



USER INSTRUCTIONS MANUAL

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ORIGINAL INSTRUCTIONS - UNCONTROLLED IF PRINTED
IMPORTANT: Make sure this user instructions manual is the latest version available.
Copies of this manual are available from SEI.
Register for manual updates notifications at bambiupdate@sei-ind.com

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REVISION HISTORY

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2	1.1, 1.2, 1.3, 2.3, 8	Applications updated, images updated, limitations revised, lifetime updated	Nov. 29, 2022



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WARNINGS AND IMPORTANT NOTICES

You will find on this page, and throughout this user instructions manual, many warnings and important notices that must be considered seriously when using this product.

DEFINITIONS:



A **WARNING** note means that if the information is not thoroughly followed, there is a risk of serious injury or death to the user or surrounding people.



A **CAUTION** note means that if the information is not followed, there is a risk of injury and/or damage to the equipment.



IMPORTANT: *This manual is intended to meet the Manufacturer's Instructions as recommended by OSHA, and should be used as part of an employee training program.*



IMPORTANT: *This manual contains information and instructions specific to Bambi longlines only. Make sure this manual is the latest version available. Consult the SEI website at www.sei-ind.com to view document revisions, important updates and other notices.*



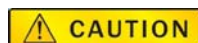
IMPORTANT: *SEI Industries Ltd. reserves the right to update product or components without prior notice.*



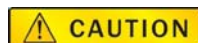
IMPORTANT: *Products manufactured by SEI Industries Ltd. are intended for use by professionals trained and experienced in the use, inspection, and maintenance of these products.*



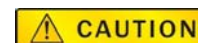
WARNING: *This product is designed for underslung helicopter external load situations only. The user must read and understand the instructions in this manual before using this equipment. Manufacturer's instructions must be followed for the proper use and maintenance of this equipment. Alterations or misuse of this equipment, or failure to follow instructions, may result in serious injury or death. If you have questions on the use, care, or suitability of this equipment for your application, contact SEI Industries Ltd.*



IMPORTANT: *This document does not replace a complete training necessary for the use of this product. Excellent technical knowledge in helicopter external load operation is required.*



IMPORTANT: *Before using this equipment, record the product identification information from the ID label in the inspection and maintenance log at the end of this document. Make sure this User Instructions Manual is readily available with the longline. Contact SEI to obtain additional copies of this manual.*



IMPORTANT: *It is the responsibility of the user to document and maintain a product use, inspection and maintenance logbook. SEI Industries Ltd. supplies inspection criteria and guidelines, forms and log sheets which may be used as an example. It is the responsibility of the user to adapt and design their own inspection and maintenance system.*

1. DESCRIPTION OF BAMBI LONGLINES

1.1 APPLICATIONS:

This manual applies to all Bambi longlines.

Bambi longlines are designed for Class B helicopter external load applications as defined by:

- Canadian Aviation Regulations SOR/96-433 Part 1 - General Provisions, Subpart 1 - Interpretation, 101.01
- FAA Order 8900.1, Volume 3, Chapter 51 Part 133 External Load Operations, Section 1, 3-4083 - Classes of Authorization

Applications include: Transport of a Bambi Bucket or other aerial fire suppression system.

In all cases, the operator or type-certificate holder must ascertain that the rotorcraft external load attaching means and the rotorcraft comply with the conditions and operations specifications as directed by the applicable aviation authority.

1.2 SPECIFICATIONS:

Highlights:

- Each longline is subjected to a load of 1 to 1.5 times the WLL (Working Load Limit) depending on longline model, during manufacturing process (proof-load)
- Manufactured under strict in-house quality control measures, individually serialized and supplied with a certificate of compliance

Normative references:

Refer to FAA, national standards and applicable local, state and federal requirements for your specific ruling in your jurisdiction.

- **FAA CFR Title 14, Parts 27.865 and 29.865**
- **EASA CS-27.865 and CS-29.865**
- **ASME B30.12-2011**, Handling Loads Suspended from Rotorcraft

Materials:

Rope

Ultra-high molecular weight polyethylene (UHMWPE) Dyneema® fiber (12-strand braid construction) with urethane coating

Protective Jacket

Heavy-duty textured nylon or urethane coated fabric with heavy-duty zipper

Hardware

- Heavy duty stainless steel fused thimbles with master link or alloy pear-shaped ring
- Heavy-duty spool and shackle assemblies

Heat and chemical resistance:



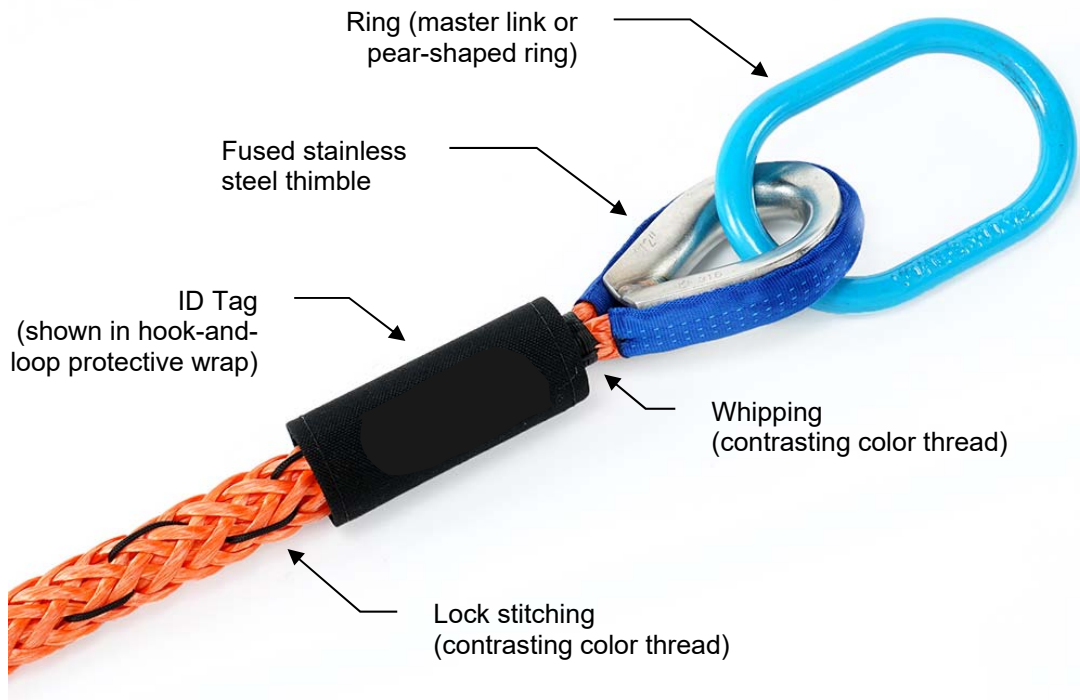
WARNING: UHMWPE (Dyneema®) fiber has a relatively low melting point. Do not subject Bambi longlines to excessive heat.

