User Instructions for the 3MTM SafeReach 2-Man Cable Horizontal Lifeline System.

Important: Keep these User Instructions for reference.
Compliant fall protection and emergency rescue systems help prevent serious injury during fall arrest. Users must read and understand the User Instructions provided with the product and be properly trained by their employer prior to use per OSHA 29 CFR 1910.66 and 1926.503 or applicable local standards. Misuse or failure to follow warnings and instructions may result in serious personal injury or death. For proper use, see supervisor, User Instructions, or call Technical Service at 800-560-1094.

FALL PROTECTION SYSTEM COMPONENTS

System Components
A complete fall protection system consists of the following components: Anchorage, Body Support, and Connecting Devices. Note: For continuous protection, more than one system may be needed.

Anchorage
An anchorage, as defined by OSHA 29 CFR 1926.502(d)(15) “shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds (22.2 kN) per employee attached, or shall be designed, installed, and used as follows: as part of a complete personal fall arrest system which maintains a safety factor of at least two; and under the supervision of a “qualified person.”

Body Support
Body support is the component of a personal fall protection system that is worn on or around the body. Per OSHA 29 CFR 1926.502(d) effective January 1, 1998, body belts are not acceptable as part of a personal fall arrest system. Note: The use of a body belt in a positioning device system is acceptable. Full body harnesses must be used for all fall arrest systems.

Connecting Devices
A connecting device is the link between the body support and anchorage. Connecting devices will vary depending on the application.
USE INSTRUCTIONS AND LIMITATIONS

Important
Before use, the user must read and understand these User Instructions. Keep these User Instructions for reference.

Purpose
The 3M SafeReach Horizontal Lifeline is a pre-engineered flexible horizontal lifeline system, designed as part of a complete personal fall arrest system, to help limit the fall arrest forces in the event of a fall.

Use Instructions
1. Failure to follow all instructions and limitations on the use of the SafeReach Horizontal Lifeline may result in serious personal injury or death.
2. Before using a personal fall arrest system, employees shall be trained in accordance with the requirements of OSHA 29 CFR 1910.66 in the safe use of the system and its components.
3. Personal fall arrest systems, including the SafeReach Horizontal Lifeline, shall be inspected prior to each use for wear, damage, and other deterioration and defective components must be immediately removed from service, in accordance with the requirements of OSHA 29 CFR 1910.66 and 1926.502.
4. The complete fall protection system must be planned (including all components, calculating fall clearance, and swing fall) before using.
5. Users must have a rescue plan, and the means at hand to implement it, that provides for the prompt rescue of employees in the event of a fall, or assures that employees are able to rescue themselves.
6. Store the SafeReach Horizontal Lifeline in a cool, dry, clean environment, out of direct sunlight, when not in use.
7. After a fall occurs on the system, remove from service for authorized repairs or disposal.

Use Limitations
1. The SafeReach Horizontal Lifeline is designed for up to two users at one time, per system, with a capacity up to 310 lb (141 kg) including clothing, tools, etc.
2. Only approved 3M components may be used with the SafeReach Horizontal Lifeline.
3. Do not induce free falls greater than 4’ with the SafeReach Horizontal Lifeline.
4. The SafeReach Horizontal Lifeline is designed to be used in temperatures ranging from -40°F to +130°F (-40°C to +54°C).
5. 3M Full Body Harnesses are recommended for use with the SafeReach Horizontal Lifeline.
   If a product other than a 3M Full Body Harness is used, and the harness stretch information is unavailable per ANSI Z359.6-2009, an additional 1.5 ft (0.76 m) must to be added to the clearance chart on page 11.
6. Only 3M Self Retracting Lanyards may be used with the SafeReach Horizontal Lifeline.
7. Only energy absorbing lanyards that limit the fall arrest forces to less than 900 lbf may be used with the SafeReach Horizontal Lifeline.
8. Do not expose the SafeReach Horizontal Lifeline to chemicals or harsh solutions which may have a harmful effect. Contact 3M Technical Service with any questions.
9. In accordance with the requirements of OSHA 29 CFR 1910.66 and 1926.502, the SafeReach
Horizontal Lifeline must be installed and used under the supervision of a “qualified person.”

