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**SAFETY DIRECT LTD.**

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## **Temporary Horizontal Lifeline System Manual Standard Duty - E8**

Model: HLLA38030 and HLLA38060

### **Warnings:**

**The following horizontal lifeline system guidelines must be read and understood by both the users and their employers.  
Failure to comply with all the instructions could result in serious injury or death.**

Failure of the user to read and understand all instructions for the installation and use of this system may result in injury or death.

It is recommended that the installer of the system has completed an approved system installation program and has demonstrated competency in the installation of horizontal lifeline systems.

All users of the system should have completed an approved Fall Protection Program before using the system.

There should be an approved rescue plan in effect on the worksite prior to using the horizontal lifeline system. The rescue plan must specifically address the retrieval of the

worker in the event of a fall arrest, without delay, in order to reduce the possible effects of suspension trauma.

Do not use the horizontal lifeline or any of its components for any applications other than specified by these instructions. Do not alter or adapt the equipment in any way.

Refer to the table in these instructions showing the minimum clearance requirements below the work area. The total fall distances and subsequent clearance needed below the work area in the event of a fall arrest should be understood.

## **Responsibilities:**

These instructions must be understood and followed by both the user and the employer.

Copies of these instructions must be provided to all users of the system before using the system.

Workers and employers must be aware of the federal, provincial, and local regulations in effect governing the installation and use of horizontal lifeline systems before using it.

The horizontal lifeline system should not be modified, or components substituted without obtaining prior written permission from Safety Direct Ltd.

The horizontal lifeline system or any of its components should not be used for any applications not specifically approved in these instructions.

The user must be aware that there is a risk of injury or death should these instructions be disregarded and that the user then assumes all liability if they choose to ignore these instructions.

Any horizontal lifeline system that has been subjected to a fall arrest must be removed from service immediately and returned to the manufacturer for inspection and repair, if needed, before being returned to service. Any personal fall protection equipment, including full body harnesses, lanyards and hardware should also be removed from service until it has been inspected.

The maximum capacity of the system is, two (2) workers including tools and clothing, if the capacity of the system is exceeded the performance of the system and safety of the users cannot be guaranteed.

This instruction manual meets the requirements of CSA and ANSI and it should be used as part of the user training program as required by OSHA and OHS regulations.

## **Inspection and Maintenance:**

Copies of these instructions must be accessible to the users and employer and for reference. Copies of these instructions can be downloaded and printed from our website at [www.safetydirect.ca](http://www.safetydirect.ca) .

All labels on the horizontal lifeline system and its component parts must be legible. If a label is missing, obscured or damaged, do not use the system until it can be replaced.

The system must be inspected prior to use to ensure that all the components of the lifeline system are complete, compatible and are in good working condition.

The horizontal lifeline system must be inspected thoroughly and frequently to ensure the system functions correctly. The end anchorages must be included as part of the routine maintenance and should be inspected to ascertain if there has been any damage or deterioration. The results of these inspections should be recorded in a log and should detail any findings or any incidents that the system has been exposed to.

## **Training:**

It is recommended that all users complete an approved and documented horizontal lifeline training program before using the system.

The presence or absence of any of the following conditions should disqualify the user from using the system:

- 1) The user must be physically and mentally fit in order to work at heights or in confined spaces.
- 2) The user should not be under the influence of drugs or alcohol.
- 3) The user should be fully trained in the use of the system and must be cognisant of the safety requirements and regulations that pertain to its use in the jurisdiction in which it is being used.

## **General Instructions:**

With the exception of the procedures specified in these instructions, any repair or modification carried out on the system must be approved by Safety Direct Ltd.

All horizontal lifeline systems, when not actively in use, should be removed from service, coiled and placed in a suitable storage area together with a copy of the instructions.

A person should be designated as being responsible for the installation, and the periodic inspection of the horizontal lifeline system, and for the maintenance of a log that details the results of any inspections carried out together with any incidents involving the lifeline system.

All users of the system must be trained in the rescue plan and the procedures to be used in the event of a fall arrest. Rescue training should include practicing rescue scenarios prior to using the horizontal lifeline system in order to minimise any potential exposure to suspension trauma.

