USER INSTRUCTIONS MANUAL

Document # 091020E
Revision 13
May 2021

This document contains 42 pages

⚠ WARNING

ORIGINAL INSTRUCTIONS - UNCONTROLLED IF PRINTED
IMPORTANT: Make sure this user instructions manual is the latest version available.
Consult the Barry website at www.barry.ca to view document revisions,
important updates and other notices.

Cordages Barry Ltd.
6110 boul. des Grandes Prairies
Montréal (Québec) Canada H1P 1A2
T. 514.328.3888, F. 514.328.1963
1.800.305.2673 (Canada / USA)

CE EC Machinery Directive 2006/42/EC

Congratulations on your purchase of a Barry Quality Safety Product!

Our philosophy at Barry is to offer only best quality in products. We hope that you will be completely satisfied with this product and wish to thank you for choosing Barry. We invite you to send in your comments to help us to continue improving our products and services.

REVISION HISTORY

Revision	Sections affected	Changes	Date
1	All	----------	Feb. 10, 2010
2	Title, Warnings, 1.3, 6 and 7.7	----------	June 9, 2010
3	Title, 1.1, 1.3, 1.4, 3.6, 4.1, 6 and 12	----------	Oct. 14, 2010
4	Title, Revision history, Warnings, 1.4, 7.5 and 8	----------	Dec. 8, 2010
5	Title, 1.3 and 1.4	----------	Feb. 14, 2011
6	1.2, 1.3, 1.4.2, 3, 6, 7.1, 7.4, 7.5, 7.9, 9, Inspection form	----------	June 22, 2011
7	1.1, 1.3, 1.4, 5, 6, 8, 10, Inspection form and log sheet	----------	June 21, 2012
8	1.1, 1.2, 1.3, 1.4, 5.1, 6.5.2, 6.6, 7.2, Inspection form	Applications updated, purpose modified, trademark references modified, specification highlights updated, standards conformity added, materials updated, jacket and end-cover installation modified, weighted end-cover installation instructions added, operational risks updated (knots section added), rope inspection pictures replaced or added, retirement criteria for extruded jacket added, inspection form updated	Nov. 5, 2013
9	All	All sections updated with dielectric longline specific information	July 10, 2017
10	1.2, 1.3.5, 2.1, 5, 6.5, 7, 8.1, Inspection form	BLLNDR-H specifications added, electrical testing standards, rope inspection criteria added, dielectric inspection and testing updated, cleaning and storage methods updated, lifetime added for BLLNDR-H	May 3, 2018
11	6	Inspection, Maintenance	Oct. 25, 2018
12	1.2, 6.2.2, 6.5.2, 6.6, 8, inspection form	Standards references updated, materials and images updated, rope inspection criteria updated, shelf and service life updated	Feb. 1, 2020
13	Title, 1.1, 1.2, 1.3.4, 2.6, 4, 5.1, 6.2.2, 6.2.3, 8	CE information added, model number listing, normative references updated, dielectric use warnings updated, splice inspection updated, shelf and service life updated	May 6, 2021

TABLE OF CONTENTS

Revision history 3

Warnings and important notices 5

Description of Barry longlines 6

Limitations 22

System requirements 23

Training 23

Operation and use 24

Inspection 28

Maintenance and storage 36

Lifetime 38

Incident/failure reporting 38

Warranty 38

Formal inspection form 41

Formal inspection log sheet 42

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:

WARNING

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.

CAUTION

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

This symbol indicates a subject that applies to work near or on live electrical conductors (live line work). Extra caution must be taken when doing live line work.

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

CAUTION ***IMPORTANT: This manual contains information and instructions specific to Barry Helicopter Longlines only. Make sure this manual is the latest version available. Consult the Barry website at www.barry.ca to view document revisions, important Updates and other notices.***

CAUTION ***IMPORTANT: Barry has a policy of continuous improvement and reserves the right to update product or components without prior notice.***

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

WARNING ***WARNING: This product is designed for underslung helicopter external load operations 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 Barry Cordage Ltd.***

CAUTION ***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.***

CAUTION ***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 manual is readily available with the product. Refer to Barry website to obtain valid version to print.***

CAUTION ***IMPORTANT: It is the responsibility of the user to document and maintain a product use, inspection and maintenance logbook. Barry 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 BARRY HELICOPTER LONGLINES

1.1 APPLICATIONS:

This manual applies to following Barry helicopter longline and short line models:

