

A300400 4-Person Temporary Horizontal Lifeline

User Instruction Manual



This manual is intended to meet the Manufacturer's Instructions as required by the American National Standards Institute (ANSI) Z359 and should be used as part of an employee training program as required by the Occupational Safety and Health Administration (OSHA).

For the purposes of this manual, the PALMER SAFETY 4-Person Temporary Horizontal Lifeline may be referred to as the PALMER SAFETY 4-Person Temporary HLL, the Horizontal Lifeline, HLL, the system, or the lifeline.

1.0 Warnings and Important Information

WARNING

- Avoid moving machinery, thermal, electrical, and/or chemical hazards as contact may cause serious injury or death.
- Avoid swing falls.
- Follow the weight restrictions and recommendations in this manual.
- Remove from service any equipment subjected to fall arrest forces.
- Remove from service any equipment that fails inspection.
- The lifeline shall be installed higher than the shoulder to limit free fall to 6' or less*. When using SRDs the lifeline must be positioned overhead. The deceleration of the self retractable lifeline may be much longer as it declaimed when attach to a flexible anchorage attachment, please Only make sure to use a self retractable lifeline that has anti-racheting design and will still function on this temporary horizontal lifeline.
- Do not alter or intentionally misuse this equipment.
- Consult PALMER SAFETY when using this equipment in combination with components or subsystems other than those described in this manual.
- Do not connect rebar hooks, large carabiners, or large snap hooks to the FBH dorsal D-rings as this may cause a roll-out condition and/or unintentional disengagement.
- Avoid sharp and/or abrasive surfaces and edges.
- Use caution when performing arc welding. Arc flash from arc welding operations, including accidental arcs from electrical equipment, can damage equipment and are potentially fatal.
- Examine the work area. Be aware of the surroundings and workplace hazards that may impact safety, security, and the functioning of fall arrest systems and components.
- Hazards may include, but are not limited to, cable or debris tripping hazards, equipment failures, personnel mistakes, or moving equipment such as carts, barrows, fork lifts, cranes, or dollies. Do not allow materials, tools, or equipment in transit to contact any part of the fall arrest system.
- Do not work under suspended loads.
- The use of independent HLL systems for each person or shorter span lengths or intermediate anchor points is recommended to minimize the potential of the other workers falling.

IMPORTANT

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

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

A Fall Protection Plan must be on file and available for review by all workers. It is the responsibility of the worker and the purchaser of this equipment to assure that users of this equipment are properly trained in its use, maintenance, and storage. Training must be repeated at regular intervals. Training must not subject the trainee to fall hazards.

Consult a doctor if there is reason to doubt your fitness to safely absorb the shock of a fall event. Age and fitness seriously affect a worker's ability to withstand falls. Pregnant women or minors must not use this equipment.

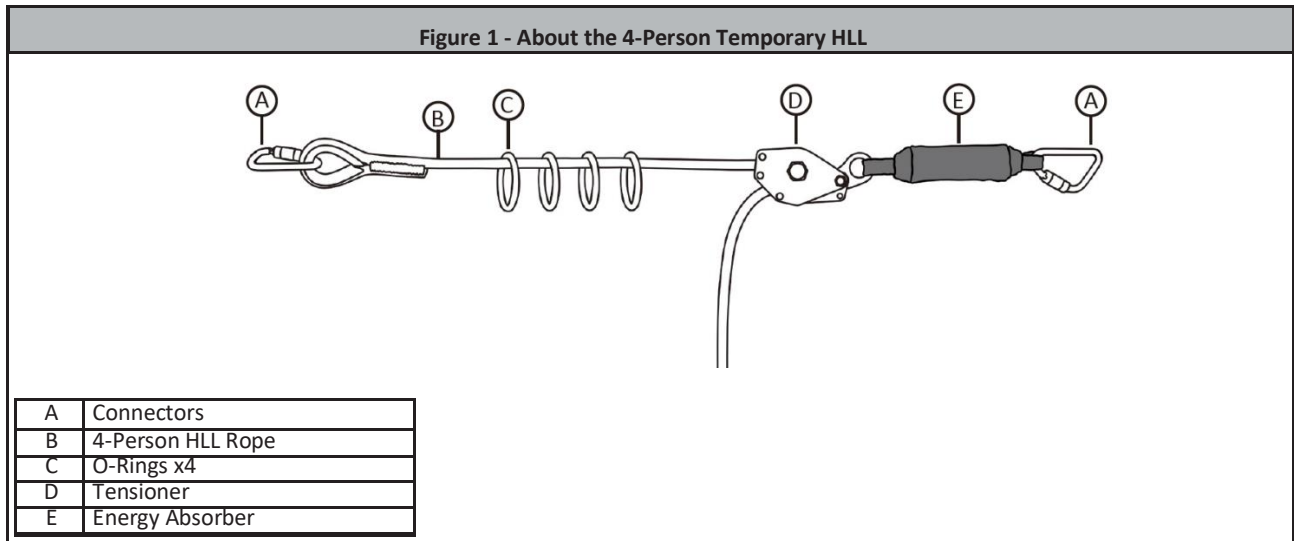
ANSI limits the weight of fall protection equipment users to a maximum of 310 lbs. Products in this manual may have a rated capacity exceeding ANSI capacity limits. Heavy users experience more risk of serious injury or death due to falls because of increased fall arrest forces placed on the user's body. In addition, the onset of suspension trauma after a fall event may be accelerated for heavy users.