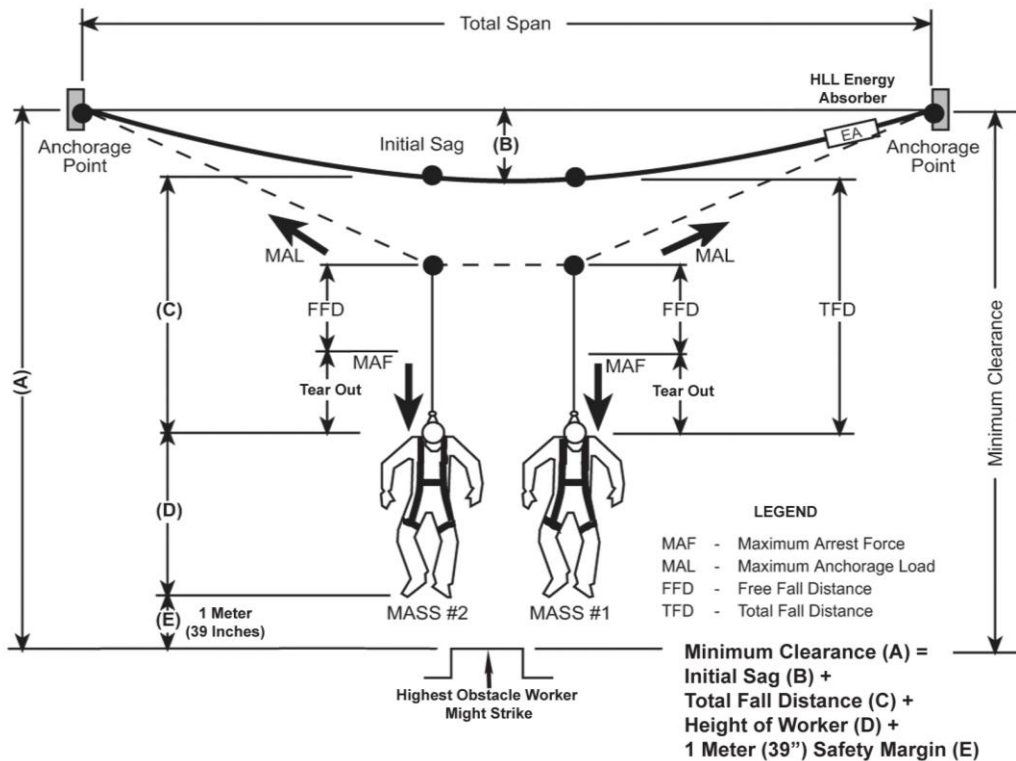
Any components or anchorages used in conjunction with the lifeline system must be compatible and load rated in accordance with the values specified in these instructions or have received approval by a Professional Engineer.

Any anchor points used to attach the system to a structure must be approved by a Professional Engineer and must comply with the applicable regulations in the jurisdiction in which the system is being installed.

The performance and design criteria that apply to a properly installed system are given below. Before using the system, the clearance available below the lifeline system should be determined by a competent person and compared with the clearance specified in the table of clearances for the system being used. Do not use the system if the clearance available is less than the clearance given in the applicable table.

Before installing a horizontal lifeline system, a complete risk and hazard assessment must be undertaken to identify the risks and hazards.

Be aware that during a fall, the user connected to the system by his lanyard will tend to slide to the center of the horizontal lifeline. Obstructions below the entire span of the system must be considered in case of a fall.



## Installation and Usage Instructions:

**SAFETY DIRECT LTD.'S HORIZONTAL LIFELINE SYSTEM IS AN ENGINEERED SYSTEM DESIGNED FOR USE WITH THE APPROVED COMPONENTS. SUBSTITUTION OR REPLACEMENT WITH NON-APPROVED COMPONENTS WILL ENDANGER THE COMPATIBILITY OF THE SYSTEM AND MAY AFFECT THE FUNCTIONING AND RELIABILITY OF THE TOTAL SYSTEM.**

The temporary horizontal lifeline system described in these instructions is a single or dual span single wire rope system, the system has low elongation and is designed to allow workers access between two anchor points at the same elevation.

The horizontal lifeline system is comprised of six major components:

- 1) The horizontal lifeline - 3/8" diameter galvanized steel cable.
- 2) Take-up device, jaw and jaw turnbuckle, to set the sag in the cable.
- 3) Combination clamp and thimble to allow cable length adjustments.
- 4) One or two energy absorbers dependent on the system span to limit loads transferred to the anchorages.
- 5) Drop forged O-rings sliding on the cable to allow connection to the workers harness.
- 6) Two auto locking carabiners.