Model number	Product name
BLL	Helicopter Longline (Non-Wired)
DLL	Helicopter Longline (Wired)
BLH	Heavy-Lift Helicopter Longline (Non-Wired)
DLH	Heavy-Lift Helicopter Longline (Wired)
BSLR / BSLRH	Helicopter Short Line
BLLNDR	Barry D.E.W. Line® Dielectric Helicopter Longline
BLLNDR-H	Barry D.E.W. Line® Dielectric HEC Longline

Example of typical part # DLL-100-4500-Z:

- DLL = Longline model number
- 100 = Length in feet
- 4500 = WLL in pounds (lb)
- Z = Protective jacket model

Barry longlines are designed for Class B, C or D 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 cargo nets, underslung loads, airborne survey instruments, aerial fire suppression and other non-human external cargo loads (NHEC).

Certain Barry longline models may also be used for Human External Cargo (HEC) operations, also known as Class D, Personnel Carrying Device System (PCDS), Human External Transport System (HETS) or short-haul rope, only if local regulations allow it, and the operator can substantiate this through analysis and testing by qualified persons. The Barry D.E.W. Line® Dielectric HEC Longline (# BLLNDR-H) is designed to be integrated as part of a PCDS, STC or LSTC for human external cargo, but it does not consist of a complete STC package, and its use may be limited by regulations under certain jurisdictions.

⚠ WARNING ***WARNING: Not all Barry longlines are designed for use as Human External Cargo (HEC). Contact Barry for specific information on such applications.***

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.

The Barry D.E.W. Line® Dielectric Helicopter Longline is the only product Barry recommends for use in or near energized fields or for de-energized work on electrical apparatus (refer to section 5.1).

⚠ WARNING ***WARNING: Not all Barry longlines are designed for use near energized power lines. Induction risks are a concern even when outside limit of approach if the longline is conductive. Any synthetic rope could be considered conductive due to moisture and contamination. Wet or contaminated ropes that are outside the limits of approach can still conduct electricity and burn up.***
Braided rope made of HMPE, Liquid Crystal Polymer (LCP), Aramid or any other synthetic fiber (whether covered or not by a fabric jacket or any braided material) will become conductive once exposed to humidity and/or dust particles, dirt or other contaminants.

1.2 SPECIFICATIONS:

Highlights:

- Each longline is subjected to a load of 1 to 2 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:** Supported by Airworthiness Analysis
- **EASA CS-27.865 and CS-29.865:** Supported by Airworthiness Analysis
- **EC Machinery Directive 2006/42/EC:** CE marking indicates product conformity with Machinery Directive 2006/42/EC, supported by Airworthiness Analysis to requirements of EASA CS-27.865 and 29.865
- **ASME B30.12-2011,** Handling Loads Suspended from Rotorcraft
- **ASTM F1701-12,** Standard Specification for Unused Rope with Special Electrical Properties
- **IEC 62192 Edition 1.0 2009-02,** Live Working – Insulating Ropes

Longline type	Diameter	WLL	Conforms to							
			FAA CFR Title 14 Parts 27 & 29	EASA CS-27 & CS-29	CE 2006/42/EC	ASME B30.12-2011	ASTM F1701-12		IEC 62192:2009	
							Wet	Dry	Wet	Dry
Standard Longline (# BLL, DLL, BSLR, BSLRH)	<1/2″ (13 mm)	<4500 lb	✔	✔	✔					
	≥1/2″ (13 mm)	≥4500 lb	✔	✔	✔	✔				
Heavy-Lift Longline (# BLH, DLH)	≥7/8″ (22 mm)	≥11500 lb	✔	✔						
Barry D.E.W. Line® Dielectric Longline (#BLLNDR-3900)	5/8″ (16 mm)	3900 lb	✔	✔	✔	✔	✔	✔	✔	✔
Barry D.E.W. Line® Dielectric Longline (#BLLNDR-5000)	5/8″ (16 mm)	5000 lb	✔	✔			✔	✔	✔	✔
Barry D.E.W. Line® Dielectric HEC Longline (#BLLNDR-H)	5/8″ (16 mm)	1300 lb	✔	✔		✔	✔	✔	✔	✔

