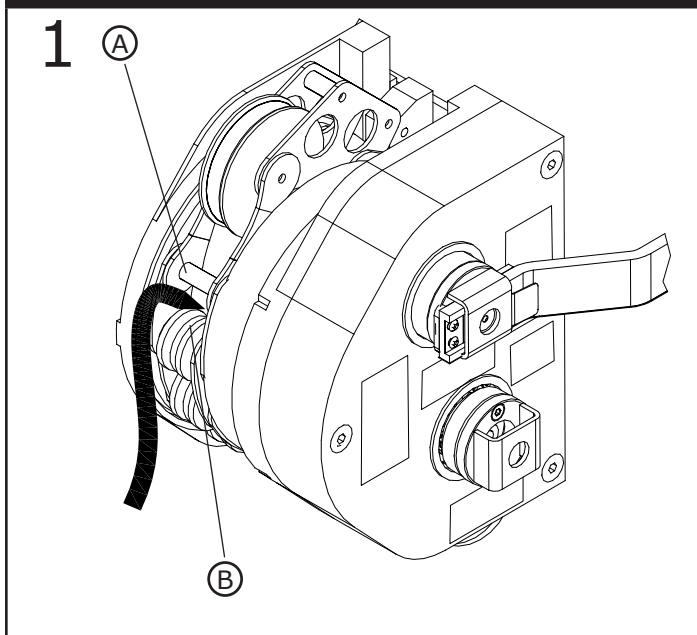
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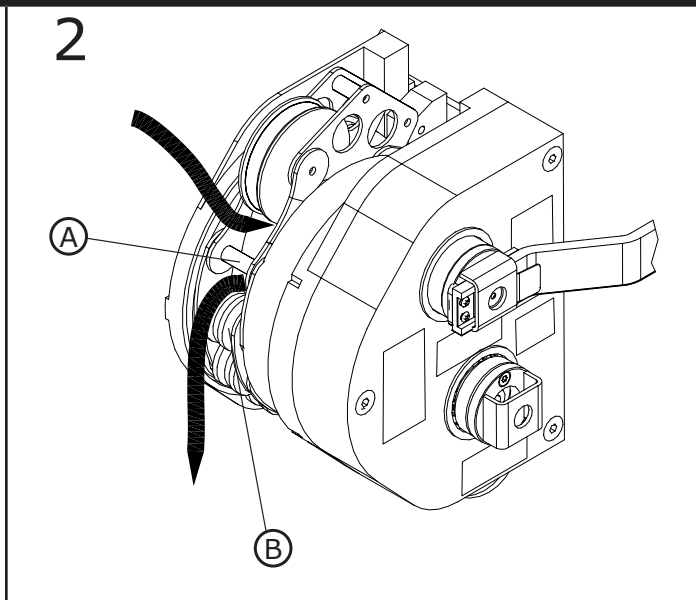
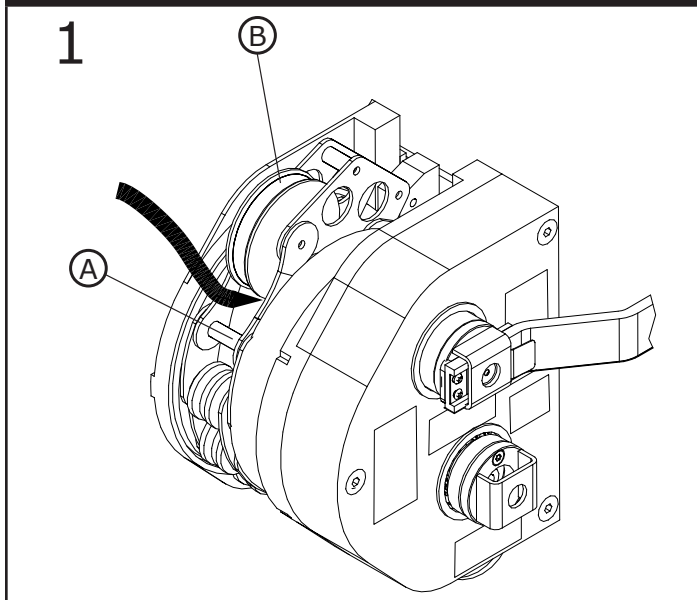
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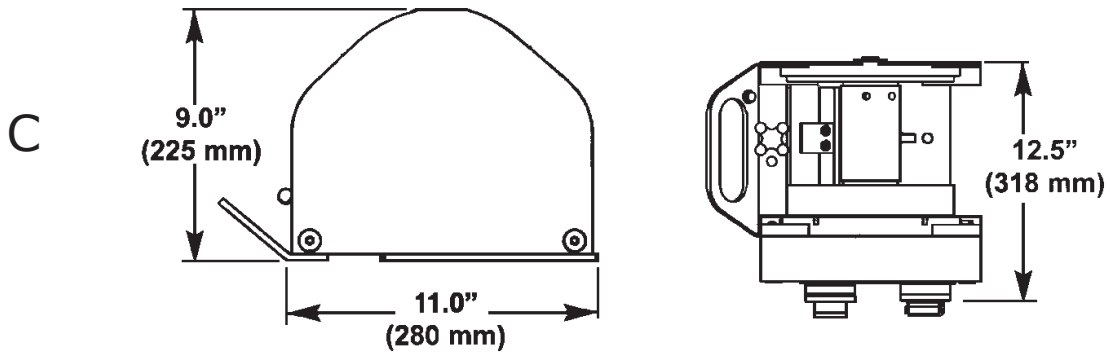
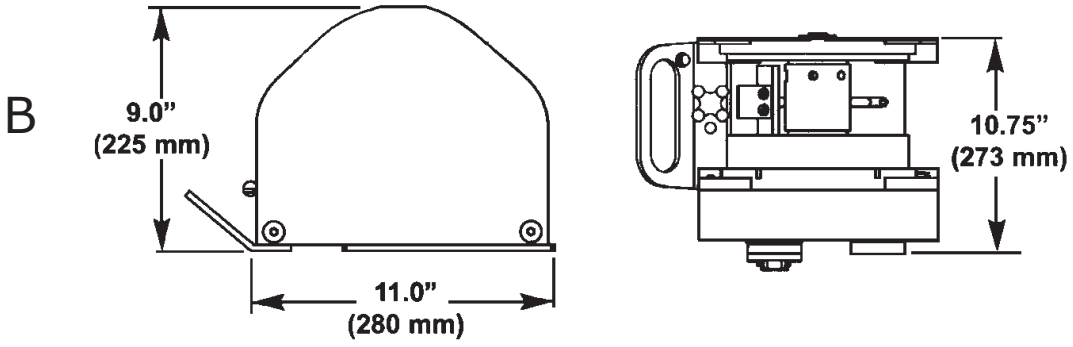
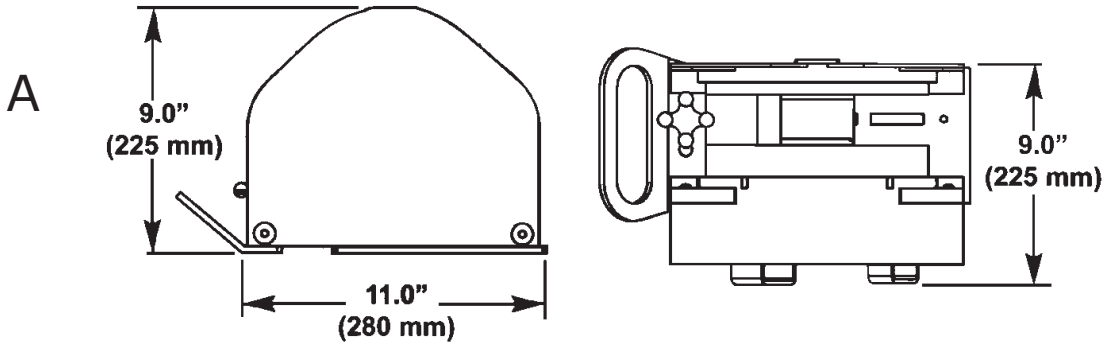