The horizontal lifeline system should be unpacked and unrolled to ensure that the cable is not kinked before or during installation. The system is fully assembled as shipped but the bolts are not tightened on the combination clamp. The turnbuckle should be adjusted so that it is at its maximum length.

The combination clamp and thimble should be positioned at its approximate position on the cable before finger tightening the bolts.

The carabiners at the ends of the lifeline can now be attached to the selected anchorages. Ensure that the lifeline is situated a minimum of 3.5 feet (1 m) above the working/walking platform or area. It is recommended, wherever possible, to place the horizontal lifeline at the same level as the attachment point (rear Dorsal D-ring of the worker's harness).

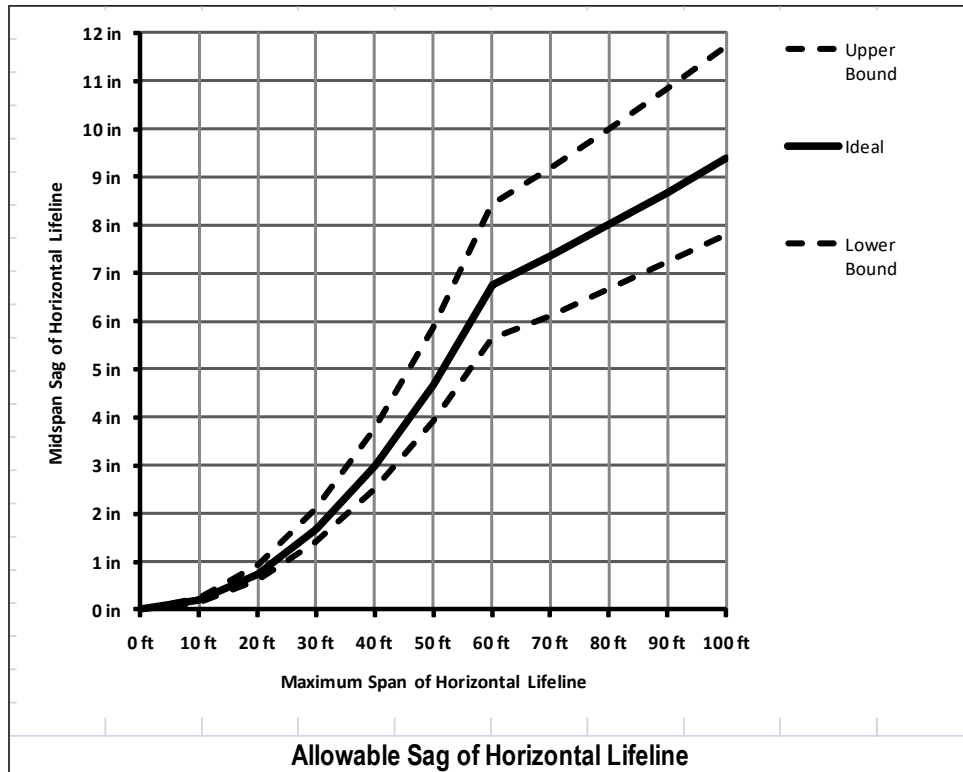
Install Horizontal Lifeline At This Height



The sag in the line can now be set to the approximate value specified in Table No 1, based on the span of the lifeline, by pulling the cable through the combination clamp. Ensure that once the slack has been taken up, the wire rope lies in the bottom of the grooves of the combination clamp.



Once the approximate adjustment has been made, the bolts on the clamp should be torqued to 40 ft / lb.



**Table 1**

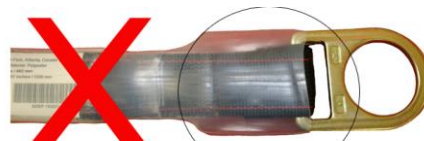
The fine adjustment of the cable sag is accomplished by tightening the turnbuckle until the specified sag is obtained at mid-span as per Table No 1. After adjustment of the cable sag there should be a minimum length of thread visible in the turnbuckle body of 3/4" (1.9 cm).



Ensure not to over tighten the lifeline so as to provoke the deployment of the shock-absorbing device. Do not use the system if the shock-absorbing device shows signs of deployment.



HLL Energy Absorber



Partially Deployed HLL Energy Absorber

**Check List:**

Before using the horizontal lifeline system for the first time after installation the following features should be double checked to ensure the installation was completed correctly.