10. Caution must be taken when using the SafeReach Horizontal Lifeline near moving machinery, electrical hazards, sharp edges, or abrasive surfaces. Contact with these elements may cause equipment failure, personal injury, or death.

11. Minors, pregnant women and anyone with a history of either back or neck problems should not use this equipment.

12. Do not use or install the SafeReach Horizontal Lifeline without proper training from a “competent person” as defined by OSHA 29 CFR 1926.32(f).

13. Only 3M, or persons or entities authorized in writing by 3M, shall make repairs or alterations to the equipment.

14. For custom applications of the SafeReach Horizontal Lifeline not addressed in these User Instructions please contact 3M Technical Service.

ANCHORAGE REQUIREMENTS

Anchorages
All anchorages in which the SafeReach Horizontal Lifeline attaches must meet the requirements of OSHA 29 CFR 1910.66 and ANSI Z359.1-2007. OSHA states:

*Anchorages to which personal fall arrest equipment is attached shall be capable of supporting at least 5,000 pounds (22.2 kN) per employee attached, or shall be designed, installed, and used as part of a complete personal fall arrest system which maintains a safety factor of at least two, under the supervision of a qualified person.*

ANSI Z359.1-2007 states that anchorages in a personal fall arrest system must have a strength capable of sustaining static loads, applied in all permitted directions by the system, of at least:

(a) two times the maximum arrest force permitted on the system when certification exists, or
(b) 5,000 pounds (22.2kN) in the absence of certification.

The strength in (a) and (b) must be multiplied by the number of personal fall arrest systems attached to the anchorage, when more than one personal fall arrest system is attached to the anchorage.

The SafeReach Horizontal Lifeline is designed to limit the maximum arrest load to less than 2,500 lbf on the end anchorages for two users. Therefore, the end anchorage must be rated at a minimum strength of 5,000 lbf, twice the maximum arrest load.

ANCHORAGE REQUIREMENTS

Anchorage Connectors
Anchorage connectors are components that couple the personal fall arrest system to the anchorage. The end anchorage connectors are designed to resist and transfer to the end anchorage at least two times the maximum arrest load.

CONNECTION REQUIREMENTS

Compatibility Limitations
All connecting subsystems must only be coupled to compatible connectors. OSHA 29 CFR 1926.502 prohibits snaphooks from being engaged to certain objects unless two requirements
are met: it must be a locking type snap hook, and it must be “designed for” making such a
connection. “Designed for” means that the manufacturer of the snap hook specifically designed
the snap hook to be used to connect to the equipment in question. The following connections must
be avoided, because they can result in rollout* when a nonlocking snap hook is used:

- Direct connection of a snap hook to horizontal lifeline.
- Two (or more) snap hooks connected to one D-ring.
- Two snap hooks connected to each other.
- A snap hook connected back on its integral lanyard.
- A snap hook connected to a webbing loop or webbing lanyard.
- Improper dimensions of the D-ring, rebar, or other connection point in relation to
  the snap hook dimensions that would allow the snap hook keeper to be depressed
  by a turning motion of the snap hook.

*Rollout: A process by which a snap hook or carabiner unintentionally disengages from another
connector or object to which it is coupled. (ANSI Z359.1-2007)

Snaphooks and Carabiners
Snap hooks and carabiners used in the SafeReach Horizontal Lifeline, marked with the ANSI
Z359.1-07 or ANSI Z359.12-09 standard, are self-locking with a minimal tensile break strength
of 5,000 lbs, and a 3,600 lbs gate rating.