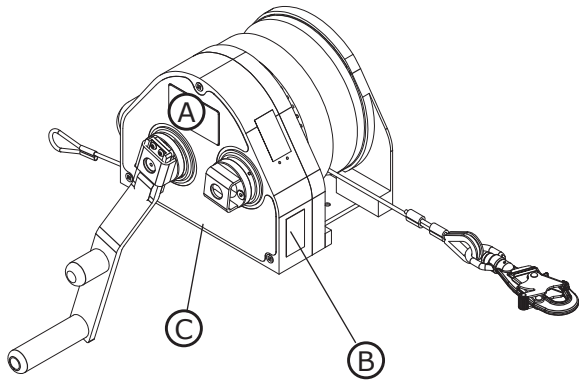
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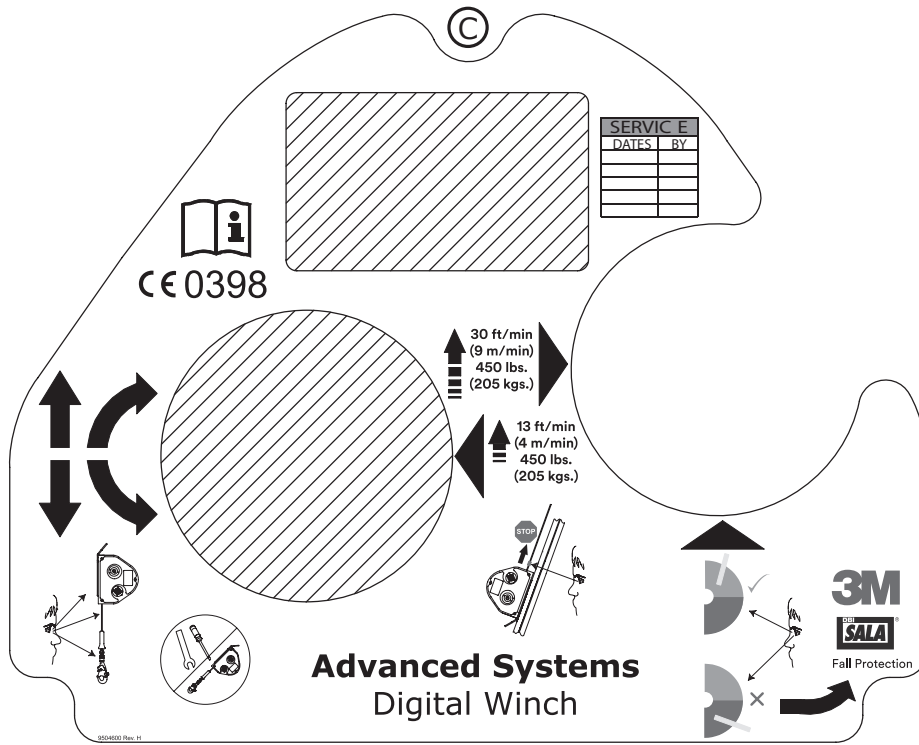