- 1) the turnbuckle has the prescribed length of thread visible inside the turnbuckle body.

- 2) the combination clamp and thimble has been torqued to the correct value.
- 3) the cable is seated correctly in the groove of the combination clamp and thimble.
- 4) the locking cotter pins have been installed in the turnbuckle pins.
- 5) the autolocking carabiners are positioned correctly and are not loaded across the gates.
- 6) the autolocking carabiners are secured into an approved anchorage.
- 7) the energy absorber has not been partially deployed.
- 8) the turnbuckles are locked with a lock wire.
- 9) the sag at the centre span complies with the value in Table No. 1.

Care should be taken when installing the horizontal lifeline system in close proximity to energised power lines. The steel cable used in the system will act as a conductor if it comes in contact with an energised power line.

Care should be exercised if the system is used near moving machinery since the user or equipment could become entangled in the equipment and cause the system to malfunction and could result in a fall situation.

The system should be installed in a straight line with the end anchors being at approximately the same height to ensure that the slope of the lifeline is less than 5 degrees from the horizontal plane. The lifeline should not have a direction change greater than 10 degrees at an intermediate anchorage and must not be allowed to touch any intermediate object that could cause the cable to be deflected from its path.

All metallic parts of the system should be inspected periodically for any evidence of corrosion. If the system is used in a corrosive environment the period between inspections should be reduced. Any evidence of corrosive degradation of any part of the system should result in the system being removed from service for further inspection and repair if necessary.

Any horizontal lifeline system that has been subjected to a fall arrest must be removed from service immediately and returned to the manufacturer for inspection and repair, if needed, before being returned to service.

Any system or component showing evidence of wear or degradation should be removed from service and inspected by a competent person before being returned to fall arrest service.

Users should only attach to the horizontal lifeline by means of the drop forged O-rings supplied with the system. Under no circumstances should the snap hook of a lanyard be attached directly to the lifeline.

## **Design Parameters:**

***“These clearance charts are based on end anchorages that will deflect less than 1 inch when a force of 5,000 lbs is applied to the end anchorage. Greater***



**clearances are required for anchorage systems that will exceed this deflection, particularly “tip-over” style anchor posts. Contact Safety Direct or a qualified Fall Protection Engineer for revised clearance requirements if the anchorage systems will deflect more than 1 inch to anchor a 5,000 lb force.”**

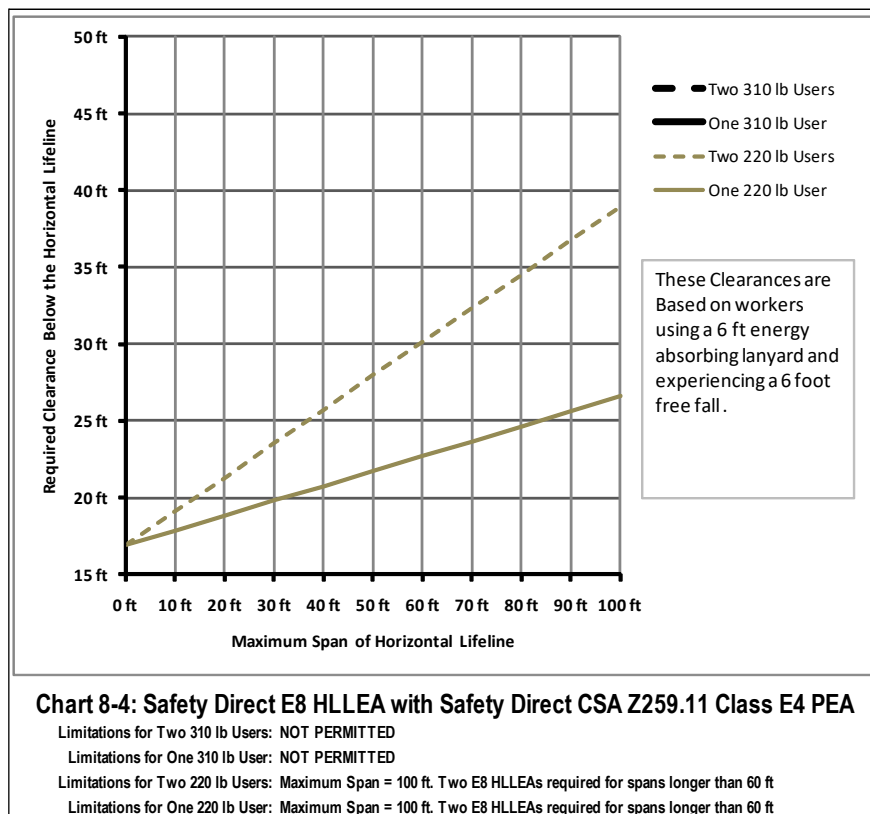
The performance of the horizontal lifeline system is based on the following design criteria when used by 1 or 2 users.