Electrical test results of Barry D.E.W. Line® Dielectric Longline		
References Standard test method	**Referenced Standard leakage current acceptance criteria**	**Barry leakage current acceptance criteria**
ASTM F1701-12 - Dry acceptance test: 100 kV AC rms for 5 min / Test length: 1 ft	≤ 100 µA	✔ **PASS**
ASTM F1701-12 - Wet acceptance test: 50 kV AC rms for 5 min / Test length: 1 ft	≤ 250 µA	✔ **PASS**
IEC 62192:2009 - Dry acceptance test: 100 kV AC rms for 1 min / Test length: 300 mm (1 ft)	≤ 100 µA	✔ **PASS**
IEC 62192:2009 - Wet acceptance test: 100 kV AC rms for 5 min / Test length: 600 mm (2 ft)	≤ 500 µA at the end of 1 min. ≤ 250 µA at the end of 5 min.	✔ **PASS**

Materials:

Rope

Standard Barry longlines:

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

Barry D.E.W. Line® dielectric and HEC longlines:

- Ultra-high molecular weight polyethylene (UHMWPE) Dyneema® fiber with dielectric jacket

Protective Jacket

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

Hardware

For light/medium lift standard longlines (3000 lb to 8300 lb WLL):

- Heavy duty stainless steel fused thimbles
- Available with or without master link, round forged ring or alloy pear-shaped ring
- Molded end terminations (on Barry D.E.W. Line® # BLLNDR models)
- Machined non-metallic thimbles on some Barry D.E.W. Line® BLLNDR models
- Forged steel swivel hook option at bottom end

For heavy-lift longlines (11500 lb to 29000 lb WLL):

- Heavy-duty spool and shackle assemblies

Heat and chemical resistance:

⚠ WARNING ***WARNING: UHMWPE (Dyneema®) fiber has a relatively low melting point. Do not subject Barry longlines to excessive heat. For heat-resistant fibers, contact Barry to discuss other options.***

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, Fluroprotein)	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

Heat and Chemical Resistance of Barry D.E.W. Line® Dielectric Longline (Applies only to rope portion of BLLNDR models)	
	Dielectric jacket
Melting point	240°C (464°F)
Resistance to short-term heat	105°C (221°F)
Arc-Flash resistance	40 cal/cm^2
UV-Resistance	Good
Resistance to abrasion	Excellent
Resistance to alkalis	Good
Resistance to acids	Good
Resistance to petroleum based products	Excellent
Resistance to bleaches and solvents	Very Good

Dielectric use specific warnings:

⚠ WARNING

WARNING: Performing live-line maintenance and operations in an energized environment may put workers and rescuers at risk if insulating ropes are faulty or if correct procedures are not followed. The dielectric properties of Barry D.E.W. Line® insulating rope tools are determined through testing under laboratory conditions using new materials. Because of the wide range of use, situational and environmental conditions and degree of risk, Barry cannot make any blanket recommendations for any particular use of these products.

Ultimately it is the responsibility of the users to determine through their own testing whether the mechanical and dielectric properties of these products meet their requirements for the intended use in the range of conditions and environments considered.

End users intending to use this product in energized environments or on electrical apparatus must determine minimum approach distances (MAD) and consider all risks and factors (i.e. switching surge factors, etc.) relating to the use of these products for any intended purposes.

It is recommended that the Barry D.E.W. Line® insulating rope tools not be used under rain, snow or high humidity conditions for operations in energized environments unless adequate compensatory measures and proper risk analysis has been performed by competent persons.

⚠ CAUTION

IMPORTANT: The Barry D.E.W. Line® dielectric longline green molded end terminations may be considered insulating if demonstrated by pre-use electrical testing (refer to sections 6.4 and 6.5). If terminations do not pass pre-use electrical testing, but the rope portion does, then users must maintain minimum approach distance (MAD) plus length of termination and/or allow enough insulating rope length between terminations for the intended use and take any additional actions adding to the electrical insulation as deemed appropriate (and tested as required) by the competent person.

⚠ WARNING

WARNING: If using a weighted end-cover on a Barry D.E.W. Line® dielectric longline, consider it to potentially be conductive and adjust the required minimum approach distance (MAD) in consequence.

⚠ WARNING

WARNING: The minimum length of the insulating rope shall be greater or equal to minimum approach distance (MAD) based on the maximum system voltage (phase to phase or phase to ground) of the energized or the de-energized environment where the rope is utilized.
Contamination and moisture can reduce the insulating properties of the rope and/or terminations, and result in longer required tool length than the length based on MAD alone, i.e, switching surge mitigation may reduce your MAD significantly however the surface conditions of the insulating tool and environmental conditions may dictate a longer required leakage distance.