9504547 Rev. J

Fall Protection

SERIAL NO.: XXXXXX 3M.com/FallProtection
 Numéro de série: XXXXXX Red Wing, MN 55066, USA

MFRD(Y/M): Fabriqué(a/ m)	LOT NO.: Numéro de lot:	MODEL NO.: Numéro du modèle:	LENGTH (FT): Longueur(m):



(B)



Fall Protection




10,000



9504599 Rev. G

SAFETY INFORMATION

Please read, understand, and follow all safety information contained in these instructions prior to the use of this Confined Space Entry/Rescue Device. 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 Confined Space Entry/Rescue Device is intended for use as part of a complete personal fall protection or rescue system.

Use in any other application including, but not limited to, non-approved material handling applications, recreational or sports related activities, or other activities not described in the User Instructions or Installation 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 Confined Space Entry/Rescue Device is part of a personal fall protection or rescue system. It is expected that all users be fully trained in the safe installation and operation of the complete system. **Misuse of this device could result in serious injury or death.** For proper selection, operation, installation, maintenance, and service, refer to all Product Instructions and all manufacturer recommendations, see your supervisor, or contact 3M Technical Service.

- **To reduce the risks associated with working with a Confined Space Entry/Rescue Device which, if not avoided, could result in serious injury or death:**
 - Inspect the device before each use, at least annually, and after any fall event. Inspect in accordance with the User Instructions.
 - If inspection reveals an unsafe or defective condition, remove the device from service and repair or replace according to the User Instructions.
 - Any device that has been subject to fall arrest or impact force must be immediately removed from service. Refer to the User Instructions or contact 3M Fall Protection.
 - The device must only be installed in the manner detailed in the Installation Instructions or User Instructions. Installations and use outside the scope of the instruction must be approved in writing by 3M Fall Protection.
 - The substrate or structure to which the device is attached must be able to sustain the static loads specified for the device in the orientations permitted in the User Instructions or Installation Instructions.
 - Do not exceed the number of allowable users.
 - Never work below a suspended load or worker.
 - Use caution when installing, using, and moving the device as moving parts may create potential pinch points. Refer to the User Instructions.
 - Ensure proper lockout/tagout procedures have been followed as applicable.
 - Never attach to a system until it is positioned, fully assembled, adjusted, and installed. Do not adjust the system while a user is attached.
 - Only connect fall protection subsystems to the designated anchorage connection point on the device.
 - Prior to drilling or fastening, ensure no electric lines, gas lines, or other critical embedded systems will be contacted by the drill or the device.
 - 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 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 the 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.

Prior to installation and use of this equipment, record the product identification information from the ID label in the Inspection and Maintenance Log (Table 2) at the back of this manual.

PRODUCT DESCRIPTION:

Digital Series Winches are used for work positioning, personnel riding, material handling, climbing protection, or rescue and evacuation. These Winch models are to be used with a 3M Fall Protection tripod, davit arm, or other support structure, and may be used in situations where personnel or materials need to be raised or lowered up to 300 feet (91.4 m).

Figure 2A illustrates the components of the Advanced Digital Winch and Figure 2B illustrates the components of the Continuous Feed Winch.

A. Work Positioning: Applications include suspending a worker in a work seat or harness. A back-up personal fall arrest system (PFAS) must be attached to the suspended employee.

B. Personnel Riding: At the work level, the worker is no longer supported by the Winch. A back-up PFAS must be attached to the employee while riding the Winch.

C. Rescue and Evacuation: Used to raise or lower an endangered or injured worker or rescue personnel. Applications include permit and non-permit confined space entry work. In rescue or evacuation situations, use back-up PFAS.