The Standard Duty (E8) horizontal lifeline system is designed to be used by a maximum of two workers, weighing up to a maximum weight of 440 lb. (200 kg.), including equipment, tools and clothing, and a maximum span between anchorages of 100 ft. (30 m.). For spans over 60 ft. (18 m.) the system requires the use of a second E8 HLLEA in order to limit the maximum force at the anchorages.

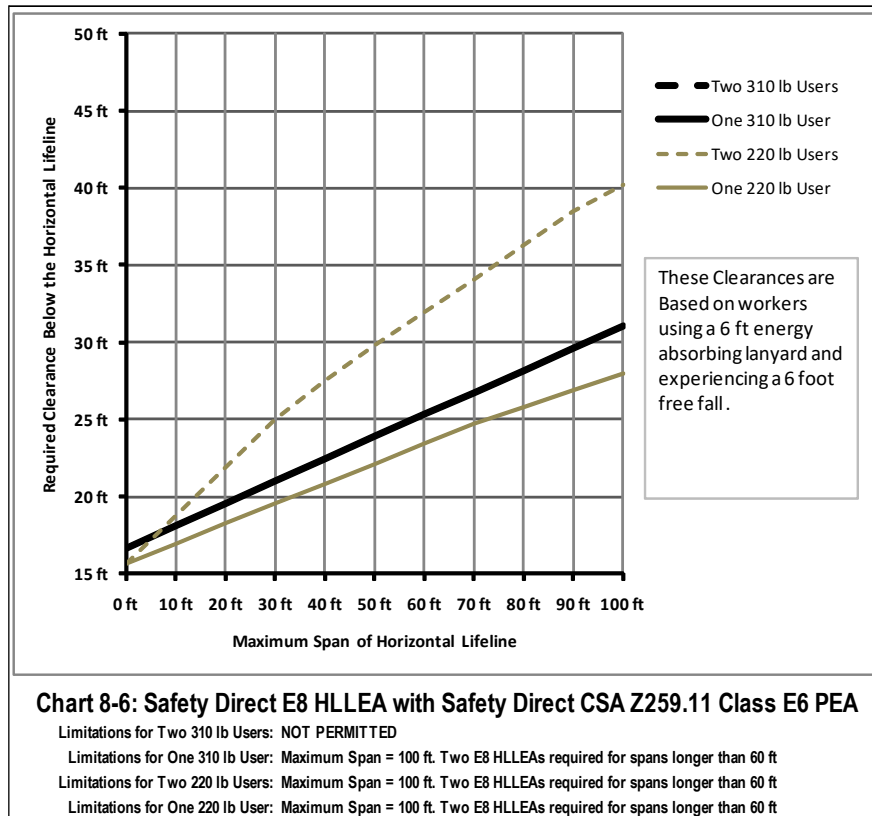
For one worker weighing between 220 lb. and 310 lb. (100 kg. and 140 kg.) the maximum span between anchorages is 100 ft. (30 m.).

The use by two workers between 220 lb. and 310 lb. (100 kg. and 140 kg.) is not permitted.

Workers using the system must use the appropriate lanyards to attach to the lifeline, either E4 class or E6 class as specified in [TABLE NO. 8-4](#), or [TABLE 8-6](#).



**Table 8-4**



**Table 8-6**

Refer to the above charts for the special requirements for additional HLLEA's for longer spans.

## Personal Protective Equipment

**Harness.** A full-body harness is mandatory for fall arrest use on a horizontal lifeline system. An energy absorbing lanyard must be attached to the rear Dorsal D-ring of the users full-body harness in order to connect to the sliding ring of the horizontal lifeline system.

**Lanyard.** Any energy absorbing lanyard used with the system must be as short as possible to minimize free fall distance and avoid potential injury. The lanyard used with the horizontal lifeline system must not exceed 6 feet (1.8 m) in length. An energy absorbing lanyard must be used to ensure that the impact forces do not exceed 1,800 lbs. (8 kN). Consult governing regulations as allowable free fall distances may vary.