The user of the equipment discussed in this manual must read and understand the entire manual before beginning work.

NOTE: For more information consult the ANSI Z359 body of standards.

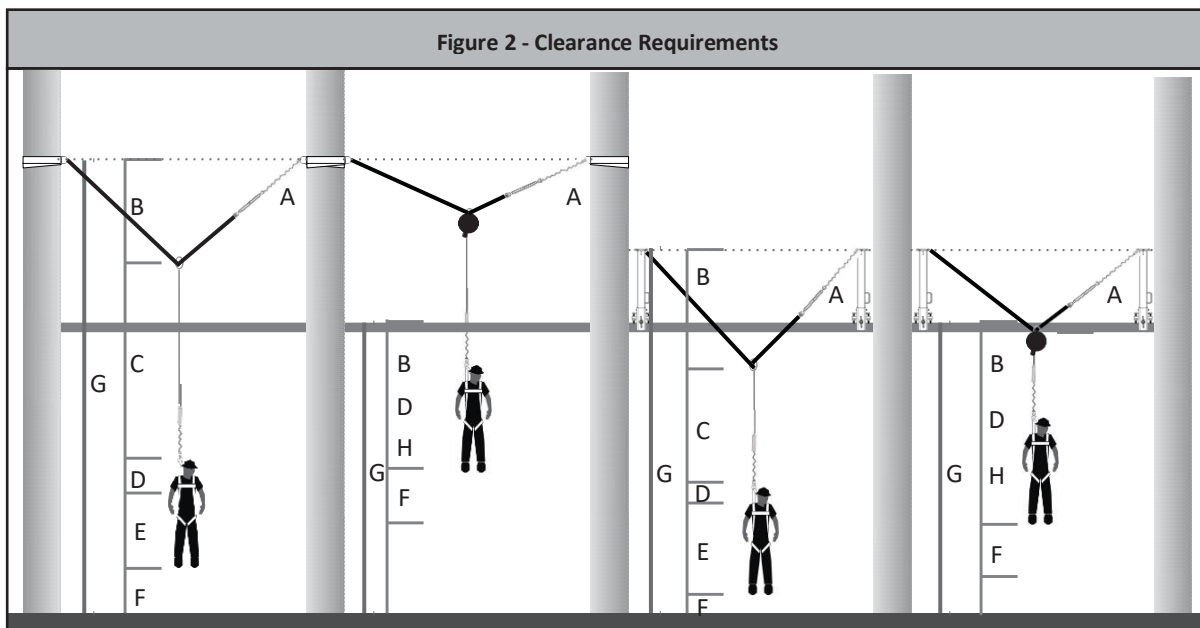
2.0 Application

- 2.1 The PALMER SAFETY 4-Person Temporary HLL provides horizontal mobility for workers exposed to fall hazards and is designed as an anchorage subsystem for the attachment of up to four PFASs. The HLL is adjustable up to 100' in length for a single span system and is designed to be used as part of a complete PFAS. See Figure 1.