D. Climbing Protection: Used to protect a worker ascending or descending a fixed ladder or similar structure. The use of this Winch should be restricted to structures where other means of climbing protection such as permanently installed ladder safety systems or personal fall arrest systems are infeasible. For this application, the following conditions must be met:

- Ladder or steps are in good condition and allow for straight, continuous climb.
- The worker climbing the ladder is wearing a full body harness and the Winch line is connected to the dorsal (back) D-ring of the harness.
- The Winch operator is trained and competent in the operation of the Winch.
- No slack line is allowed to develop when the worker moves up or down the ladder.
- Energy absorbing lanyards should be connected between the harness dorsal D-ring and the winch line.

Table 1 – Specifications

Material Specifications:	
Capacity	Maximum working load for this product is one person with a combined maximum weight (including tools, clothes, and equipment) of 450 lbs (204 kg).
Housing	Cast Aluminum with powder coat paint finish
Lifeline	3/16 in. (5 mm) Stainless Steel 1/4 in. (6 mm) Stainless Steel 3/16 in. (5 mm) Galvanized Steel 1/4 in. (6 mm) Technora Rope 1/2 in. (12 mm) Kernmantle Rope
Weight Specifications:	
100 Series Advanced Digital Winch:	26.5 lbs (12 kg) plus lifeline.
200 Series Advanced Digital Winch:	27 lbs (12.2 kg) plus lifeline.
300 Series Advanced Digital Winch:	27.5 lbs (12.4 kg) plus lifeline.
Load Specifications:	
Maximum Working Load	450 lbs (204 kg)
Dimensions (See Figure 14)	
A: 100 Series Winch	100 feet (30 m) of lifeline.
B: 200 Series Winch	200 feet (61 m) of lifeline.
C: 300 Series Winch	300 feet (91 m) of lifeline.

Table 1 – Specifications

Component Specifications:	
Figure 2A Reference	Component
(A)	Winch
(B)	Primary Drive Hub. 4:1 Reduction Ratio
(C)	Secondary Drive Hub. 9:1 Reduction Ratio
(D)	Cable Retainer Spring
(E)	Carrying Handle
(F)	Manual Drive Hubs (Optional)
(G)	Power Drive Hub (Optional)
(H)	Power Drive Clutch (Optional)
(I)	Removable Crank Arm
(J)	1/2" Drive, 8ft-lbs Minimum Continuous Torque Drill
(K)	Universal Mounting Plate

Continuous Feed Winch:	
Figure 2B Reference	Component
(A)	Crank Handle
(B)	Top Pulley
(C)	Spacer
(D)	Upper Roller

1 Capacity: 310 lbs (141 kg) is the capacity range required by ANSI. This product has been tested to a 420 lbs (191 kg) Maximum Capacity per OSHA.

2 Qualified Person: An individual with a recognized degree or professional certificate, and extensive experience in Fall Protection. This individual must be capable of design, analysis, evaluation, and specification in Fall Protection.

1.0 PRODUCT APPLICATION

- 1.1 PURPOSE:** Confined Space Systems are designed to provide anchorage connection points for Fall Arrest¹ or Fall Restraint² systems: Restraint, Work Positioning, Personnel Riding, Rescue, etc.

Fall Protection Only: This Confined Space System is for connection of Fall Protection Equipment. Do not connect Lifting Equipment to this Confined Space System.

- 1.2 STANDARDS:** Your Confined Space System conforms to the national or regional standard(s) 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.
- 1.3 SUPERVISION:** Installation of this equipment must be supervised by a Qualified Person³. Use of this equipment must be supervised by a Competent Person⁴.
- 1.4 TRAINING:** This equipment must be installed and used by persons trained in its correct application. This manual is to be used as part of an employee training program as required by ANSI. 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 subsystem(s), the employer must have a rescue plan and the means at hand to implement and communicate that plan to users, authorized persons⁵, and rescuers⁶. A trained, on-site rescue team is recommended. Team members should be provided with the equipment and techniques to perform a successful rescue. Training should be provided on a periodic basis to ensure rescuer proficiency.
- 1.6 INSPECTION FREQUENCY:** The Confined Space System shall be inspected by the user before each use and, additionally, by a competent person other than the user at intervals of no longer than one year.⁷ Inspection procedures are described in the "Inspection and Maintenance Log". Results of each Competent Person inspection should be recorded on copies of the "Inspection and Maintenance Log".
- 1.7 AFTER A FALL:** If the Confined Space System is subjected to the forces of arresting a fall, it must be removed from service immediately and destroyed.