Heat and Chemical Resistance of UHMWPE fiber (Applies only to rope made of Dyneema® fiber)		
Melting point	140°C -150°C (284°F -302°F)	
Resistance to short-term heat	70°C (158°F)	
UV-Resistance	Excellent	
Resistance to acids		Excellent
Resistance to alkali		Excellent
Resistance to water		Excellent
Aviation jet A fuel (ISO 1817 test liquid F)	RTCA DO160	Excellent
Hydraulic fluid (ISO 1817 test liquid 103)	RTCA DO160	Excellent
Lubricating oil (ISO 1817 test liquid 101)	RTCA DO160	Excellent
Solvents and cleaning fluid (Isopropyl alcohol)	RTCA DO160	Excellent
De-icing fluid (Ethylene glycol)	RTCA DO160	Excellent
Insecticide (Pyrethroid pesticide)	RTCA DO160	Excellent
Fire extinguishant (Protein, Fluoroprotein)	RTCA DO160	Excellent

(Reference: DSM Dyneema® literature)

Heat and Chemical Resistance of Polyamide (Nylon) (Applies to whipping and lock-stitch twine, jacket, end-covers and carry bag)	
Melting point	215°C -260°C (419° -500°F)
Resistance to short-term heat	130°C (266°F)
UV-Resistance	Good
Resistance to alkalis	Good at low concentration
Resistance to acids	Predominantly good
Resistance to petroleum-based products	Good
Resistance to bleaches and solvents	Limited

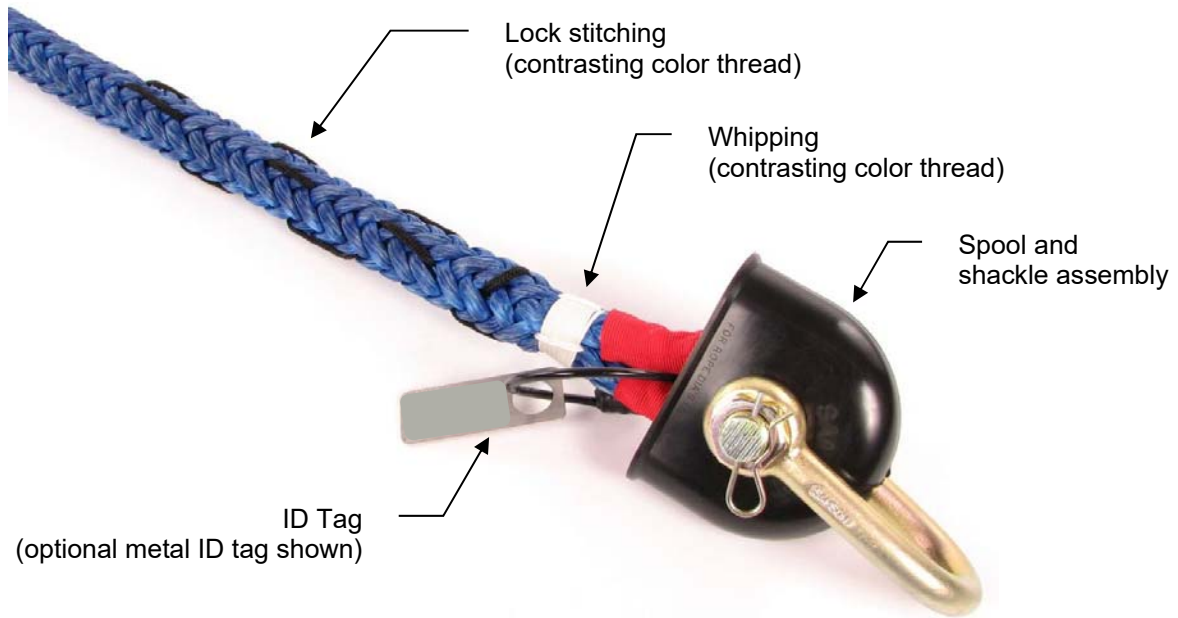
Details of top-end splice with fused thimble, lockstitch, whipping and ID tag:



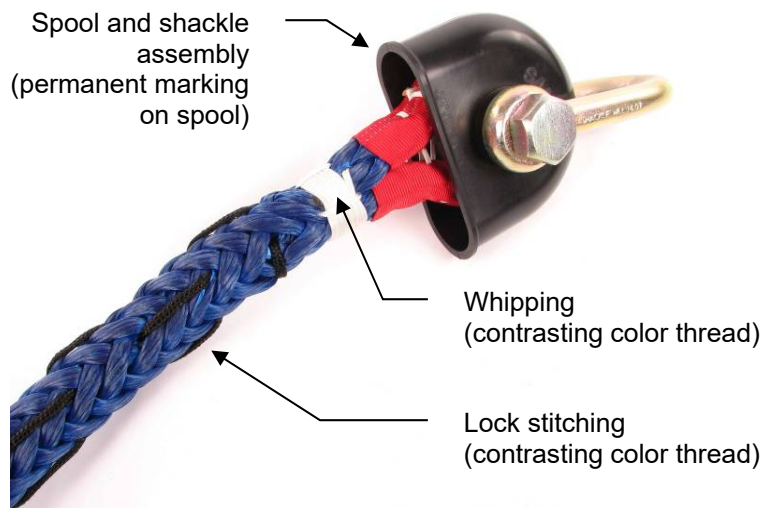
Details of bottom-end splice with marked fused thimble, lockstitch and whipping:



Details of top-end splice with spool and shackle, lockstitch, whipping and ID tag:



Details of bottom-end splice with marked spool, shackle, lockstitch and whipping:



Labelling:

The ID tag must be permanently attached to one end of the longline and be fully legible:



WARNING: Do not allow the ID tag to hang and flap in the wind. Longlines with missing ID tag should be removed from service until they can be identified, and the ID tag is replaced.

Additional features:

Electrical cable: ■ As required for the Bambi Bucket and accessories

Protective Jacket: Available options:
1- Double zipper jacket, gives redundancy in closure system and separates electrical wire(s) from rope but still allows fast and easy inspection of the longline, with integral connection to the top termination (requires one bottom end-cover)
2- Double zipper jacket with external helix to limit vibration of longline at high speed (requires one bottom end-cover)

End-Cover: 2.5 m (8') to 6.1 m (20') zippered bottom end-cover with hook-and-loop cinch strap and reflective band

ID Tag: Printed ID tag protected by hook-and-loop wrap with permanent markings, including:

- Part number
- Description
- Serial number
- Date of manufacture
- Working load limit
- Shelf life limit
- Service life limit

(Note: Refer to bottom thimble or spool for back-up markings of serial number)

Carry Bag: Made of textured nylon or urethane coated fabric, with a document pocket for instructions manual

1.3 ASSEMBLY:

Bambi longlines are shipped pre-assembled. Should you require replacing or removing the jacket, end-covers, electrical cables or rope, follow these instructions to make sure that you install them properly to retain efficient aerodynamic properties.