## **Personal Energy Absorbers**

Personal Energy Absorbers must be used:

Workers weighing up to 220 lb. (100 kg.), including tools, clothing and equipment, must use Safety Direct Class E4 Energy Absorbing Lanyards, certified to CSA Z259.11-05 Class E4.

Workers weighing between 220 and 310 lb.(100 and 140 kg.), including tools, clothing and equipment, must use the Safety Direct Class E6 Energy Absorbing Lanyards, certified to CSA Z259.11-05 Class E6.

Maximum freefall specified in the charts is based on the use of a 6 ft. (1.8 m.) energy absorbing lanyard with the horizontal lifeline system located at the same height as the users Dorsal D-ring lanyard attachment point, 5 ft. (1.5 m.) above the working platform. For other combinations of lanyard lengths and height of the lifeline amend the maximum freefall in accordance with those values shown in [TABLE 2](#).

**Clearance Adjustments: (Add to Clearances from Charts 8-4, 8-6**

		Height of HLL above the Walking Surface							
		0 ft	1 ft	2 ft	3 ft	4 ft	5 ft	6 ft	7 ft
Lanyard Length	6 ft	8' 0"	6' 5"	4' 10"	3' 2"	1' 7"	-	-1' 7"	-3' 2"
	5 ft	6' 5"	4' 10"	3' 2"	1' 7"	-	-1' 7"	-3' 2"	-4' 10"
	4 ft	4' 10"	3' 2"	1' 7"	-	-1' 7"	-3' 2"	-4' 10"	-6' 5"
	3 ft	3' 2"	1' 7"	-	-1' 7"	-3' 2"	-4' 10"	-6' 5"	-8' 0"

**Table2**

During a fall the user will migrate to the centre of the horizontal lifeline span. The minimum clearance below the worksite is applicable over the entire length of the span.

Example A: if workers are using 5 ft lanyards and the HLL is set up 3 ft above the working platform, the required clearance below the HLL (from the charts) must be increased by 1' 7".

Example B: if workers are using 6 ft lanyards and the HLL is set up 7 ft above the working platform, the required clearance below the HLL (from the charts) can be decreased by 3' 2".

**Note:**

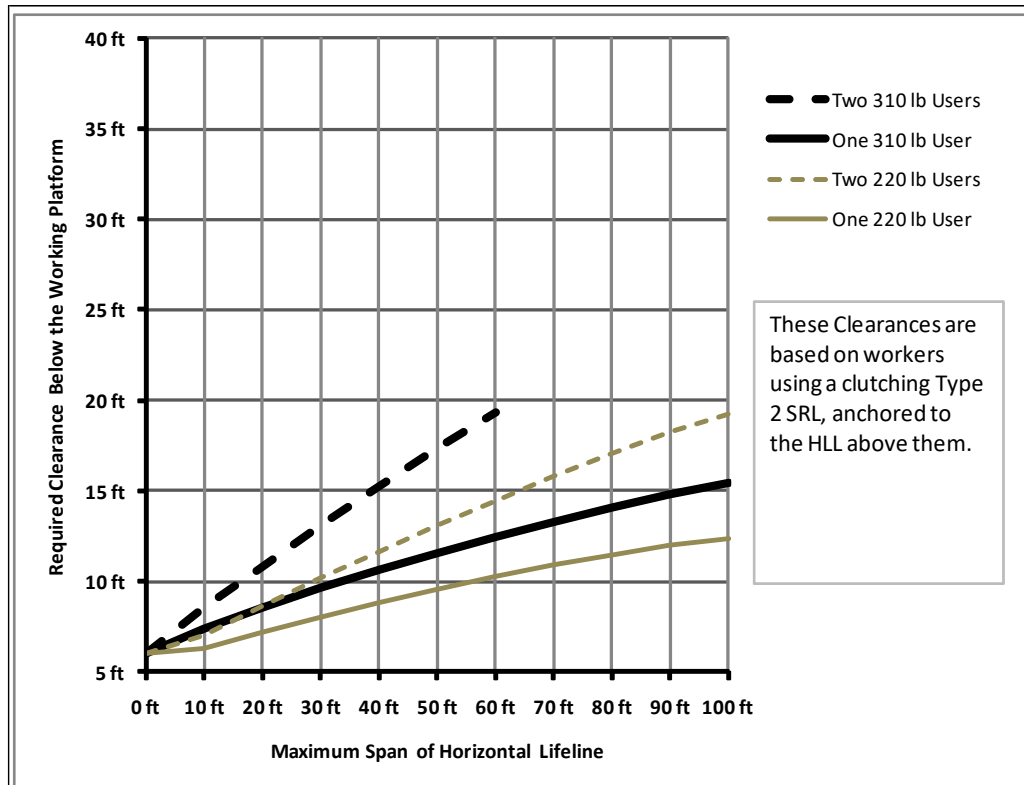
When using a Type II SRL with an integral clutching mechanism please refer to Table 8-SRL for the Standard Duty HLL to determine the clearances needed below the working surface.