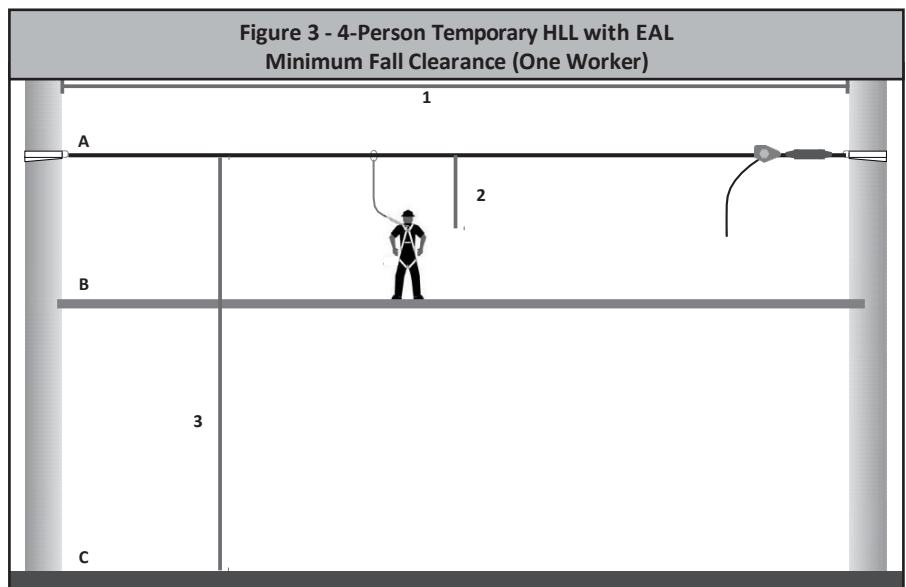
When properly tensioned, the lifeline will react to a fall event of up to four workers by combining the energy absorbing properties of the lifeline energy absorber, the lifeline, and the worker's personal energy absorber. During a fall event, the stretch of the lifeline and the expansion of the user's PFAS will result in reduced forces to the anchor and to the user's body.

- 2.2 **Application Limits:** The PALMER SAFETY 4-Person Temporary HLL is a dynamic anchorage subsystem that will vary in its performance depending upon the length of the system, the number of workers attached and the type of PFAS being used. Care should be taken to understand the capacity of the system, minimum required fall clearance, anchorage strength requirements, total allowable free fall, total allowable fall clearance, and how the user's PFAS will deploy during a fall event. Longer HLL spans will generate more lifeline deflection and sag during a fall event and will result in greater clearance requirements. See Figure 2. It is important to use intermediate anchor points which would significantly help to reduce the fall clearance space and also reduce the other risks could happen.



A	Deployed In-Line Energy Absorber	E	Height of Worker
B	Dynamic Lifeline Sag	F	Safety Factor
C	Deployed EAL	G	Total Required Fall Clearance
D	D-ring Shift and Harness Stretch	H	Total SRD Deceleration Distance from User's Manual*

- 2.3 **System Capacity:** The PALMER SAFETY 4-Person Temporary HLL maximum capacity is four workers simultaneously, with each worker weighing no more than 310 lbs. inclusive of clothing, tools, etc.
- 2.4 **Anchorage Requirements:** End anchors selected for use with this system must be a minimum of 5,000 lbs. (22.2 kN) for one and two workers. If used in applications with leading edge hazards, anchorage locations must be selected so that the deflected HLL shall not come in contact with a leading edge in the event of a fall.
- 2.5 **Total Allowable Free Fall:** OSHA limits free fall to 6' or less. The HLL system described in this manual is designed to be used overhead and free fall should be limited to 6' only.
- 2.6 **PFAS Selection:** Only PALMER SAFETY PFASs may be used in conjunction with this HLL system. The HLL may be used with PALMER SAFETY energy absorbing lanyards those are ANSI Z359.13 complies and PALMER SAFETY fall arrestor connecting subsystems.
- 2.7 **Clearance Requirements:** The PALMER SAFETY 4-Person Temporary HLL is designed to react to a fall event by elongating and deflecting to absorb energy. PFAS attached to the HLL will also elongate during a fall event. Failure to calculate the fall clearance required when using the system could result in contact with a lower level or obstruction during a fall event and could result in serious injury or death. See tables and charts below for calculating minimum required fall clearance.
- 2.7.1 **Minimum Required Fall Clearance for One Worker w/EAL**