1.3.1 Double-zipper protective jacket installation:

Make sure you have enough room to lay the longline on a flat and clean surface. Locate the top end of the longline, i.e. the end with the ID tag. Locate the top end of the jacket, i.e. the end with the red UP label.



Open protective jacket and bring all 4 zipper sliders at the top end.



Insert longline top end in the opening of the inner jacket, from the inside and out.



Insert the thimble connector webbing, located inside the outer jacket, through the thimble or the small rope eye (for spool and shackle terminations) and fasten the heavy-duty plastic buckle. A minimum length of 2" (5 cm) of webbing should exceed from the buckle.



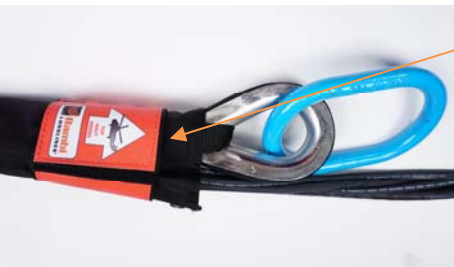
Zip closed the first zipper slider of the inner jacket all the way to the other end. Make sure to place the protective webbing correctly underneath the zipper as you close the zipper. “Park” the zipper slider in the padded slider cover.



Insert electrical wire(s), if applicable, in the opening of the outer jacket, from the inside and out. Secure the wire(s) with the hook-and-loop support straps inside the jackets as required.



Zip closed the second zipper slider of the outer jacket all the way to the other end, and “park” the zipper slider in the padded slider cover. The length of uncovered rope at the bottom end should be at least 30 inches (75 cm) shorter than the end-cover you will install (see section 1.3.2).



Close the zipper at the top end and then close the hook-and-loop cinch strap. If the longline has a metal ID tag, it must be secured underneath the hook-and-loop cinch strap. Zipper slider must be held in place with the hook-and-loop cinch strap.

⚠ WARNING **WARNING: Do not allow the ID tag to hang and flap in the wind**

1.3.2 End-cover installation:



Lay the longline with the installed protective jacket on the open end-cover. The hook-and-loop cinch strap must be towards thimble.



Align the hook-and-loop strips on the outside of the jacket and the inside of the end-cover and press firmly together. The hook-and-loop should overlay on a length of at least 30 inches (75 cm).



Insert the thimble connector webbing, located inside the end-cover, through the thimble or the small rope eye (for spool and shackle terminations) and fasten the heavy-duty plastic buckle. A minimum length of 2" (5 cm) of webbing should exceed from the buckle.



Electric cable(s) should be installed parallel to the longline (not spiraling), must move freely and not go through the thimble connector webbing or the ID tag attachment cord.



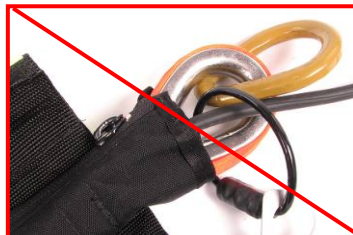
Close the zipper and then close the hook-and-loop cinch strap.



Zipper slider must be held in place with the hook-and-loop cinch strap.



Do not use tape, ties or other material to close or fasten the end-covers and jacket, or to cinch or squeeze rope or electrical wire, as this will impair wire movement



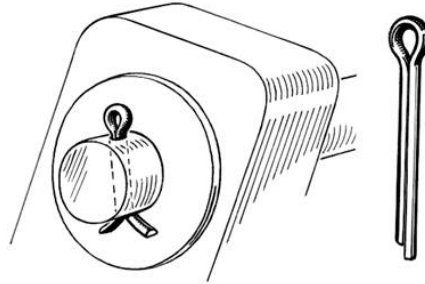
Do not thread the electrical wire through the ID tag attachment cord or master link/pear-shaped ring

1.3.3 Safety pin alternatives for spool and shackle assemblies:

Even though some spool and shackle assemblies are provided with a spring-style safety pin, it is possible to replace this pin by a cotter pin (preferably stainless steel).



Standard spring-style safety pin



Cotter pin replacement option

2. LIMITATIONS

Consider the following application limitations before using this longline:

2.1 WORKING LOAD LIMIT: Refer to the product ID label or the product data sheet for information on the working load limit of a specific Bambi longline, which should never be exceeded. It is up to the user to determine if the working load limit is appropriate for the intended use and conditions of the longline which may have deteriorated over time and as a result of use.

Certain environmental conditions and dynamic loading situations may require the downgrading of the working load limit to take into consideration these factors of critical use conditions.

2.2 ANCHORAGE: Each anchorage point for the longline must be designed, installed and used under the supervision of a qualified person.

2.3 CRITICAL USE CONDITIONS: Do not use a Bambi longline in any of the following conditions:

- Loads are not accurately known
- Operators are poorly trained
- Operating procedures are not well defined
- Inspections are infrequent
- There is a chance of shock loads or accidental dynamic loadings
- It is used at high temperatures
- It may have been exposed to contaminants
- It has been in service for an unknown time period
- It is continually under tension
- It may be subject to sharp bends or excessive wear

2.4 ENVIRONMENTAL 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 contamination, electrical fields, electrostatic discharges, moving machinery, corrosion, gases and sharp edges.

2.5 TRAINING: This longline must be used by persons trained in its correct application and use (see Section 4).

2.6 SERVICE TEMPERATURE LIMITS: The Bambi longlines shall be used and stored in the temperature range between -40°C (-40°F) and +50°C (122°F).

3. SYSTEM REQUIREMENTS



IMPORTANT: Do not modify the original product by altering, adding or removing components, unless approved in writing by SEI Industries Ltd.

3.1 COMPATIBILITY OF COMPONENTS: SEI Industries Ltd. equipment is designed for use with SEI-approved components and subsystems only. Substitution or replacements made with non-approved components or subsystems may jeopardize compatibility of equipment and may affect the safety and reliability of the complete system.

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 size and shape do not cause their gate mechanism to inadvertently open regardless of how they become oriented. Contact SEI Industries Ltd. if you have any questions about compatibility.

3.3 MAKING CONNECTIONS: Only use connectors that are suitable to each application. Ensure all connectors are compatible in size, shape, and strength. Do not use equipment that is not compatible. Ensure all connectors are fully closed and locked.