⚠ CAUTION

IMPORTANT: The dielectric and mechanical strength properties of Barry D.E.W. Line® insulating rope tools may vary and wear out or decrease with use: the more severe the usage, the greater the wear and strength loss. It is often not possible to detect wear on a rope by visible signs alone, therefore it is recommended that the end-user determine retirement criteria for ropes for their specific application and conditions of use.

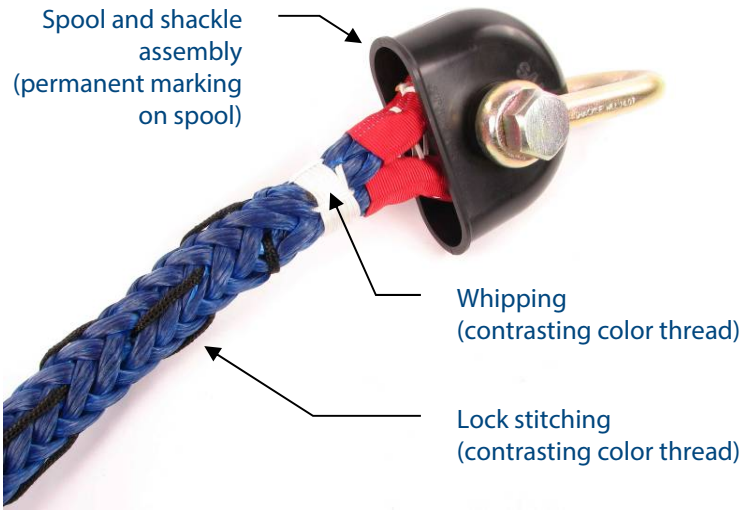
Only qualified employees may work on electrical apparatus and shall wear all the required insulating and protective equipment in conformance with the applicable rules and regulations governing this type of work. Unless otherwise established, electric apparatus and equipment shall be considered and treated as energized and as an electrical hazard. The employer shall ensure that no employee approaches or takes any conductive object closer to exposed energized parts or energized fields than set forth in a plan which has established the minimum approach distances and required safety equipment and measures for such work and equipment involving the use of Barry products.

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

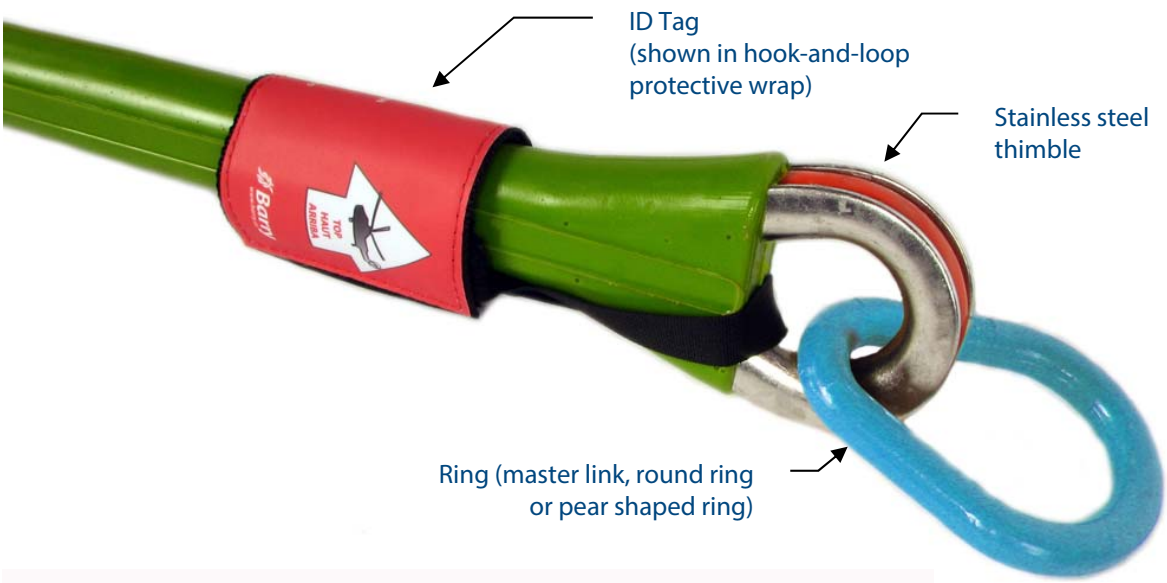
Details of bottom-end splice with marked fused thimble, lockstitch and whipping:

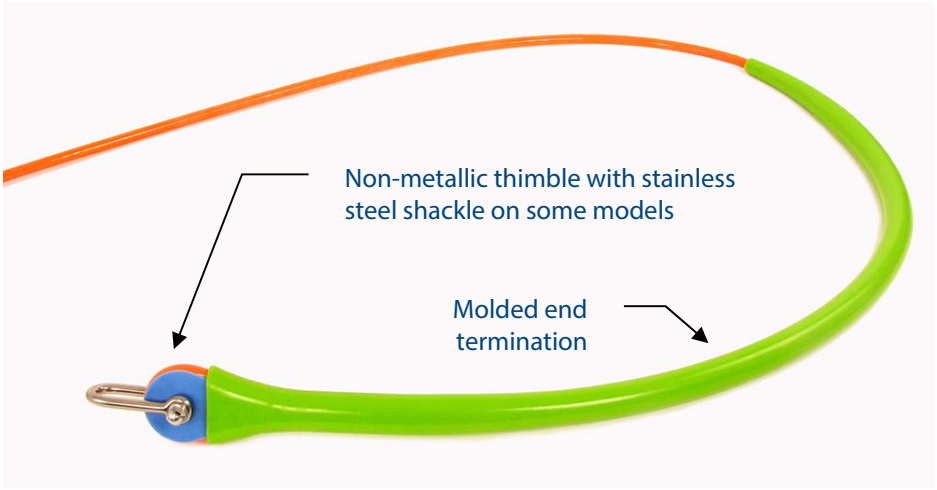
Details of top-end splice with spool and shackle, lockstitch, whipping and ID tag:

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



Details of molded end termination of Barry D.E.W. Line® dielectric longline:





Labelling:

One of these labels must be permanently attached to one end of the longline and be fully legible:

⚠ WARNING ***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:	▪ 14/3 Ga flexible wire, 105°C to -50°C, RoHS, 300 v, SJOOW EPDM insulation/CPE jacket or SJTW/SJTOW thermoplastic elastomer insulation & jacket; weather, water and oil resistant ▪ 15A/125V 2-Pole 3-Wire grounding plugs are provided (to be installed by customer) ▪ Other types of cable available upon request
Customized Assembly:	▪ Length ▪ Rope coating color ▪ Additional hardware (rings, hooks, rigging plates) ▪ Protective jacket and end-covers color ▪ Multiple electrical wires ▪ Labelling or identification ▪ Telemetry load pin/shackle assembly with remote display All custom modifications are subject to approval
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 thimble (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) 3- Single zipper jacket, allows fast and easy inspection of the longline (requires top and bottom end-covers)
End-Covers:	2.5 m (8') to 6.1 m (20') zippered end-covers with hook-and-loop cinch strap ▪ Top end-cover has warning label with TOP identification ▪ Bottom end-cover has reflective band
Weighted End-Cover: (Optional)	Zippered end-cover with weight inserts for the bottom end of longline to reduce excessive rope movement without a load Weight: 25 lb (11 kg) or 50 lb (22 kg)
ID Tag:	Soft printed ID tag protected by hook-and-loop wrap or stainless steel ID tag with permanent markings, including: ▪ Barry information ▪ Part number ▪ Description ▪ Serial number ▪ Date of manufacture ▪ Working load limit ▪ Shelf life limit ▪ Service life limit ▪ CE logo (on applicable longline models only) (Note: Refer to bottom thimble or spool for back-up markings of serial number)
Carry Bag:	Made of 1000D textured nylon or urethane coated fabric, with a document pocket for instructions manual

1.3 ASSEMBLY:

Barry longline systems 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:

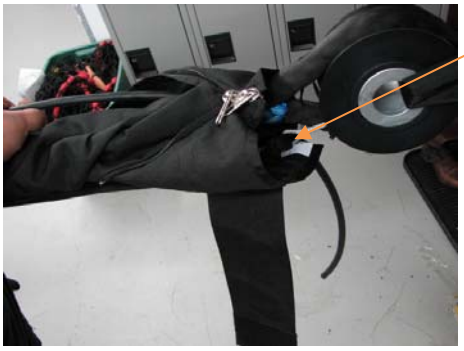
Make sure you have enough room to lay the longline on a flat and clean surface. Locate the top end of the longline, i.e. the end with the ID tag. Locate the top end of the jacket, i.e. the end with the red UP label.

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 close 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 cable(s), if applicable, in the opening of the outer jacket, from the inside and out.