Snap hooks and carabiners marked with the ANSI Z359.1-1999 and/or CSA Z259.12-01
standards, incorporate self-locking snap hooks and carabiners with minimal tensile break strength
of 5,000 lbs, a minimum gate rating of 220 lbs, and a minimum side load gate rating of 350 lbs.

SYSTEM COMPONENTS

Compatibility Limitations
All components and subsystems used with the SafeReach Horizontal Lifeline have been tested as
part of a pre-engineered flexible horizontal lifeline system. Only 3M approved components and
subsystems are to be used with the SafeReach Horizontal Lifeline.

Energy Absorber (SW-247)
The in-line Energy Absorber is 36” in length with 1⅛” polyester web and a ⅜” vinyl coated
steel cable as a safety strap. The web and cable are connected with a large and a small carabiner.
It is designed to limit the maximum arrest load to less than 2,500 lbf on the end anchorages.

Turnbuckle (SWSW-04)
The Jaw and Jaw ½” Turnbuckle is constructed of forged galvanized steel and adjusts from 18” to
28”.

Cable (SWSW 00)
The Cable in the SafeReach Horizontal Lifeline is 7x19 ⅝” galvanized steel Aircraft cable. The
Cable comes with one end finished (thimble and two swages), and the other end unfinished for
adjustment in length utilizing two fist grips (SWSW-11) and a thimble (SWHC-12).
Hardware
Carabiners used with the SafeReach Horizontal Lifeline are marked with the ANSI Z359.1-07 and/or ANSI Z359.12-09 standard, and are self-locking with a minimal tensile break strength of 5,000 lbf and a 3,600 lbf gate rating.

O-rings used with the SafeReach Horizontal Lifeline are marked to the ANSI Z359.1-07 and/or ANSI Z359.12-09 standard and have a minimum tensile break strength of 5,000 lbf.

INSTALLATION

Before Each Use
Users of personal fall arrest systems must have a rescue plan in place, if the user cannot rescue themselves, as well as the means to carry out the rescue.

The user must read and understand these User Instructions, as well as the User Instructions for every component/subsystem of the personal fall arrest system.

The entire SafeReach Horizontal Lifeline system, and its subsystems, must be inspected prior to each use for wear, damage, and other deterioration. All snaphooks and carabiners must be able to self-close and lock. Check the operation of self retracting lanyards by pulling smoothly on the lanyard, then pull sharply on the lanyard to engage the locking mechanism. All webbing must be inspected for tears, cuts, fraying, abrasion, discoloration, or other signs of wear and damage. Sewn terminations should be secure, complete, and not visibly damaged. Cable must be inspected for kinks, broken strands, corrosion, abrasion, or other signs of wear and damage. Swaged terminations should be secure with the thimble tight and not visibly damaged. System must be properly tensioned. No load indicators shall be deployed. Damaged and other deteriorated and defective components must be immediately removed from service, in accordance with the requirements of OSHA 29 CFR 1910.66 and 1926.502.

WARNING

Swing Falls
To minimize the possibility of a swing fall, work as directly under the lifeline as possible. Striking objects horizontally, due to the pendulum effect, may cause serious injury. Swing falls also increase the vertical fall distance of a worker, compared to a fall directly below the anchorage connector. Swing falls may be controlled by using anchorage connectors that move with a worker to a point overhead.
Multiple Span Systems
A Multiple Span System is a SafeReach Horizontal Lifeline that includes the use of an intermediate anchorage connector. Intermediate anchorage connectors may be added to help reduce the required clearance by decreasing the length of the span.

Step 1. Install Anchorage Connectors
Install approved anchorage connector to the anchorage at a recommended height of 7’ above the working surface. For applications below 7’, anchorages must be installed in such a way that the SafeReach Horizontal Lifeline cable does not pass over the leading edge during a fall arrest. See anchorage connector user instructions for proper installation.