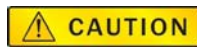
3.4 EXTERNAL CARGO HOOKS AND OTHER CONNECTING HARDWARE: It is the responsibility of the user to ensure that longlines and connecting hardware are compatible with the cargo hook it will be connected to. Refer to cargo hooks operating manual for confirmation. Contact cargo hook manufacturers if you have any questions about compatibility.

3.5 REMOTE CARGO HOOKS AND OTHER REMOTE DEVICES (CAROUSELS, GRAPPLERS, ETC): It is the responsibility of the user to ensure that longlines and connecting hardware are compatible with the remote devices. Refer to the remote devices operating manual for instructions and limitations. Contact the hook or other remote device manufacturers if you have any questions about compatibility.

3.6 SWIVELS: If necessary and when appropriate, use a swivel that is compatible in strength and function with the other external cargo hardware. Refer to the swivel manufacturer's instructions for correct use and limitations.

4. TRAINING

It is the responsibility of the buyer/user to make sure they are familiar with this helicopter external load product and are sufficiently trained in the correct care and use of this equipment. This product must only be used by competent persons. The user must be aware of the operating characteristics, application limits, and the consequences of improper use of this equipment.



IMPORTANT: Gaining an adequate apprenticeship in appropriate techniques and methods of safety is your own responsibility. Inspection training should be repeated on a periodic basis under the supervision of competent persons*.

* Competent person: (OSHA) 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. OPERATION AND USE

Before each use of this equipment, carefully inspect it to assure that it is in serviceable condition. Refer to section 6 for further inspection details. Do not use if inspection reveals an unsafe condition.

Bambi longlines should be kept in their bag or container until they are used and immediately stored back in their bag or container after use.



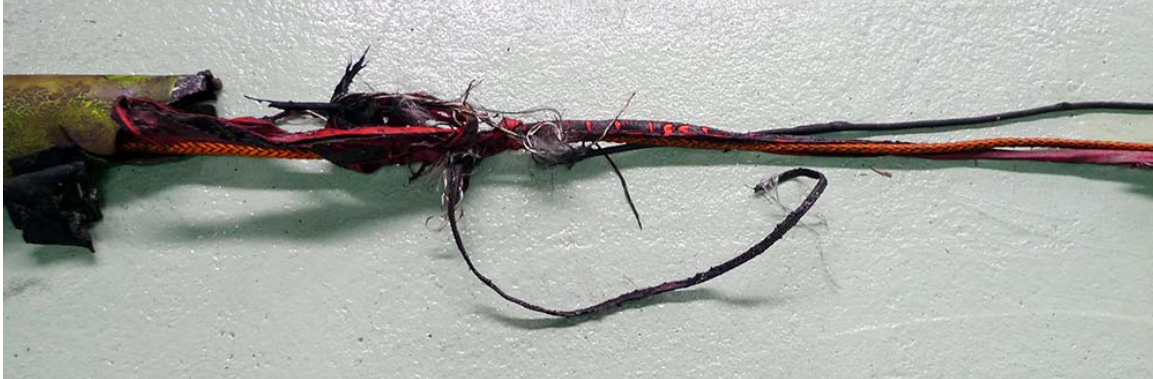
WARNING: Do not alter or misuse this equipment. Consult with a competent person when using this equipment in combination with components or subsystems other than those described in this manual. Use caution when using this equipment around moving machinery, electrical hazards, chemical hazards and sharp edges.

5.1 OPERATIONAL RISKS: Consider all factors that affect your safety at any time during use. The following list gives some important points to consider when planning your system:

- **Anchorage:** Select a compatible and certified anchorage point to attach the longline to. Do not load the longline in any other manner than from approved anchor point straight to load attachment point.
- **Sharp edges:** Avoid working where the longline, subsystem, or other system components will be in contact with, or abrade against unprotected sharp edges. Do not loop the longline around small diameter structural members. If working with this equipment near sharp edges or rough surfaces is unavoidable, protection against cutting must be provided by using a heavy pad or other means over the exposed sharp edge or rough surface (contact SEI Industries Ltd. for additional options).
- **Abrasion:** Take special care to protect your longlines from abrasion. Abrasion damage is the most common cause of early longline retirement. This damage occurs most often when your longline, when under tension, comes into contact with rough or sharp edges, the inside edges of shackles, bollards, or any other potential hazard that might be found in the surrounding environment. Longline jackets will help minimize this problem. Remember, a longline under tension is more susceptible to damage than one that is not.
- **Heat and friction:** Longlines that are made of Dyneema® fiber have a relatively low melting point. Avoid any excessive abrasion which may cause melting or glazing of the fibers and avoid contact with any source of direct heat (motors, mufflers, welding equipment, grinders, etc.)
- **Chemicals:** Although the Dyneema® fiber used in Bambi longlines offers excellent chemical resistance, great care should be taken in order to minimize exposure. Protect your longline from exposure to harsh chemicals. Do not allow your longline to come in contact with any compounds containing acids or alkalines, oxidizing agents or bleaching compounds. Be especially careful to avoid contact with battery acid and acid fumes.
- **High-temperature (fire-fighting):** Dyneema® fiber has a relatively low-melting point and should be used with precaution when doing longline work in fire-fighting operations. Make sure that service temperature limits (refer to section 2) are never exceeded.

- **Performing underslung operations near high-voltage power lines:** Be extremely careful when operating a longline near powered (energized) electrical lines to prevent flashover/electrical arc. Refer to a competent person to validate work method in these situations.

Example of a longline with electrically-activated remote hook and electrical wire, damaged by a phase to ground flashover between longline and 132kV live circuit line:



- **Protective jacket:** If the longline fabric protective jacket is defective or becomes worn or damaged, there is a risk that it could open while flying. The opened and unattached jacket may create a “wing” effect that could cause the longline or remnant parts of the jacket to fly in the tail rotor. As with any components of a longline, the protective jacket must be inspected before each use and replaced if worn or defective. It should also be installed properly as per manufacturer’s instructions. Flying speed when using a longline should be adjusted accordingly, and if the pilot perceives a problem, he should slow down immediately, visually identify the problem and land securely as soon as possible.
- **Static discharge:** Static discharge along the longline is a common occurrence, particularly in low humidity conditions. Flying dust, sand or snow can also increase static build-up. Larger helicopters as well as carrying large conductive objects (loads) will also develop more static build-up. It is a good practice to touch ground with the helicopter, longline or cargo before on-ground personnel is allowed to come in contact with the load, or to use a static discharge wand. If the ground is covered with snow, the use of a grounding rod may be necessary to ground the helicopter.