2.0 SYSTEM REQUIREMENTS

- 2.1 ANCHORAGE:** Anchorage requirements vary with the fall protection application. Structure on which the Confined Space System is placed or mounted must meet the Anchorage specifications defined in Table 1.
- 2.2 PERSONAL FALL ARREST SYSTEM:** Figure 1 illustrates the application of this Confined Space System. Personal Fall Arrest Systems (PFAS) used with the system must meet applicable Fall Protection standards, codes, and requirements. The PFAS must incorporate a Full Body Harness, have a Maximum Permissible Free Fall of 6 ft (1.8 m), and limit Average Arresting Force to the following values:

PFAS with Shock Absorbing Lanyard	900 lb (4 kN)
PFAS with Self Retracting Device	900 lb (4 kN)

- 2.3 FALL PATH AND SRD LOCKING SPEED:** A clear path is required to assure positive locking of an SRD. 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.
- 2.4 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: 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 Personal Fall Arrest System.
- 2.5 FALL CLEARANCE:** Figure 3 illustrates the components of a Fall Arrest. There must be sufficient Fall Clearance (FC) to arrest a fall before the user strikes the ground or other obstruction. Clearance is affected by a number of factors including: (A) Anchorage Location, (B) Lanyard Length, (C) Lanyard Deceleration Distance or SRD Maximum Arrest Distance, (D) Harness Stretch and D-Ring/Connector Length and Settling (typically a Safety Factor of 1 m). Refer to the instructions included with your Fall Arrest subsystem for specifics regarding Fall Clearance calculation.
- 2.6 SWING FALLS:** Swing Falls occur when the anchorage point is not directly above the point where a fall occurs (see Figure 4). The force of striking an object in a swing fall may cause serious injury or death. Minimize swing falls by working as directly below the anchorage point as possible. Do not permit a swing fall if injury could occur. Swing falls will significantly increase the clearance required when a Self-Retracting Device or other variable length connecting subsystem is used.

1 Fall Arrest System: A collection of Fall Protection Equipment configured to arrest a free fall.

2 Fall Restraint System: A collection of Fall Protection Equipment configured to prevent the person's center of gravity from reaching a fall hazard.

3 Qualified Person: An individual with a recognized degree or professional certificate, and extensive experience in Fall Protection. This individual must be capable of design, analysis, evaluation, and specification in Fall Protection.

4 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.

5 Authorized Person: For purposes of the Z359 standards, a person assigned by the employer to perform duties at a location where the person will be exposed to a fall hazard.

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

7 Inspection Frequency: Extreme working conditions (harsh environments, prolonged use, etc.) may require increasing the frequency of competent person inspections.

2.7 COMPONENT COMPATIBILITY: 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 effect the safety and reliability of the complete system.

2.8 CONNECTOR COMPATIBILITY: 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. 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). See Figure 3.

Self-locking snap hooks and carabiners are required by ANSI Z359 and OSHA.

2.9 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 complies is equipped with a 3,600 lb (16 kN) gate. Check the marking on your snap hook to verify that it is appropriate for your application.
- C. In a false engagement, where features that protrude from the snap hook or carabiner catch on the anchor, and without visual confirmation seems to be fully engaged to the anchor point.
- 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.

3.0 INSTALLATION

3.1 PLANNING: Plan your fall protection system prior to installation of the Digital Winch. Account for all factors that may affect your safety before, during and after a fall. Consider all requirements, limitations and specifications defined in Section 2 and Table 1.

3.2 INSTALLING WINCH TO DAVIT ARM OR TRIPOD:

WINCH INSTALLATION: See Figure 8.

Step 1: Install the Winch onto the support structure by inserting the slotted end of the quick Mount Bracket onto the Fixed Pin (A) on the Mounting Bracket.

Step 2: Pivot the Winch upwards to align the holes in the Mounting Brackets.

Step 3: Insert the Locking Detent Pin (B) through the holes securing the Winch to the support structure.

LOAD REQUIREMENTS: Figure 7 illustrates the Winch mounted to the support structure and the load requirements. The mounting bracket must support the loads specified. Reference A represents the Right Hand Retrieve (cable feeds off bottom) with a 625 ft-lbs moment load and 2,500 lbs in direction of pull. Reference B represents Left Hand Retrieve (cable feeds off top), with a 1,900 ft-lbs moment load and 2,500 lbs in direction of pull. Reference C represents use of a Directional Sheave. Wire rope directional sheaves must have a minimum tread diameter of 2.5 inches.

3.3 OPERATION OF WINCH:

A. CONNECTING THE WINCH LINE TO A LOAD: See Figure 9. A: Winch Line, B: Y-Type Lanyard, C: Secondary Lifeline, D: Shoulder D-ring, E: Back D-ring, F: Tie-off Adapter, G: Material Load. For applications that do not require a secondary PFAS, the winch line should be connected to the worker's harness back D-ring. For applications requiring a secondary PFAS, the winch line should be connected to a Y-type lanyard and this lanyard should be attached to the worker's harness shoulder D-rings. The secondary lifeline should be connected to the worker's harness back D-ring. For material handling applications, connect the winch line to the load using a tie-off adapter or other anchoring device.