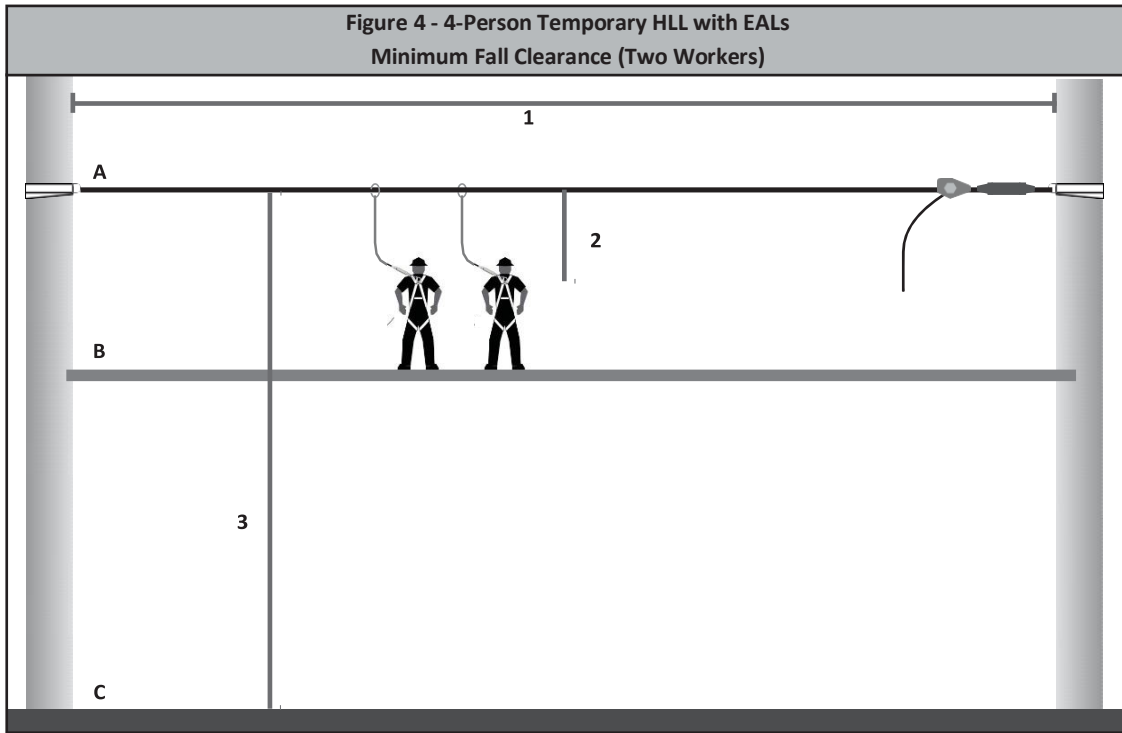


Temporary HLL with EAL Minimum Required Fall Clearance	
310 lbs. Maximum User Capacity	
Max. One Worker	
1	Find Span Length in Table Below
2	Find Freefall Distance in Table Below
3	Required Fall Clearance at the intersection of Span Length and Freefall Distance (see table below)
A. Overhead Anchorage B. Walking/Working Surface C. Nearest Lower Level or Obstruction	
* Work below HLL to avoid Swing Fall	

Freefall Distance (feet)

1-USER			
SPAN LENGTH IN FEET	Free fall Distance		
	0	3	6
10 ft	15'6"	17'6"	19'
25 ft	17'2"	19'1"	20'7"
35 ft	18'11"	20'7"	22'6"
45 ft	19'10"	21'6"	22'10"
55 ft	20'12"	23'7"	24'8"
65 ft	22'2"	24'3"	26'
75 ft	24'1"	25'6"	26'11"
85 ft	24'12"	26'7"	29'1"
100 ft	27'1"	28'5"	29'10"

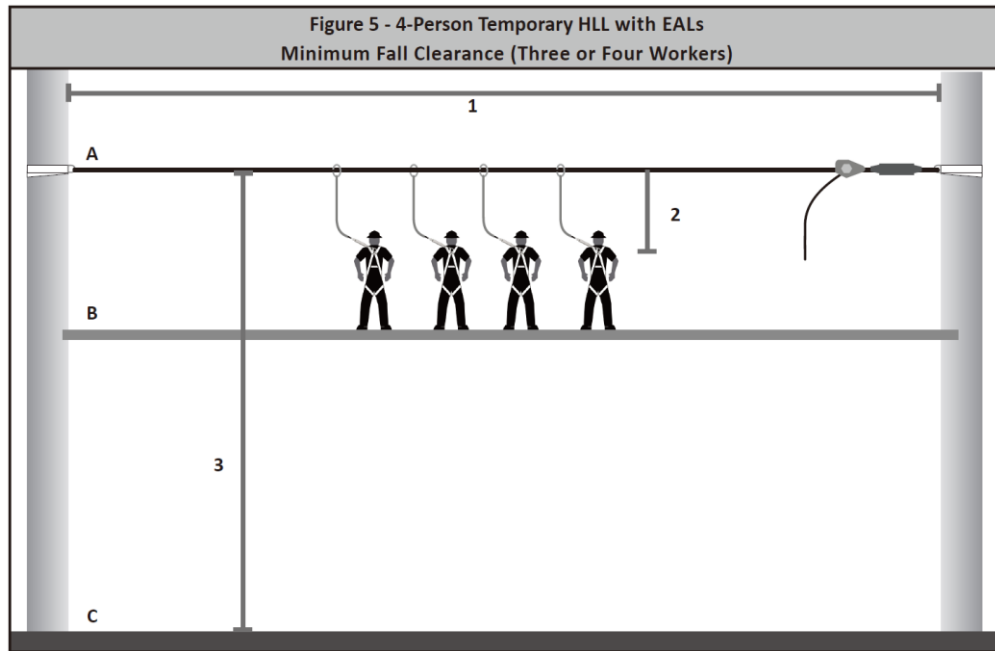
2.7.2 Minimum Required Fall Clearance for Two Workers w/EAL