 **WARNING:** *Static electricity is dangerous and may cause injury or death.*

- **Accidental dynamic loading:** Nearly all helicopter external load work is subject to dynamic loading to some degree. Whenever a load is picked-up, stopped, moved or swung, there is an increased force due to the acceleration or dynamics of the movement. The more rapidly or suddenly such actions occur, the greater the forces. Your longline is not designed to absorb the energy of an accidental dynamic loading. Accidental dynamic loading may occur when, in extreme cases, the forces sustained by the rope may be two, three or even more times the static load (ex: When picking up a lift on a slack longline, using a longline to stop an accidentally falling object, if the longline gets snagged, etc.). Care must be taken to avoid this. Loads should be handled slowly and smoothly to minimize the dynamic load. If an accidental dynamic loading does occur, retire your longline! Users should also be aware that dynamic effects are greater on low elongation ropes such as Dyneema® fiber ropes, and that dynamic effects are more significant on a short longline as opposed to longer ones.

 **WARNING:** *“Slingshot” loading (intended dynamic loading) of the longline may cause premature failure of the longline and connecting hardware.*

- **Recoil (snap-back) effect:** Even though rope made of Dyneema® fiber has a minimal risk of dangerous snap-back (ref. DSM Dyneema® documentation), combination of a longline made of Dyneema® fiber with protective jacket, protective end-covers, electrical wires, hydraulic hoses and other accessories might affect recoil properties. *Recoil is the phenomena whereby the broken ends of a tensioned rope draw back rapidly after break. This may also be referred to as “snap-back”.*



WARNING: *When using longlines, there is always a risk of main or tail rotor strike if the longline, connected accessories or load fail during transport.*

- **Longline ditching (jettisoning):** When disconnecting the longline from the helicopter in flight, do so from a maximum hovering height of 1.5 m (5 ft) above soft ground, unless your SOP (Standard Operating Procedures) prevents you from doing so. Dropping the longline from a greater height or on a hard surface will permanently damage the longline and its components and may be hazardous to ground personnel.
- **Landing:** Plan your landing zone to allow room so the helicopter will not land on the longline.
- **Avoid stepping or passing over your longline:** Besides the possibility of cutting the longline, stepping or passing over a longline will grind dirt into the strands and increase the possibility of internal abrasion which may cut filaments and lead to premature wear or longline failure.
- **Personal protective equipment:** Ground personnel should always be wearing protective glasses, helmet, gloves and other required personal protective equipment specific to the task when manipulating a longline, remote hook or external cargo load.
- **Torsion fatigue:** The repeated or excessive twisting of a longline will cause internal abrasion and premature wear, and will decrease the longline’s strength. Always ensure that there is no twisting or torsion of the longline and use appropriate swivels as required.
- **Knots:** A knot in a longline may reduce its strength significantly. Make sure there are no knots in the longline before using it. If a knot was made in the longline and the longline is subsequently loaded, then the longline must be removed from service, the knot must be removed, and a proper inspection must be made by a competent person before the longline is put back in service.



WARNING: *Never use a longline with knots.*

- **High-cycle lifting:** Be extremely vigilant that every hook-up of the load is secure and that the crew does not become complacent due to the repeated nature of the work. Also be aware that the longline will age more rapidly and may necessitate being withdrawn from service earlier (refer to section 6 of this manual).
- **Multiple loads:** If and when permitted, extreme care should be practiced whenever multiple loads are carried to avoid twisting, spinning, torsions, abrasion, friction, etc.
- **Flying speed:** Adjust helicopter flying speed according to load carried.



WARNING: *The helicopter pilot should exercise extreme caution when flying with an unweighted longline. It is the pilot’s responsibility to understand and control the dynamics of flying a helicopter with a weighted or unweighted longline.*

- **Floor cut-out (*Hell hole*):** For helicopters (ex. Mi-8, Mi-17) with an internal hook and a cut-out in the floor (also known as *Hell hole*), unless there is a counter-indication preventing this, the user (under guidance of a competent person) should install an extension lanyard made of steel cable of sufficient strength, which will pass through the cut-out hole, and make a compatible connection to the longline under the helicopter.

Example of a steel lanyard through a cut-out hole on a Mil Mi-171:



- **Kite lines:** In certain parts of the world, kite fighting is a popular activity, which involves cutting an opponent's kite line. Kite fighters will coat their kite lines with abrasive and cutting material such as ground glass. We have had reports of helicopter longlines being cut by kite lines, and as such, operators must be careful not to fly in the line of such kites.

Example of a heavy-lift longline cut by a kite line:



6. INSPECTION



WARNING: Improper care and use of your Bambi longlines can result in serious injury or death. Never use these products for any other than their intended purpose.

This document may only be used by persons who are competent in the inspection of synthetic longlines in accordance with the recommendations found herein this manual, which is provided with each longline.

If the user notices any other fault that isn't stated in this manual and that he/she feels might compromise the mechanical integrity of the longline, then its use should be discontinued, and SEI Industries Ltd. should be contacted for further instructions.

6.1 INSPECTION FREQUENCY: It is important to continually monitor the condition of your longline by doing regular inspections.

There are three types of mandatory inspections:

- **Initial inspection** performed on a new longline prior to using it for the first time.
- **Pre-use inspection** performed before each use of the longline.
- **Formal inspection** performed at least once per year (or more frequently if deemed necessary due to intensive use, unknown use conditions, etc.).








6.2 INSPECTION CRITERIA: Longline inspection should be performed in a clean and well-lit place. The visual and tactile inspection should be done on the entire length and surface of each longline that is to be inspected.

It is expected that a longline will be left in normal service if no significant damage is identified. However, when a longline is considered to be damaged, in accordance with the inspection and evaluation criteria, a decision must be made to repair, downgrade, or retire the longline based on the results of inspection.

If any defect is found which can adversely affect the mechanical integrity of the product during or after inspection, it shall be removed from service, examined and repaired (if possible) exclusively by SEI Industries Ltd., before it can be returned to service. A Bambi longline that cannot be repaired shall be permanently removed from service.

6.2.1 IDENTIFICATION LABEL INSPECTION: The identification label must be permanently attached to the longline and be fully legible. If the longline has a steel ID hangtag, it should be inspected for sharp edges or other damages that could eventually cut rope fibers, should not be left to hang loosely, and should be tucked inside the end-cover after inspection.

6.2.2 ROPE INSPECTION: Every portion of the rope should be inspected visually and manually for defects or damages. The following list is not exhaustive and does not exclude the possibility of other types of longline degradation, contamination and/or manufacturing defects.