Step 2. Connect Energy Absorber (SW-247)
Attach the large carabiner of the SW-247 Energy Absorber to the anchorage connector.

Step 3. Install Turnbuckle (SWSW-04)
Extend the Turnbuckle until one inch of threaded rod remains visible on each end inside the turnbuckle body. Connect one end of the Turnbuckle directly to the anchorage connector.

Step 4. Attach Cable (SWSW 00)
Attach the finished end of the cable to the small carabiner of the SW-247 Energy Absorber. Pass the unfinished end of the cable lifeline through both O-rings. The unfinished end of the cable is for system length adjustment.

Pass the bolt in the unused jaw of the Turnbuckle through the SWHC-12 thimble. Turn back cable over the thimble until the desired length is reached and apply first SWSW-11 Fist Grip 5” from the thimble. Use torque wrench to tighten fist grip evenly, alternating from one nut to the other until reaching 30 ft-lb of torque. Apply the second fist grip as near the thimble as possible.

Step 5. Tension the System
Tension the system by adjusting the length of the Turnbuckle. Use the chart on page 11 to determine the initial sag needed for the length of the lifeline. Do not over tension the system.
**CONNECTION**

**Number of Users**
The SafeReach Horizontal Lifeline is designed for up to two users at one time, per system, with a capacity up to 310 lb (141 kg) including clothing, tools, etc.

**Self Retracting Lanyards (SRL’s)**
Only 3M Self Retracting Lanyards are to be used with the SafeReach Horizontal Lifeline. Attach the housing connector of the Self Retracting Lanyard to the O-ring on the cable of the SafeReach Horizontal Lifeline. The opposing end of the Self Retracting Lanyard is connected to the primary dorsal D-ring of the full body harness. Never attach an additional energy absorbing lanyard, or Self Retracting Lanyard, to lengthen the lifeline. For leading edge applications see page 11.

**Note:** Never use combinations of components or subsystems that may affect, or interfere with the safe function of each other.

**Housing of the SRL to Harness**
Lighter weight Self Retracting Lanyards may be attached by the housing connector directly to the primary dorsal D-ring of the full body harness. The opposing end is connected to the O-ring on the cable of the SafeReach Horizontal Lifeline.

**Dual Leg Retractables**
Only 3M Dual Leg Retractables are to be used with the SafeReach Horizontal Lifeline. Attach the Dual Leg Retractable directly to the dorsal D-ring of the full body harness. Attach one leg of the Dual Leg Retractable to the O-ring on the cable of the SafeReach Horizontal Lifeline, and the unused leg to an approved lanyard storage keeper on the harness.

**Note:** Never attach the unused leg of the Dual Leg Retractable back to the harness at any location other than an approved lanyard storage keeper.

When using the Dual Leg Retractable to move between spans, attach the unused leg to the next span, before disconnecting the first leg. Connection of both legs while transitioning between spans is acceptable.

**Energy Absorbing Lanyards**
Only 3M Energy Absorbing Lanyards may be used with the SafeReach Horizontal Lifeline. Energy Absorbing Lanyards must be connected with the energy absorbing end of the lanyard connected to the dorsal D-ring of the full body harness. The opposing end of the lanyard is to be connected to the O-ring on the cable of the SafeReach Horizontal Lifeline.
Connecting Y-Lanyards

Y-Lanyards are designed for single person use only, and must be connected with the energy absorbing end of the lanyard connected to the dorsal D-ring of the full body harness. **Do not connect the energy absorbing end of the lanyard to any anchorage connector.** Attach one leg of the Y-Lanyard to the O-ring on the cable of the SafeReach Horizontal Lifeline, and the unused lanyard leg to an approved lanyard storage keeper on the harness.

**Note:** Never attach the unused leg of the lanyard back to the harness at any location other than a lanyard storage keeper.

When using Y-Lanyards to move between fall protection systems, attach the unused leg of the lanyard to the new location, before disconnecting the first lanyard leg. Connection of both lanyard legs to separate anchorage connectors, while transitioning between systems, is acceptable.