Temporary HLL with EAL Minimum Required Fall Clearance	
310 lbs. Maximum User Capacity Each	Max. Two Workers
1	Find Span Length in Table Below
2	Find Freefall Distance in Table Below
3	Required Fall Clearance at the intersection of Span Length and Freefall Distance (see table below)
A. Overhead Anchorage B. Walking/Working Surface C. Nearest Lower Level or Obstruction	
* Work below HLL to avoid Swing Fall	

2-USERS			
SPAN LENGTH IN FEET	Free fall Distance		
	0	3	6
10 ft	15'10"	17'11"	19'1"
25 ft	18'6"	22'4"	23'1"
35 ft	20'2"	22'8"	24'6"
45 ft	22'5"	24'1"	25'9"
55 ft	24'5"	26'6"	27'
65 ft	26'5"	28'8"	30'-5"
75 ft	27'8"	30'4"	33'5"
85 ft	29'7"	32'5"	35'1"
100 ft	31'6"	32'9"	37'6"

2.7.3 Minimum Required Fall Clearance for Three or Four Workers w/EAL



Temporary HLL with EAL Minimum Required Fall Clearance	
310 lbs. Maximum User Capacity Each	Max. Four Workers
1	Find Span Length in Table Below
2	Find Freefall Distance in Table Below
3	Required Fall Clearance at the intersection of Span Length and Freefall Distance (see table below)
A. Overhead Anchorage B. Walking/Working Surface C. Nearest Lower Level or Obstruction	
* Work below HLL to avoid Swing Fall	

SPAN LENGTH IN FT	Free fall Distance		
	0	3	6
0-10	19'3"	22'3"	25'4"
'10-25	20'2"	23'2"	26'3"
'25-35	21'3"	24'4"	27'4"
'35-45	23'	25'9"	28'8"
'45-55	25'6"	27'	29'6"
'55-65	28	29.5	31
65-75	30'8"	31'3"	32'9"
'75-85	32'4"	35'	36'4"
'85-100	35'7"	41'	45'1"

WARNING

When a worker falls while connected to the horizontal lifeline, the system will deflect. If two or more workers are connected to the same horizontal lifeline, and one worker falls, the other workers may be pulled off the walking-working surface. The potential for the other workers falling increases as the lifeline length increases. The use of independent HLL systems for each person or shorter span lengths or intermediate anchor points is recommended to minimize the potential of the other workers falling.

2.8 Rescue: The PALMER SAFETY 4-Person Temporary HLL is part of a complete PFAS. It is not intended as a rescue device. Use of this system presents a wide variety of potential rescue scenarios. Users of this system should understand their work environment and develop a rescue plan accordingly. It is recommended that a trained on-site rescue team be present during use of the system.

3.0 System Requirements

- 3.1 Anchorage Strength:** End anchors selected for use with this system must have a minimum rating of 5,000 lbs. (22.2 KN) for one- and two-person applications & 6000lbs (26.7KN) for three-and four-person applications
- 3.2 Structure:** The mounting points for the anchorage must be capable of supporting no less than 5,000 lbs. (22.2 KN) for one- and two-person applications & 6000lbs (26.7KN) for three-and four-person applications, see Figure 7.
- 3.2 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 PALMER SAFETY if you have any questions about compatibility. Connectors must be compatible with the anchorage or other system components. Do not use equipment that is not compatible. Non-compatible connectors may unintentionally disengage. Connectors must be compatible in size, shape, and strength. Self-closing, self-locking snap hooks and carabiners are specified by OSHA and ANSI Z359.12.
- 3.3 Compatibility of Components:** Equipment is designed for use with approved components and subsystems only. Substitutions or replacements made with non-ANSI Z359 compliant components or subsystems may jeopardize compatibility of equipment and may affect the safety and reliability of the complete system. Ensure compatibility between the connectors if non- PALMER SAFETY components are used for fall protection, see Figure 6.

Figure 6 - Incorrect Connections

A	Never connect two active components (snap hooks or carabiners) to each other.
B	Never connect two active components (snap hooks or carabiners) to a single D-ring at the same time.
C	Never connect in a way that would produce a condition of loading on the gate.
D	Never attach to a object in a manner whereby the gate (of the snap hook or carabiner) would be prevented from fully closing and locking. Always guard against false connections by visually inspecting for closure and lock.
E	Never attach explicitly to a constituent subcomponent (webbing, cable or rope) unless specifically provided for by the manufacturer's instructions for both subcomponents (snap hook or carabiner and webbing, cable or rope).
F	Never attach in a manner where an element of the connector (gate or release lever) may become caught on the anchor thereby producing additional risk of false engagement.
G	Never attach a spreader snap hook to two side/positioning D-rings in a manner whereby the D-rings will engage the gates; the gates on a spreader must always be facing away from the D-rings during work positioning.