**Clearance Charts for Using Self Retracting Lifelines:**

The following charts are applicable for usage of the E8 HLLs, installed above the users, who are connected to the HLL using CSA Z259.2.2 Type II SRLs that contains a clutching mechanism.

If a worker falls from a kneeling position using an SRL, as described above, 2.5 ft of clearance must be added to the clearances indicated in Charts 8-SRL.

Chart 8-SRL:



**Chart 8-SRL: Safety Direct E8 HLL EA with CSA Z259.2.2 Type II Clutching SRL**

Limitations for Two 310 lb Users: Maximum Span = 60 ft. Two E8 HLL EAs required for spans longer than 40 ft  
 Limitations for One 310 lb User: Maximum Span = 100 ft. Two E8 HLL EAs required for spans longer than 40 ft  
 Limitations for Two 220 lb Users: Maximum Span = 100 ft. Two E8 HLL EAs required for spans longer than 60 ft  
 Limitations for One 220 lb User: Maximum Span = 100 ft. Two E8 HLL EAs required for spans longer than 60 ft

**Do not use a combination of SRL’s and regular lanyards on the same system.**

If a worker is likely to fall from a kneeling position add 2.5 ft. (0.76 m.) to the clearances shown in the charts.

**Anchorage Ratings**

Based on the Maximum Arrest Load at the anchorage, the anchorage should have a minimum rated strength of 5,000 lb. ( 22 kN. 2,270 kg.), for the Standard Duty E8 HLL

**Hazards**

**Acids and Alkalis.** Polyester is resistant to many acids but is degraded by sulfuric acid and some alkalis or phenolic compounds. Signs of damage on the webbing are staining on the webbing and the stiffening of the webbing.

**Paint.** Paint can penetrate into the weave and dry, causing the webbing to become hard and brittle; it may eventually break the fibers. Solvents and drying agents within paint can cause damage similar to chemical exposure.

**Corrosion.** Equipment should not be left for extended periods of time in environments where corrosion could take place. If corrosive environments such as sewage, fertilizer, or coastal areas are unavoidable increase frequency of inspections to ensure that integrity of the horizontal lifeline system and its components remains uncompromised.

**Electrical Hazards.** Caution should be exercised when working near or around high voltage power lines: electricity could pass through the metal components of the equipment, resulting in a critical electrical hazard.

**Moving Machinery.** Exercise caution while using the system near or around moving machinery.

**Heat.** Equipment is not designed for use in high temperature environments. The horizontal lifeline system should not be used in environments where temperatures exceed 180 F (82 C). Also, steps should be taken to ensure that the equipment is not exposed to flames or sparks.

**Sharp Edges/Abrasion.** Do not allow components to come in contact with sharp edges or abrasive surfaces especially when under tension. Protect the components against any contact.

**Sunlight.** All organic fibers, either natural or man-made, will degrade to various degrees when exposed to ultraviolet light. Precautions should be taken to store the equipment away from prolonged exposure to sunlight, fluorescent lights and other sources of ultraviolet radiation.

**Impact.** Any horizontal lifeline system subjected to arresting a fall shall be removed from service immediately. The system must be inspected and recertified by a qualified person before being placed back into service.

**Life.** There is no mandatory retirement age for the equipment. Any components exhibiting excessive wear or degradation shall be removed from service and returned to safety Direct, or any authorized dealer for inspection and if necessary, repair or replacement.

### **Removal of the System from Service:**

To remove the system from service reverse the installation instructions previously outlined. The cable should be loosely coiled, and the system should be inspected for any evidence of significant deterioration. Any defects should be noted and remedial action taken. The system should be stored in a well ventilated, dry area and should not be in direct contact with the floor. Avoid exposure to any corrosive environmental conditions.