B. OPERATING THE DIGITAL WINCH: Attach the Winch to the support structure as described in section 3.4. Install the Winch Crank Handle into the 9:1 or 4:1 drive hub and push firmly inward until the spring loaded tab on the handle snaps in place (the grip on the handle should face outward).

To remove the Crank Handle from the hub, push down on the spring loaded tab and pull the handle out of the hub.

Feed the line off the Winch Drum by rotating the Crank Handle in the lowering direction (counterclockwise). Apply about 10 lbs. (4.5 kg) of tension to the line while feeding it off the drum. Route the line over the support structure pulley system. Refer to the support structure user instructions for cable routing.

TO RAISE A LOAD: Rotate the Winch Crank Handle in the raise direction (clockwise). To hold or momentarily suspend the load, stop cranking. The automatic brake will hold the load if handle is released. Do not exceed the rated capacity of 450 lbs (204 kg).

TO LOWER A LOAD: Rotate the Winch Crank Handle in the lower direction (counterclockwise). When lowering line without a load, maintain about 10 lbs. (4.5 kg) of tension on the line to aid payout and prevent cable entanglement.

C. IMPACT INDICATOR: See Figure 10. A: Normal Snap Hook, B: Impacted Snap Hook, C: Red band indicating impact load. The Digital Winch is supplied with a connecting swiveling hook that incorporates an impact indicator. This indicator functions if the Winch is severely impact loaded or if the lifting capacity is exceeded by a preset amount. A hook that has been subjected to an impact load will display a red band in the swivel area. See section 5.0 for inspection of impact indicator.

D. WINCH REMOVAL: Disconnect the lifeline from the worker's harness or from the material load. Maintain at least a 10 lb. (4.5 kg) load on the lifeline winding the lifeline onto the drum. Retract the lifeline through the support structure. Continue to wind the lifeline onto the drum until the copper ferrules and thimble contact the drum. Disconnect the Winch from the support structure.

3.4 LOAD ATTACHMENT: Pull on the Snap Hook while cranking the handle counterclockwise to extend lifeline until there is sufficient line to comfortably attach to the worker or load. Perform the attachment away from the entrance so there is no danger that the worker or load will fall. Use two hands when attaching the lifeline; one hand maintaining tension on the lifeline, the other to depress the lock and open the gate on the snap hook. Insert the hook into the harness D-ring. Release the gate and ensure the snap hook is securely locked onto the D-ring.

3.5 SYSTEM INTEGRITY: Verify the integrity of the attachment and support system as follows:

A. Crank the Winch Handle in the raise direction until the line is snug. The worker should slowly transfer their weight to the harness and lifeline until they are able to lift both feet off the ground.

B. Make sure the Winch holds the worker in a stationary position. Also adjust the fit of the harness at this time so that it does not pinch, chafe, or bind.

Do not use Winch for lifting or lowering of more than one person. The maximum lifting capacity is 450 lb (2.0 Kn).

3.6 LOWERING A WORKER: The attendant should turn the Winch Handle counterclockwise to pay out the lifeline. The attendant should keep a gloved hand on the lifeline as it extends to keep a slight tension on the lifeline.

If the line becomes tight or slack during use, communicate with the suspended worker to determine whether there is a problem. Correct any problems before proceeding.

If the cranking tension eases during lowering, the person or material being lowered has reached a work level or obstruction. Do not continue cranking without communicating with the person or checking the material being lowered. Always keep the cable tension firm. Slack cable could cause a free fall.

While a worker is suspended, maintain the lifeline angle at a maximum of 5 degrees from vertical. Letter A indicates where the anchor is located and letter B indicates where the lifeline is located. The worker can be seriously injured in a swing fall at more than 5 degrees. If the worker is not suspended and there is no chance of a fall, the attendant may pay out sufficient line [2 ft. max.(.6 m)] so the worker can work comfortably. The attendant should hold the line so there is always a slight tension. Maintain constant communication between the worker and the attendant.

The last 10 ft (3 m) of the lifeline has a red marker and should not be unwound from the drum. This length provides the required wrap on the drum to properly anchor the lifeline and ensures that the lifeline wrap direction is correct. Stop extending the lifeline when you see the red marker. The lifeline must wind onto the drum by turning the crank handle in the "raise" (counterclockwise) direction only. Check periodically to see that the lifeline is winding evenly on the drum. Use gloves when handling the lifeline.

3.7 RETRIEVING A WORKER: Communicate with the worker when preparing to retrieve them and maintain communication throughout the procedure. Place the crank handle in the 4:1 or 9:1 drive hub as appropriate to keep the turning force in a comfortable range. Retract the lifeline and retrieve the worker. Maintain an even retrieval rate. If the Winch Handle turning load suddenly increases, stop and investigate. Determine the cause and correct the problem before continuing. Upon retrieval, support the load or worker and disconnect the lifeline.