- 3.4 Connectors:** Only use self-locking snap hooks, rebar hooks, and carabiners with this equipment. Only use connectors that are suitable to each application. Ensure all connections are compatible in size, shape and strength. Do not use equipment that is not compatible. Visually ensure all connectors close and lock completely. Connectors (snap hooks, rebar hooks, and carabiners) are designed for use only as specified in this manual.

4.0 Installation and Use

4.1 Plan the Personal Fall Arrest System (PFAS): Inspect the HLL subsystem before each use in accordance with the procedures detailed in Section 6. Examine the work area and take action to address hazards. Falls are a serious hazard when working at height. Training and equipment are the tools of fall hazard management. There are several closely related facets of fall hazard management with a PFAS;

- Anchor Point Selection
- Anchorage Connector
- Deceleration Device
 - Maximum Arrest Force
 - Deceleration Distance
 - Minimum Required Fall Clearance (MRFC)
- Body Wear
- Rescue

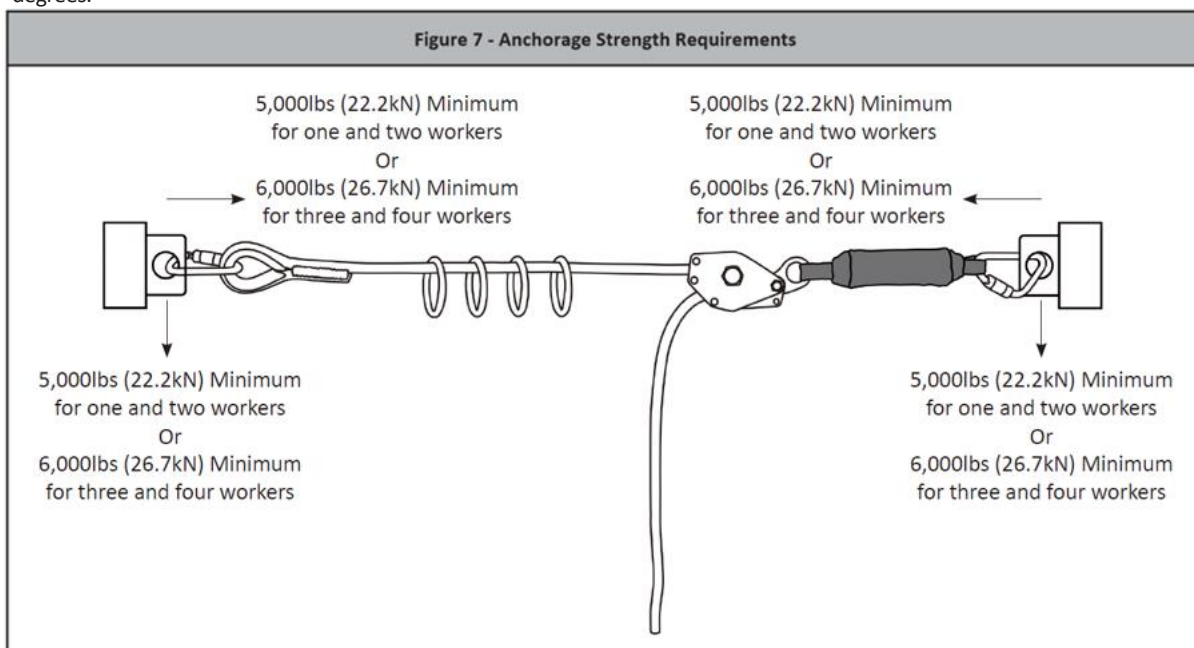
4.2 Anchor Point Selection: Select a suitable anchor point. Consider the area where the work is being performed. In an overhead anchorage condition, the area below the anchorage is the work zone. Lateral movement away from the anchorage is hazardous. As distance from the anchor increases, the work zone expands, and so does the hazard. Work zone expansion is measured in feet and has a direct influence on user safety. Always work as close to the anchor as possible.

If used in applications with leading edge hazards, anchorage locations must be selected so that the deflected HLL shall not come in contact with a leading edge in the event of a fall. For below D-ring anchor point installations for use with this HLL system, contact PALMER SAFETY

4.3 Anchorage Connector: Anchorage Connectors used as part of a PFAS should be designed for use with specified anchor points and compatible with the PFAS components and connectors to be used in the assembly of a complete PFAS. Care should be taken to ensure proper assembly, installation and maintenance of all Anchorage Connectors to be used when planning a PFAS. Failure to inspect, assemble, install and/or maintain Anchorage Connectors could result in injury or death.