**INSPECTION**

**Frequency**

All components of the SafeReach Horizontal Lifeline must be inspected prior to each use, and annually by a “competent person” (other than the user), as defined by OSHA.

**Criteria**

If inspection reveals any defect, inadequate maintenance, or unsafe condition, remove from service until a “qualified person” as defined by OSHA 1926.32(m) can determine the need for authorized repair or disposal.

All components and subsystems of the SafeReach Horizontal Lifeline must be inspected.

Any equipment that has been subjected to the forces of arresting a fall, or that has a deployed Load Indicator must be removed from service until a “qualified person” can determine the need for authorized repair or disposal.

All markings must be legible and attached to the product.

All equipment must be free of corrosion, chemical attack, alteration, excessive heating or wear.

To inspect webbing, bend a portion of the webbing 6”-8” into an upsidedown ‘U’ shape. Continue along all webbing inspecting for tears, cuts, fraying, abrasion, discoloration, burns, holes, mold, pulled or broken stitches, or other signs of wear and damage.

Sewn terminations should be secure, complete, and not visibly damaged.

All snaphooks and carabiners must be able to self-close and lock. All hardware must be free of
cracks, sharp edges, deformation, corrosion, or any evidence of defect.

All components of the Full Body Harness, Self Retracting Lanyard, and/or energy absorbing lanyard must be inspected. See user instructions supplied with the product.

CLEANING, MAINTENANCE, STORAGE

**CAUTION:** Wear proper Personal Protective Equipment when performing Inspection, Cleaning and Maintenance procedures. Safety glasses & gloves are recommended.

**Cleaning**
The SafeReach Horizontal Lifeline can wiped down with a mild detergent and clean water solution, and rinsed with a dampened clean cloth to remove detergent. The hardware can also be wiped down to remove grease, or dirt with a clean dry cloth.

**Maintenance**
Any SafeReach Horizontal Lifeline component requiring maintenance must be tagged “unusable” and removed from service.

Cleaning maintenance may be performed by the user.

**Repairs to the product may only be made by the manufacturer, or entities authorized in writing by the manufacturer.**

**Storage**
When not installed, the SafeReach Horizontal Lifeline should be stored in a cool, dry place out of direct sunlight. Do not store in areas where damage from environmental factors such as heat, light, excessive moisture, oil, chemicals and their vapors, or other degrading elements may be present. Do not store damaged equipment or equipment in need of maintenance in the same area as product approved for use. Equipment that has been stored for an extended period must be inspected as described in these *User Instructions* prior to use.

**LABELING**
The use of 3M Personal Energy Absorber 3012 is required in Leading Edge Applications. The snaphook of the 3012 Personal Energy Absorber is to be connected to the dorsal D-ring of the full body harness. The housing connector of the Self Retracting Lanyard is connected to the O-ring on the cable lifeline of the SafeReach Horizontal Lifeline, and the opposing end is connected to D-ring of the 3012 Personal Energy Absorber.

Note: Do not induce free falls greater than 4' with the SafeReach Horizontal Lifeline.

### MODELS AND PART NUMBERS

(length in feet)

SWHC-20 (20), SWHC-30 (30), SWHC-40 (40), SWHC-50 (50), SWHC-60 (60), SWHC-70 (70), SWHC-80 (80), SWHC-90 (90), SWHC-100 (100)

### CLEARANCE REQUIREMENTS

**Clearance Charts**

The clearance chart below shows the required distance needed from the walking/working surface to the ground or nearest obstruction below, with the SafeReach Horizontal Lifeline installed at the recommended height of 7'. Intermediate anchorage connectors may be added to a system to help reduce the required clearance by decreasing the length of the flexible horizontal lifeline span.