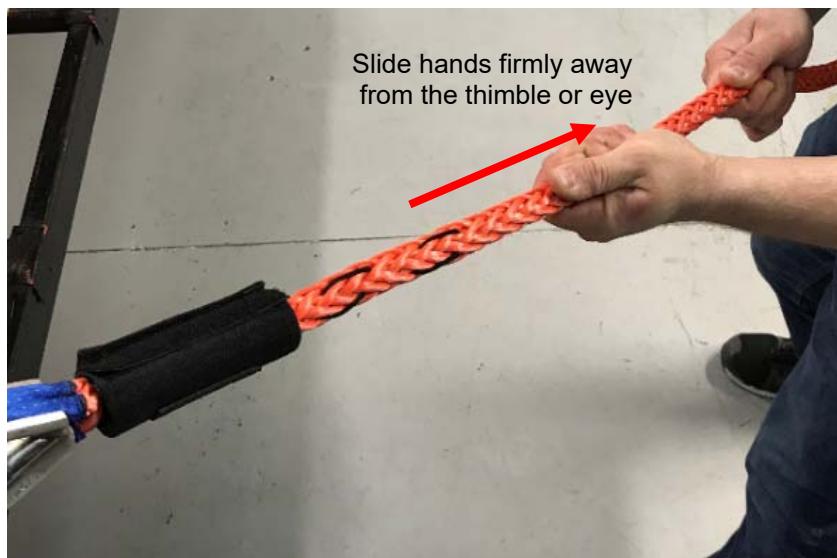
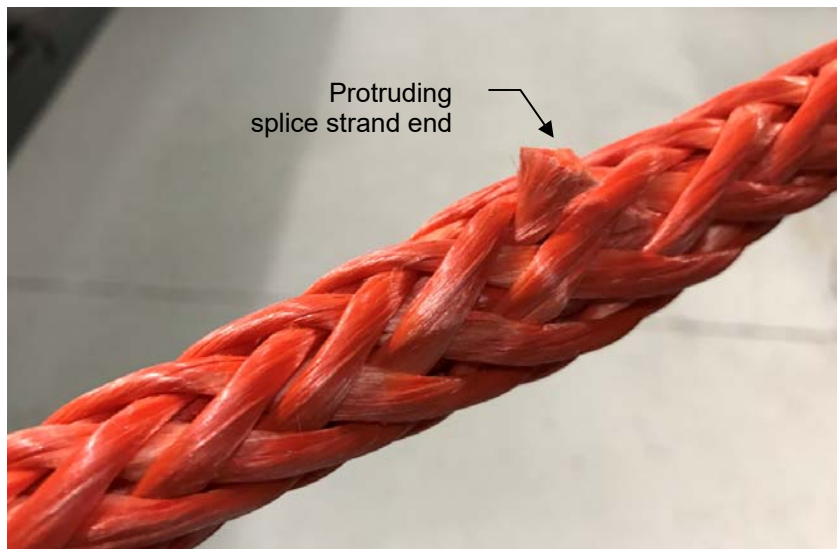
	<p>NEW LONGLINE AND LONGLINE HISTORY: A sample of unused longline is required at all times for comparison to other longlines in use, along with the longline's inspection record and history. SEI Industries Ltd. supplies a sample of new rope in a sealed pouch with each longline. Keep this rope sample as it is essential to the proper and complete inspection process.</p>
	<p>EXCESSIVE ABRASION: A longline showing excessive external abrasion and/or any internal abrasion must also be removed from service. Light external abrasion is acceptable if no internal abrasion is observed.</p>
	<p>CUT STRANDS: Longlines made of 12-strand rope that have cut strands should be retired from service.</p> <p>⚠ CAUTION <i>IMPORTANT: The splice section at each end of the longline may sometimes have protruding splice strand ends, i.e. cut ends of rope spread over the final third of the splice to create a tapered section. These could appear between 18 inches and 96 inches (depending on the rope diameter) from the spliced eye. This is normal and not a defect, but a result of the splice section being relaxed. This is not to be confused with an actual cut rope strand. Refer to section 6.2.3 for more details.</i></p>
	<p>MELTING OR GLAZING: Rope showing melting or glazing caused by excessive heat, which can be the result of intensive abrasion, must be retired from service.</p>
	<p>DISCOLORATION: A change in the color of the fibers may be caused by exposure to chemicals or heat. Determine the source and if the longline has been in contact with damaging chemicals or heat, remove it from service.</p>
	<p>COMPRESSIONS OR DIAMETER INCONSISTENCY: If the rope exhibits fiber-set due to compression, visible in the area where the rope is loaded, it often has a slight sheen on the contact area. This condition is often corrected by flexing the rope.</p>
	<p>EXTERNAL AND INTERNAL ABRASION: Pictures show examples of moderate external abrasion. If moderate external abrasion and internal abrasion of the fibers are observed on the same rope, then the longline must be retired from service.</p>

6.2.3 SPLICE INSPECTION: Splice terminations at each end of the rope must be carefully inspected. The spliced eyes should not have opened and allow the thimbles to be easily removable. Inspect the lockstitch and make sure the thread is not broken or frayed. Verify the whipping and make sure that the sewing thread is not cut.



IMPORTANT: *The splice section at each end of the longline may sometimes have protruding splice strand ends, i.e. cut ends of rope over the final third of the splice to create a tapered section during manufacturing. These could appear between 18 inches and 96 inches (depending on the rope diameter) from the spliced eye. This is normal and not a defect, but a result of the splice section being relaxed. This is not to be confused with an actual cut rope strand.*

These splice strand ends should normally disappear inside the rope when the longline will be loaded. The user can also “milk” the splice by attaching the end of the longline to a solid anchor point and sliding his/her hands firmly down the rope (away from the eye) to tension the outer braids of the splice. If protruding ends do not disappear this way, they can be pushed back inside the rope.



6.2.4 HARDWARE INSPECTION: All hardware components used in conjunction with longline products should be inspected. All hardware (thimbles, spool and shackle assemblies, rings) should not show any damage, deformation, unusual wear, sharp edges or corrosion.

Hardware components that are damaged must be replaced, if possible, or the longline must be retired from service.

6.2.5 PROTECTIVE JACKET AND COVERS INSPECTION: The protective jacket and end-cover should be free of tears or other damages. Seams should be inspected for loose or broken thread. Zippers should close and open properly (all teeth should engage). All jacket and end-cover attachment straps and buckles should be properly attached as per the assembly instructions of this manual (section 1.3). Longlines must not be used without properly installed jackets and covers that are in good working condition. If required, contact SEI Industries Ltd. for replacement jackets and covers for your specific longline.

6.2.6 ELECTRICAL COMPONENTS INSPECTION: Electrical cable(s) and plugs should be inspected, and damages (cut or stripped cable, broken plugs) must be repaired or components replaced.

6.3 INITIAL INSPECTION: Every longline, prior to being put in service, must be inspected to make sure it is complete and has not been damaged during transit.