4.4 Connectors/Deceleration Devices: Connectors and Deceleration Devices such as Shock Absorbing Lanyards, Self-Retracting Devices/Lifelines, and Fall Arrestor Connector Subsystems (Vertical Lifeline/Rope Grab Combinations) are designed to connect the user's body wear to the Anchorage Connector and/or Anchor Point of a Personal Fall Arrest System.

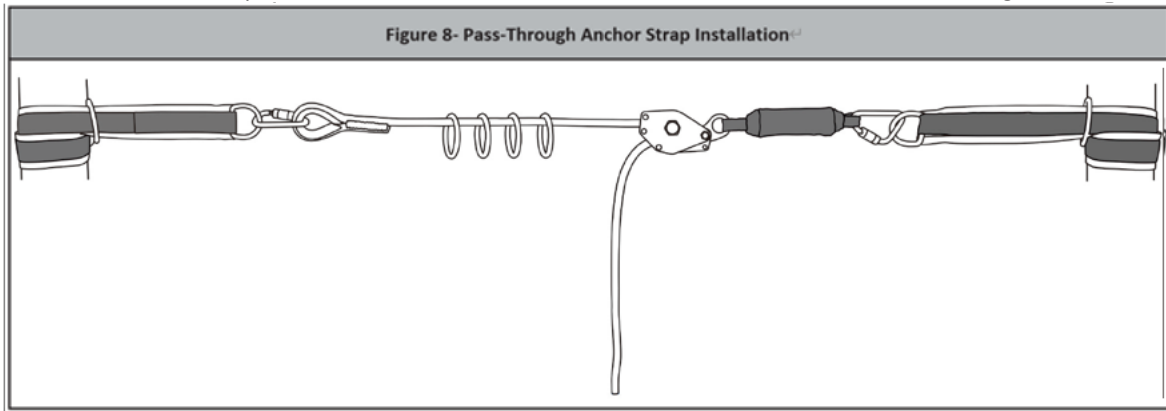
4.5 Product Assembly and Installation: System installation requires end anchor points that are a minimum of 5,000 lbs. (22.2 kN) for one and two workers, see Figure 8. The lifeline shall be installed higher above the shoulder to limit free fall to 6' or less*. When using SRDs the lifeline must be positioned overhead and the SRD must have anti-ratcheting design. The horizontal lifeline should be positioned in a manner to minimize free fall while allowing ease of use. Movement away from the lifeline should be limited to reduce the potential for swing fall. Lifeline end anchors should be installed at approximately the same elevation so that the lifeline itself is not sloped more than 5 degrees.



Step 1: Determine the location of the end anchorages and, in accordance with Section 3.2, evaluate their strength. Determine the span length of the system and determine the minimum required clearance for safe use in accordance with Section 2.7.

Step 2: Install the end anchorage connectors. The PALMER SAFETY 4-Person Temporary HLL system comes with 2 pass-through anchor straps for wrapping around columns. If using pass through anchor straps, ensure strap is wrapped at least twice around the end anchorage, see Figure 9. This will help prevent sliding of the anchor straps during use. If using alternative anchorage connectors, please

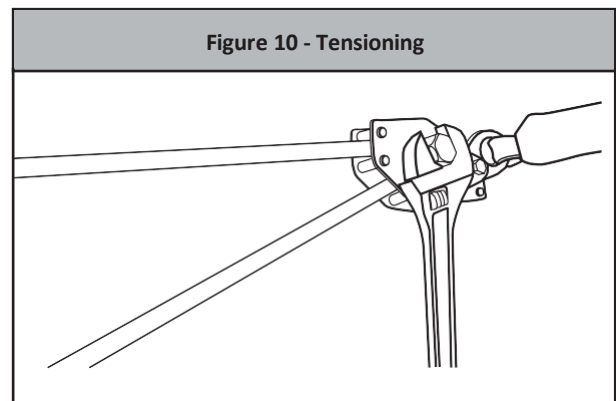
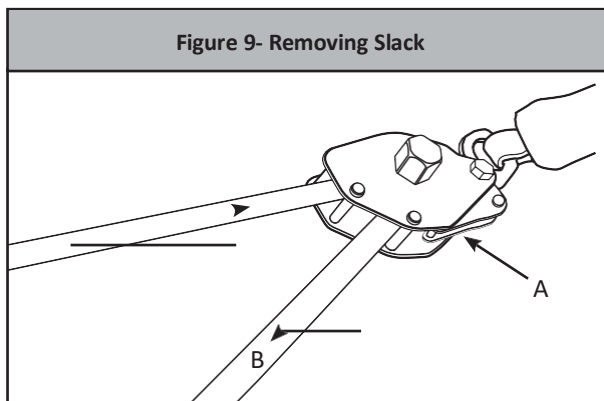
ensure the connectors are compliant and conform to the requirements of Section 3.2. Not all anchorage connectors are designed for use with horizontal lifeline systems. In all cases, refer to the user's instruction manual for the end anchorage connectors to be used.