**Note:** Assistance with Free Fall calculations can be found in the Energy Absorbing Lanyards (EAL) user instructions. SRL clearance requirements are calculated with a 0 ft Free Fall. See Self Retracting Lanyards user instructions for more information.

**Leading Edge Applications**

The use of 3M Personal Energy Absorber 3012 is required in Leading Edge Applications. The snaphook of the 3012 Personal Energy Absorber is to be connected to the dorsal D-ring of the full body harness. The housing connector of the Self Retracting Lanyard is connected to the O-ring on the cable lifeline of the SafeReach Horizontal Lifeline, and the opposing end is connected to D-ring of the 3012 Personal Energy Absorber.

**Note:** The addition of a 2' (0.6 m) personal energy absorber will increase the clearance requirements by 5.5' (1.6 m). The additional distance must be taken into consideration during the clearance calculation process.

<table>
<thead>
<tr>
<th>Lifeline Span</th>
<th>One User (with SRL)</th>
<th>Two Users (with SRL)</th>
<th>One User (with 6' EAL)</th>
<th>Two Users (with 6' EAL)</th>
<th>Initial Cable Sag</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Feet</td>
<td>7'0&quot;</td>
<td>7'6&quot;</td>
<td>7'1&quot; + Free Fall</td>
<td>8'4&quot; + Free Fall</td>
<td>0.8&quot;-1.3&quot;</td>
</tr>
<tr>
<td>20 Feet</td>
<td>7'6&quot;</td>
<td>8'4&quot;</td>
<td>8'1&quot; + Free Fall</td>
<td>9'9&quot; + Free Fall</td>
<td>1.6&quot;-2.1&quot;</td>
</tr>
<tr>
<td>30 Feet</td>
<td>8'1&quot;</td>
<td>9'2&quot;</td>
<td>9'0&quot; + Free Fall</td>
<td>11'1&quot; + Free Fall</td>
<td>2.4&quot;-2.9&quot;</td>
</tr>
<tr>
<td>40 Feet</td>
<td>8'7&quot;</td>
<td>10'2&quot;</td>
<td>9'11&quot; + Free Fall</td>
<td>12'4&quot; + Free Fall</td>
<td>3.2&quot;-3.7&quot;</td>
</tr>
<tr>
<td>50 Feet</td>
<td>9'3&quot;</td>
<td>11'2&quot;</td>
<td>10'8&quot; + Free Fall</td>
<td>13'5&quot; + Free Fall</td>
<td>4.0&quot;-4.5&quot;</td>
</tr>
</tbody>
</table>
| 60 Feet       | 9'11"               | 12'3"
| 70 Feet       | 10'7"               | 13'6"
| 80 Feet       | 11'4"               | 14'9"                | 11'5" + Free Fall      | 14'5" + Free Fall | 5.6"-6.1"        |
| 90 Feet       | 12'1"               | 16'2"                | 11'7" + Free Fall      | 14'7" + Free Fall      | 6.4"-6.9"        |
| 100 Feet      | 12'10"              | 17'7"                | 11'7" + Free Fall      | 14'9" + Free Fall      | 7.2"-7.7"        |

When using a 6' EAL spans greater than 60' require an intermediate anchorage connector.
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. Equipment offered by 3M is warranted against factory defects in workmanship and materials for a period of one year from date of installation or first use by the original owner.

LIMITED REMEDY: Upon notice in writing, 3M will repair or replace all defective items at 3M’s sole discretion. 3M reserves the right to require that the defective item be returned to its plant for inspection before determining the appropriate course of action. Warranty does not cover equipment damage resulting from wear, abuse, damage in transit, failure to maintain the product or other damage beyond the control of 3M. 3M shall be the sole judge of product condition and warranty options. This warranty applies only to original purchaser and is the only warranty applicable to this product. Please contact 3M technical service department at 800-243-4630 for assistance.

LIMITATION OF LIABILITY: IN NO EVENT WILL 3M BE 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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