3.8 INERTIAL BRAKE: The Digital Winch is designed with a constantly engaged brake that will hold a suspended load whenever the crank handle is released. The brake is composed of three independent pawls. All three pawls would have to become inoperable for the primary brake to fail. The Winch has a secondary inertia brake in case the primary brake should fail. If the primary brake failed, the Winch would free-wheel until the inertia brake engaged and stopped the cable. No more than 3 ft. (1 m) of cable deploys before the inertia brake engages.

3.9 LEFT HAND RETRIEVE: The Digital Winch can be adjusted to work as a left hand retrieve. To make this adjustment, remove the cable retention spring and attach it to the hole on the other end of the mounting plate using the same hardware. Remove the carrying handle by removing the two screws attaching it to the Winch and replace it on the other end of the Winch. Use a removable thread lock such as Loctite 242 to secure all fasteners. The Winch will now mount on mounting brackets with the handle on the left side of the Winch.

The cable will feed off the top of the drum in this configuration, changing the moment load requirements in Figure 7.

3.10 ROPE INSTALLATION: The Continuous Feed Winch can accommodate 1/2" (12 mm) diameter Kernmantle rope of varied lengths. Installation procedures will vary based on whether the rope is terminated with a Snap Hook on one end.

After feeding the rope into the Continuous Feed Winch, it may be necessary to apply tension to the free end of the rope while raising a load to fully seat the rope in the Drum.

Always ensure there is enough length in the rope to safely operate the Winch without running out of rope length.

WITHOUT SNAP HOOK: Rope without Snap Hook can be fed into the Winch from either end depending on the amount of rope used:

INSTALLING FROM THE BEGINNING OF THE ROPE: See Figure 12.

Step 1: Secure the Continuous Feed Winch to proper anchorage (tripod leg, davit arm, etc.).

Step 2: Insert the beginning of the rope under the Spacer (12.1A) and between the Drum and Upper Roller (12.1B).

Step 3: Gently guide the rope in the Winch while turning the Crank Handle counter-clockwise. As the rope passes through the Winch (Figure 12.2), ensure the rope exits the Winch over the Spacer (12.2A) and under the large Top Pulley (12.2B). Guiding the rope in front of the Top Pulley may be necessary.

Step 4: Continue cranking the handle and route the rope end over the davit system pulley or cable guide.

INSTALLING FROM THE END OF THE ROPE: See Figure 13.

Step 1: Secure the Continuous Feed Winch to proper anchorage (tripod leg, davit arm, etc.).

Step 2: Insert the end of the rope above the Spacer (13.1A) and between the Drum and large Top Pulley (13.1B).

Step 3: Gently guide the rope in the Winch while turning the Crank Handle clockwise. As the rope passes through the Winch (Figure 13.2), ensure the end of the rope exits the Winch under the Spacer (13.2A) and on top of the Upper Roller (13.2B). Guiding the rope in front of the Spacer (13.1A) may be necessary.

Step 4: Continue cranking the Crank Handle until the rope drapes over the Upper Roller and hangs down from the Winch.

3.12 INSTALLING ROPE WITH A SNAP HOOK: When installing rope terminated with a Snap Hook on one end, the rope should be correctly route over any anchorage structure (e.g., pulley, roller) and the un-terminated end fed through the Continuous Feed Winch in the same manner as for "Installing from the End of the Rope".

3.13 ROPE TERMINATION: The free end of the rope must be secured or have a knot tied in it to ensure the free end of the rope does not pass through the Winch during operation.

4.0 USE

4.1 BEFORE EACH USE: Verify that your work area and Personal Fall Arrest System (PFAS) meet all criteria defined in Section 2 and a formal Rescue Plan is in place. Inspect the Digital Winches per the 'User' inspection points defined on the "Inspection and Maintenance Log" (Table 2). If inspection reveals an unsafe or defective condition, do not use the system. Remove the system from service and destroy, or contact 3M regarding replacement or repair.

5.0 INSPECTION

5.1 INSPECTION FREQUENCY: The Digital Winch must be inspected at the intervals defined in Section 1. Inspection procedures are described in the "Inspection and Maintenance Log" (Table 2). Inspect all other components of the Fall Protection System per the frequencies and procedures defined in the manufacturer's instructions.

Every 10,000 cycles or 5 years: It is recommended that the Winch be serviced by a factory authorized service center or the manufacturer. Extreme working conditions may require increasing the frequency of inspections. Servicing should include but not limited to an intensive inspection and cleaning of all internal and external components. Failure to provide proper service may shorten product life and could endanger performance.

5.2 DEFECTS: If inspection reveals an unsafe or defective condition, remove the Winch from service immediately and contact 3M regarding replacement or repair. Do not attempt to repair the Fall Arrest System.

Authorized Repairs Only: Only 3M or parties authorized in writing may make repairs to this equipment.

5.3 PRODUCT LIFE: The functional life of the Fall Arrest System is determined by work conditions and maintenance. As long as the product passes inspection criteria, it may remain in service.