Step 3: Secure the HLL system to the anchorage connectors with the provided end attachment carabiners.

Step 4: Close the locking lever into the down position so that it is engaged; Figure 9A. Remove the slack from the line by pulling the preinstalled rope through the tensioner by hand, see Figure 9B. Insert a pointed bar through the tensioning nut or use a wrench to tighten by turning the nut clockwise until the tensioner slips or can no longer rotate, see Figure 10. Do not alter the tensioner to achieve greater tension. Final line tension will be approximately 200 - 300 lbf. **The loose end tail length should not less than 3.3ft (1.0m)**

Step 5: Once properly tensioned, connect a PFAS system only to the connection O-rings that have been preinstalled on the lifeline.



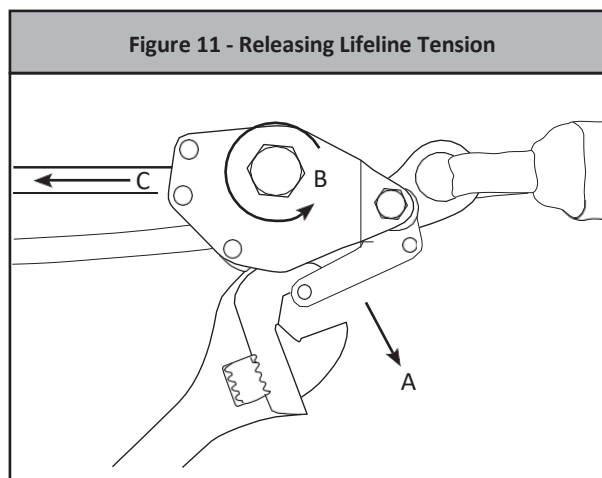
4.6 Releasing Lifeline Tension: Upon completion of work, to move to a new work location or to disconnect from the end anchorage connectors lifeline tension should be released. To release lifeline tension:

Step 1: Lift the locking lever and position the pointed bar or wrench between the tensioner body and locking lever.

Step 2: Pry upward with the pointed bar or wrench to disengage the lock lever and release the HLL tension, see Figure 11A.

Step 3: Loosen the tensioning nut with the pointed bar or wrench by turning the tensioning nut counter clockwise until loose, see Figure 11B

Step 4: If necessary, the rope can be pulled through the tensioner by hand while holding the locking lever in the disengaged position, see Figure 11C.



5.0 Maintenance, Service and Storage

Maintenance: Clean the horizontal lifeline with water and mild detergent. Do not allow excessive build-up of dirt, paint or other agents that may cause damage or hardening of the rope fibers. Do not treat the lifeline with heat to dry or clean the lifeline. Hardening of the ropes fibers from external elements may result in a loss of strength or alter the properties of the rope in a manner that could cause the HLL to fail to operate or perform properly.

Service: There are no specific service requirements for this system component.

Storage: The system should be stored in its carry bag and kept out of direct sunlight. Store in a clean, dry and chemical free environment.

6.0 Materials:

Rope: Double braided polyester

Energy absorber: Polyester webbing

Connectors: Steel

Tension adjuster: Steel & Aluminium

7.0 Inspection

1. **Pre-Use Inspection:** Prior to each use the HLL system should be inspected by the user for damage, wear and to ensure the lifeline is properly tensioned. Please review the inspection checklist for inspection requirements.
2. **Inspection Frequency:** Other than pre-use inspection, the PALMER SAFETY 4-Person Temporary HLL should be inspected by a competent person at least once a year.
3. **Inspection Checklist:** A general inspection should be done at the intervals specified in this manual. Inspect as follows:

Step 1: Inspect labels. Ensure legibility of content. If labels are missing or illegible, remove the system from service.

Step 2: Inspect all metal components for cracks, corrosion, deformities, missing parts or noticeable defects. Metal components include O-rings, carabiners, thimble eyes, rope tensioner, D-rings, ferrules etc.

Step 3: Inspect rope for wear, paying special attention to the areas of rope most likely in contact with the tensioner teeth. Rope should not present frayed strands, cuts, abrasions, burn marks, and discoloration indicating UV damage.* Thimble eyes should be firmly in place and there should be no build-up of foreign matter such as paint, dirt, rust, concrete or cement etc.

*Minor fuzziness of rope is acceptable so long as the inner white core of the rope is not openly exposed.



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