## Maintenance and Storage

**Failure to maintain and store the horizontal lifeline system carefully can result in damage that could lead to serious or fatal injury.**

**Cleaning.** The shock-absorbing device can be washed with a damp cloth or sponge using a mild soap. After washing, rinse off the soap with clean water and hang up to dry out of the sun and away from exposure to high heat. Hardware components should be wiped with a rag and lubricated with a light oil to ensure good working condition and to protect against corrosion. Items can be washed whenever needed in order to extend their lives. They will be easier to inspect for damage. **DO NOT USE** any cleaning solvent agents, acids, etc. as they may seriously damage the equipment.

**Storage.** Store system in a clean, dry environment free of corrosive contaminants, harmful fumes and out of direct sunlight.

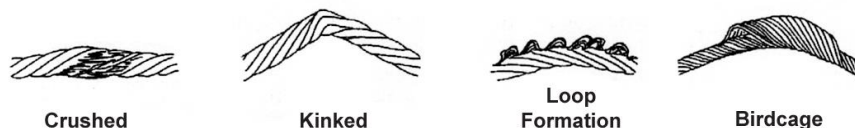
## Inspection

Inspect equipment before each use and also periodically, at least annually, by a competent person. If damage is found as described below, remove the system from service immediately, replace it and contact **Safety Direct Ltd.** for advice.

If any damage or questionable conditions are apparent that is not described below, remove the item from service immediately, replace it and contact **Safety Direct Ltd.** for advice.

**Failure to remove equipment that has been damaged or is in questionable condition could lead to serious or fatal injury. Keep a detailed log of the regular periodic inspections for future reference.**

**Wire Rope.** Inspect wire rope over its entire length in order to detect damage such as birdcage or loop formation, or wire rope that has been crushed, kinked or snagged over sharp edges, etc. Examine cable clamp for deformation or missing hardware.



**Hardware.** Carefully examine all hardware components for the following defects:

- A) damaged, distorted or missing items,
- B) sharp edges, burrs, cracks, corrosion, or worn parts.
- C) correct functioning.

**Carabiner.** All parts of the carabiner should be free of distortion and corrosion. The gate spring should exert enough force to firmly close the gate. Pay special attention to the auto locking mechanism; it should close fully. The safety bar of the auto locking carabiner must complete its rotation when closed.

**Anchor Sling (where used).** Examine the anchor sling over its entire length by running the sling through your hands. If the wire cable anchor sling exhibits any evidence of kinking, crushing, broken strands or distorted splice it should be removed from service.

For web anchor slings, slide the protective cover, if present, back out of the way, to inspect the webbing. If any abrasion, sharp cuts, broken or pulled stitching is apparent and there is any evidence of contaminants they should be removed from service.

**Energy Absorber.** The energy absorbing device must be free of any sign of deployment. Elongation indicates a loss in the absorbing capabilities of the device and may be a sign that the system has sustained a load equivalent to arresting a fall. The actual length of the energy absorber must be compared to the length value given on the label for a new energy absorber. The energy absorbing device must also be free of any visible wear or defects. Webbing must not have been deployed and be visible outside the heat shrink protecting the energy absorber pack.



## Warranty

**Safety Direct Ltd.** warrants the equipment to be free of defects in material and workmanship under normal use and service.

**Safety Direct Ltd's** obligation under this warranty is limited to repairing or replacing any part of the unit, which proves, under examination to our satisfaction, to be defective in material or workmanship. The item in question is to be returned to **Safety Direct Ltd.** upon authorization of the distributor, transportation prepaid, within six (6) months from the date the equipment was sold to the original purchaser. Return shipment must be prepaid.

Any parts proved to be defective, upon inspection will be repaired or replaced at no cost.

**Safety Direct Ltd.** must be notified if any defect in this equipment is found, arrangements will be made for repairs or replacements of the parts within the terms of this warranty.

**Safety Direct Ltd's** obligation is restricted to replacing parts and does not include the complete unit. If any part of the equipment is modified, tampered with, repaired by persons other than a factory representative, and repaired with other than Safety Direct Ltd. standard parts, or damaged by reasons of accident, alteration, misuse or abuse, this warranty is void.

This warranty is in lieu of all other warranties, expressed or implied. We do not authorize any person or representative to make any other guarantee or to assume for us any liability in connection with the sale of our appliances other than those contained herein. Any agreement outside of, or contradictory to, the foregoing shall be void and of no effect.

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