6.0 MAINTENANCE, SERVICING, STORAGE

6.1 CLEANING: Periodically clean the Digital Winch's metal components with a soft brush, warm water, and a mild soap solution. Ensure parts are thoroughly rinsed with clean water.

6.2 SERVICE: Only 3M or parties authorized in writing by 3M may make repairs to this equipment. If the Digital Winch has been subject to fall force or inspection reveals an unsafe or defective conditions, remove the system from service and contact 3M regarding replacement or repair.

6.3 STORAGE AND TRANSPORT: When not in use, store and transport the Winch and associated fall protection equipment 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

Figure 17 illustrates labels on the Digital Winch. Labels must be replaced if they are not fully legible. Information provided on each label is as follows:


(A)	 Read all instructions. 1) Year and Month Manufactured 2) Lot Number 3) Model Number 4) Length
(B)	10,000 Cycles
(C)	Digital Winch Instruction Label

Table 2 – Inspection and Maintenance Log

Inspection Date:		Inspected By:		
Components:	Inspection: (See Section 1 for <i>Inspection Frequency</i>)	User	Competent Person¹	
Digital Winch (Figure 2)	Inspect all screws, bolts and nuts. Ensure they are securely attached and tight. Check to see if any bolts, nuts or other parts are missing, or have been substituted or altered in any way. Inspect covers and housings. Ensure they are free of cracks, dents, corrosion, or other damage.	<input type="checkbox"/>	<input type="checkbox"/>	
Labels (Figure 15)	Verify that all labels are securely attached and are legible (see 'Labels')	<input type="checkbox"/>	<input type="checkbox"/>	
PFAS and Other Equipment	Additional Personal Fall Arrest System (PFAS) equipment (harness, SRL, etc) that are used with the Flexiguard Anchorage System should be installed and inspected per the manufacturer's instructions.	<input type="checkbox"/>	<input type="checkbox"/>	
Crank Handle Screws	Removable Crank Arm must lock positively into each of the drive hubs and be free of cracks, bends, or other damage. Check that each handle on the crank arm is tight. Use Loctite262 or equivalent thread lock on the anchor screws if required to keep them tight. Do not use unless the crank arm is fully functional.	<input type="checkbox"/>	<input type="checkbox"/>	
Connecting Hook	Connecting hook must not be damaged, broken, distorted, or have any sharp edges, burrs, cracks, worn parts, or corrosion. Ensure the connecting hook works properly. Hook gate must move freely and lock upon closing. Hook must swivel freely.	<input type="checkbox"/>	<input type="checkbox"/>	
Break Wear Indication (Figure 11A)	Inspect the Break Wear Indicator located in the center of the 4:1 Drive Hub. If the indicator is in the red section, remove the Winch from service and return to 3M or an authorized repair center service.	<input type="checkbox"/>	<input type="checkbox"/>	
Digital Counter (Figure 11B)	If the digital counter exceeds 10,000 cycles from the last factory service recorded in the inspection log, return the winch to 3M or an authorized repair center for service.	<input type="checkbox"/>	<input type="checkbox"/>	
Wire Rope Flaws	Inspect entire length of wire rope assembly starting at the hook. Always wear protective gloves when inspecting wire rope. Inspect for broken wires by passing the wire rope through gloved hands, flexing it every few inches to expose breaks. Inspect for kinks, cuts, crushed burned areas, corrosion, or other damage. Wire rope with serious damage must be removed from service.	<input type="checkbox"/>	<input type="checkbox"/>	
Synthetic Rope	Inspect for concentrated wear, frayed strands, broken yarns, cuts, and abrasions. The line must be free of knots, excessive soiling, heavy paint buildup, and rust staining throughout its length. The line must be free of ultraviolet damage, indicated by discoloration and the presence of splinters and slivers on the rope surface. All of the above factors are known to reduce rope strength. Damaged or questionable rope must be replaced by an authorized service center.	<input type="checkbox"/>	<input type="checkbox"/>	
Rope	Verify the rope is fully seated in the Drum by raising and lowering a load of at least 100 lbs (35 kg). If the rope slips during this operation, apply tension to the free end of the rope while raising the load until slippage is eliminated	<input type="checkbox"/>	<input type="checkbox"/>	

Serial Number(s):	Date Purchased:
Model Number:	Date of First Use:
Corrective Action/Maintenance:	Approved By:
	Date:
Corrective Action/Maintenance:	Approved By:
	Date:
Corrective Action/Maintenance:	Approved By:
	Date:
Corrective Action/Maintenance:	Approved By:
	Date:
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	Date:
Corrective Action/Maintenance:	Approved By:
	Date:
Corrective Action/Maintenance:	Approved By:
	Date:
Corrective Action/Maintenance:	Approved By:
	Date:
Corrective Action/Maintenance:	Approved By:
	Date:

1 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.

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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EU DECLARATION OF CONFORMITY:
3M.com/FallProtection/DOC