6.3.1 INITIAL INSPECTION PROCEDURE:

- A. Make sure that your longline is complete as ordered (i.e. protective end-cover, protective jacket, ring, electrical wire, electrical terminations, etc., as applicable), and that the provided rope sample for inspection purpose is present.
- B. Do a visual inspection of the complete longline while removing it from its bag to make sure it has no apparent damages.
- C. Check the longline's ID tag and make sure it matches the info on the provided Certificate of Compliance.
- D. Complete the provided (or your own) inspection logbook with the longline's part number, serial number, date of manufacture, date of purchase and date of first use.
- E. Validate that the copy of the user instructions manual provided with your longline is the latest revision (consult the SEI Industries Ltd. website) and keep it with the longline.

6.4 PRE-USE INSPECTION: The pre-use visual and tactile inspection must be performed before each use of the longline by the user as long as this person is trained and qualified to identify damages according to this manual.

Use is defined as from the moment a longline is attached to the helicopter hook until the time when it is removed from the hook to terminate a continuous cycle of external load lifts. If these recommendations are not applicable due to the nature of the work being done, then the user may refer to a competent person to establish their own pre-use inspection frequency.

Visual and tactile inspection is a good indicator of rope condition and should always be done prior to use. Look for signs of damage such as scratches, cuts, abrasions, melting, etc. (refer to section 6.2).

6.4.1 PRE-USE INSPECTION PROCEDURE:

- A. Make sure you have enough room to lay the longline on a flat and clean surface, as it should be thoroughly inspected both visually and manually over its entire length.
Inspect the complete longline and accessories as per inspection criteria (refer to section 6.2).
The protective jacket should be opened to expose the longline to do a visual inspection of the rope.

- B.** If the inspection is satisfactory, and none of the retirement criteria (refer to section 6.6) are observed, then the longline may be used after the protective jacket and other components have been re-installed properly (refer to section 1.3).

If the inspection is unsatisfactory, the longline should not be put in service. It should be tagged accordingly and either be inspected formally (refer to section 6.5), sent to SEI Industries Ltd. for repair/refurbishing or destroyed if it appears to the inspector that it is beyond repair or meets the retirement criteria (refer to section 6.6). A note in the logbook should be made accordingly. In the case of loss or destruction, please notify SEI Industries Ltd. with the serial number identification so that an update can be made to its logbook of manufactured products.

6.5 FORMAL INSPECTION: Every Bambi longline and its documentation must be inspected at least annually by a competent person (other than the user or person who performs the pre-use inspections). Certain jurisdictions require testing at 6 months or other intervals, and the user may determine a shorter interval depending on usage made, environment of use, etc. Additional inspection or testing criteria may be required in order to meet internal policies.

6.5.1 FORMAL INSPECTION PROCEDURE:

- A.** During formal inspections, the inspector should have all the significant information pertaining to the longline being inspected, such as:
- The manufacturer's product recommendations
 - Knowledge of whether a recall has been made on the product
 - A sample of the longline rope to be inspected that has yet to be used
- B.** Make sure you have enough room to lay the longline on a flat and clean surface, as it should be thoroughly inspected both visually and manually over its entire length. Inspect the complete longline and accessories as per inspection criteria (section 6.2). The protective jacket should be opened to expose the longline to do a visual inspection of the rope.
- C.** If the inspection is satisfactory, and none of the retirement criteria (refer to section 6.6) are observed, then the longline may be used after the protective jacket and other components have been re-installed properly (refer to section 1.3).
If the inspection is unsatisfactory, the longline should not be put in service. It should be tagged accordingly and either be sent to SEI Industries Ltd. for repair/refurbishing or destroyed if it appears to the inspector that it is beyond repair or meets the retirement criteria (refer to section 6.6). A note in the logbook should be made accordingly. In the case of loss or destruction, please notify SEI Industries Ltd. with the serial number identification so that an update can be made to its logbook of manufactured products.
- D.** Complete the inspection form and inspection log sheet provided at the end of this manual (or use your own inspection logbook that minimally contains the inspection requirements found in this manual).

6.6 RETIREMENT CRITERIA:

When to retire your longline: The following is a list of general guidelines that can assist you in deciding when to retire a longline.

- **Age:** The longline has exceeded its shelf and/or service life limits.
- **Overuse:** The longline is simply “worn out” from use.
- **Abrasion:** Excessive external abrasion and/or any internal abrasion is observed.
- **Fiber strands cut:** The longline is displaying cut strands.
- **Melting or glazing:** Caused by heat sources or intensive abrasion.
- **Dynamic loading:** Longline that has been subjected to accidental dynamic loading.
- **Overloading:** Longline that has been subjected to the kind of overload for which it was not designed, such as towing or lifting heavy objects beyond the working load limit.
- **Chemical contamination:** Unless the chemical is specifically known to be harmless, it should be considered a contaminant.
- **Texture inconsistency:** Soft, mushy places or hard spots (localized or over an extended area).
- **Diameter inconsistency:** A visible change in diameter, localized diameter reduction, flat area, lumps and bumps in longline.
- **Loss of confidence:** The longline was used by persons who you suspect may not have taken proper care of it.
- **Modifications:** The longline was modified or altered without the written consent of SEI Industries Ltd..
- **Identification:** The information on the age and working load limit of the longline is no longer present or legible.



IMPORTANT: *A longline is not as valuable as human life. If for any reason you do not feel comfortable using your longline, retire it from service immediately.*

7. MAINTENANCE AND STORAGE

7.1 CLEANING: A dirty longline should be cleaned by hand in cold water with small amounts of mild soap only, rinsed thoroughly and then air-dried in a cool ventilated dark room. Do not use detergents, solvent based cleaners, bleach or bleach substitutes and do not dry the rope in a dryer. An excessive buildup of dirt, paint, diesel, fuel, hydraulic oil, etc. may prevent the longline from working properly, and in severe cases degrade the longline to a point where it weakens and should be removed from service. More information on cleaning is available from SEI Industries Ltd. if required.

7.2 STORAGE: Store the longline in its transport bag, in a cool, dry, clean environment out of direct sunlight. Although UHMWPE (Dyneema®) fiber is very resistant to chemical immersion, avoid areas where chemical vapors may exist. When storing the longline, make sure that it is not compressed or exposed to damage from sharp or heavy objects, batteries, chemical and acid fumes. Thoroughly inspect the longline after extended storage.

7.3 REPAIRS: Repairs and other servicing procedures must only be completed by SEI Industries Ltd.. Do not attempt to disassemble the splices or mechanical terminations.

8. LIFETIME

8.1 SHELF AND SERVICE LIFE: The following best practice recommendations for Bambi longlines apply only on the condition that regular inspections prior to each use do not reveal an anomaly. The actual lifetime depends on the intensity and the frequency of use as well as the environment. An exceptional circumstance might limit the product lifetime to a single use. A longline that was not formally inspected with documented results at least once per year should be removed from service and replaced, unless stated otherwise by the manufacturer after a thorough inspection. **Service life begins when the longline is used for the first time. Log book must be updated with date of first use. In the absence of this written information, manufacturing date must be considered as date of first use.**

	Max. shelf life	Max. service life	Max. combined life (shelf + service)
Bambi longlines with master link, manufactured <u>after</u> Sept. 15th, 2022	10 years after manufacturing date	10 years	10 years
Bambi longlines manufactured <u>before</u> Sept. 15th, 2022	6 years after manufacturing date	4 years	6 years
Always refer to shelf and service life info on the longline's ID tag Longlines without an expiry date should be retired no later than 4 years after their manufacturing date			



IMPORTANT: Longlines are considered on-condition throughout their shelf and service life and must pass inspections and maintenance recommendations found in this user manual.

9. INCIDENT/FAILURE REPORTING

In the unfortunate situation that a Bambi longline is involved in an incident or a failure, please notify SEI Industries Ltd. immediately so that prompt corrective measures can be taken.

10. WARRANTY

SEI Industries Ltd. (the company) agrees to grant a warranty for a period of one year from the date of purchase of Bambi bucket systems on the following conditions:

- a) The company's sole obligation under this warranty is limited to repairing or replacing, at the company's sole discretion, any product shown to be defective.
- b) The company's products are not guaranteed for any specific length of time or measure of service, but are warranted only to be free from defects in workmanship and material for a period of one year to the original purchaser.
- c) To the extent allowable under applicable law, the company's liability for consequential and incidental damages is expressly disclaimed. **The company's liability in all events is limited to and shall not exceed, the purchase price paid.**
- d) This warranty is granted to the original purchaser of Bambi bucket systems and does not extend to a subsequent purchaser or assignee.
- e) The company must receive notification in writing of any claims of warranty from the original purchaser which must give details of the claimed defect in the product.
- f) Where the original purchaser is claiming under warranty, the product must be returned to the company for inspection with all transportation and duty charges prepaid.
- g) The warranty does not extend to any product that has been accidentally damaged, abraded, altered, punctured, abused, misused or used for a purpose which has not been approved by the company.
- h) This warranty does not apply to any accessories used with the product that are not supplied by the company and any warranty on such accessories must be requested from the manufacturer or dealer of the accessories.
- i) In the event the original purchaser does not give notice of a warranty claim, within one year of the original purchase of the product, it is understood that the purchaser has waived the claim for warranty and the purchaser and/or any subsequent purchaser must accept the condition of the product, without warranty.
- j) Any technical information supplied by the company regarding the product is not a condition of warranty but rather is information provided by the company to the best of its knowledge.
- k) There are no implied warranties nor is there any warranty that can be assumed from any representation of any person, except the company itself.

Exclusions

- l) This warranty is void if the product is not installed, used and/or maintained in accordance with the operations manual supplied by SEI.
- m) All Bambi buckets are designed and manufactured with substantial safety margins. It is the responsibility of the user to ensure that the bucket is maintained to a safe standard.



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FORMAL INSPECTION FORM FOR BAMBI LONGLINES

Model #: _____ User identity (company)
 Serial #: _____ Name: _____
 Length: _____ Address: _____
 WLL: _____

Age and Service Life Information

Date of manufacture:	Date of purchase:	Date of first use (put in service):
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Part A - Information Check

	Yes	No	Comment
Do you have the latest product documentation (User instructions manual)?			
Was there a recall on this product?			
Do you have a new rope sample for comparison?			

Part B - Visual and Tactile Inspection

Refer to section 6.2 INSPECTION CRITERIA of the User Instructions Manual

Part to inspect	Verify	Pass	Fail	Comment
Identification label	Permanently attached to longline, fully legible, no sharp edges (steel ID hangtag)			
Rope	Excessive abrasion, cut strands, melting, glazing, discoloration, compressions, external/internal abrasion			
Splices	Spliced eye tight on thimble, lockstitch thread not broken, whipping thread not cut			
Hardware (thimbles, spool/shackle, rings, hooks)	Damages, sharp edges, corrosion, incorrect shape, cracks, nicks, gouges, chemical damages			
Protective jacket and covers	Tears, broken seams, zipper and hook-and-loop functionality, straps and buckles condition			
Electrical components	Cut or stripped electrical cable(s), broken plugs			

Part C - Inspection Conclusion

Refer to section 6.6 RETIREMENT CRITERIA of the User Instructions Manual

Criteria	Verify	Pass	Fail	Criteria	Verify	Pass	Fail
Age	Shelf and/or service life limit			Chemical contam.	Exposed to harmful chemicals		
Overuse	Signs of overuse			Texture inconsist.	Soft, mushy or hard spots		
Abrasion	Excessive external and/or any internal			Diameter inconsist.	Change in diameter of rope		
Fiber strands cut	No cut strands			Loss of confidence	Not properly taken care of		
Melting /Glazing	Caused by heat or abrasion			Modifications	Modified by other than SEI		
Dynamic loading	Accidental dynamic loading			Identification	ID tag fully legible		
Overloading	Loading beyond WLL						
Verdict:	The product is fit to remain in service			The product is unfit to remain in service			

Part D - Inspector Identification

Name: _____	Signature: _____
Company: _____	Title: _____
Date of inspection: _____	Date of next inspection: _____





FORMAL INSPECTION LOG SHEET FOR BAMBI LONGLINES

Model #: _____ **User identity (company)**
 Serial #: _____ Name: _____
 Length: _____ Address: _____
 WLL: _____

Formal Inspection and maintenance log		Note: Each log entry should have a corresponding inspection form	
Inspection Date	Inspection Items Noted	Corrective Action	Maintenance Performed
Approved By: _____	Verdict: Fit <input type="checkbox"/> Unfit <input type="checkbox"/>		
Approved By: _____	Verdict: Fit <input type="checkbox"/> Unfit <input type="checkbox"/>		
Approved By: _____	Verdict: Fit <input type="checkbox"/> Unfit <input type="checkbox"/>		
Approved By: _____	Verdict: Fit <input type="checkbox"/> Unfit <input type="checkbox"/>		
Approved By: _____	Verdict: Fit <input type="checkbox"/> Unfit <input type="checkbox"/>		
Approved By: _____	Verdict: Fit <input type="checkbox"/> Unfit <input type="checkbox"/>		
Approved By: _____	Verdict: Fit <input type="checkbox"/> Unfit <input type="checkbox"/>		
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Approved By: _____	Verdict: Fit <input type="checkbox"/> Unfit <input type="checkbox"/>		
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