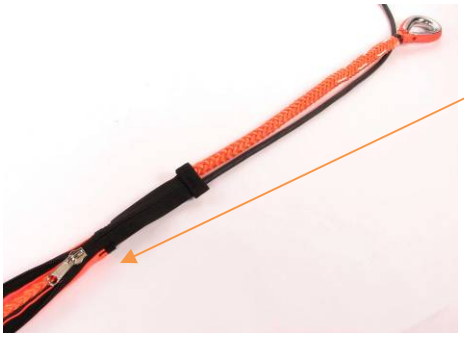
Zip close the first zipper slider of the outer jacket all the way to the other end, and “park” the zipper slider in the padded slider cover. The length of uncovered rope at the bottom end should be at least 30 inches (75 cm) shorter than the end-cover you will install (see section 1.3.4).

1.3.2 Single zipper protective jacket installation:

Make sure you have enough room to lay the longline on a flat and clean surface. Locate the bottom end of the longline, i.e. the end without the ID tag.

Open protective jacket and bring zipper slider at the end.

Insert longline bottom end (and electrical cable if applicable) in the zipper opening, from the inside and out.



Pull the jacket up a few feet and zip close the zipper approx. 1 feet (30 cm). Before zipping further, slide the jacket towards the thimble until the fabric gets snug around the rope.

Zip close the zipper slider all the way to the other end, and “park” the zipper slider in the padded slider cover. The length of uncovered rope at both ends should be at least 30 inches (75 cm) shorter than the end-covers you will install (see section 1.3.4).

1.3.3 End-covers installation:

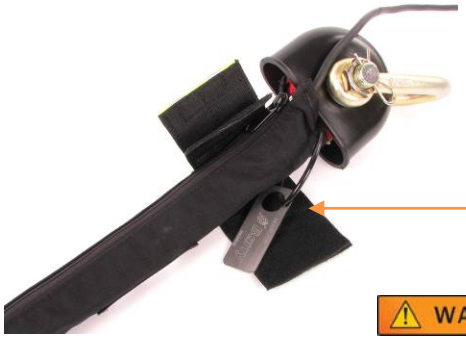
For longlines requiring 2 end-covers, locate the top-end of the longline, i.e. where the ID tag is attached to the longline. Install the end-cover with the UP indicator at the top-end of the longline.

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 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. If the longline has a metal ID tag, it must be secured underneath the hook-and-loop cinch strap.

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

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 pear-shaped ring

1.3.4 Weighted end-cover installation:

When required, the standard bottom end-cover of a Barry longline can be replaced by a weighted end-cover if the longline is flown without a load.

Make sure you have the properly sized weighted end-cover for your longline/wire/jacket combination. Contact Barry for more details.

⚠ WARNING ***WARNING: When flying a Barry D.E.W. Line® dielectric longline without an underslung load, a weighted end-cover must be installed at the bottom of the longline. If the weighted end-cover is a 25 lb (11 kg) model, flying speed should not exceed (V_{ne}) 60 knots. For higher flying speeds without a load, a 50 lb (22 kg) weighted end-cover should be used. In any case, adjust flying speed according to conditions of flight, after a thorough analysis by a competent person.***

⚠ WARNING ***WARNING: Weighted end-covers are made of textile fabric and other materials that are not dielectric. As such, consider a weighted end-cover installed on a Barry D.E.W. Line® dielectric longline to potentially be conductive and adjust the required minimum approach distance (MAD) in consequence.***

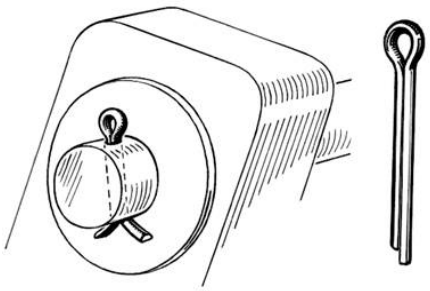
Remove the standard end-cover at the bottom of the longline and install the weighted end-cover the same way a standard end-cover is installed (follow steps in section 1.3.4). Make sure all straps and hook-and-loop fasteners are properly tightened.

Note that you can adjust the total weight by removing or adding weight strips in the end-cover. Contact Barry if additional weight strips are required.

1.3.5 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 Barry 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: The user should always review the safety factors and frequency of inspections of Barry longlines if:

- 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

If one or more of the above conditions are present, it is preferable to reduce the working load. Serious accidents can thus be prevented.

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 Barry longlines shall be used and stored in the temperature range between -40°C (-40°F) and +50°C (122°F). Carefully handle the Barry D.E.W. Line® dielectric longline when temperature is lower than -20°C (-4°F), as thermoplastic jacket will become stiffer and less flexible.

2.7 TEMPERATURE AND HUMIDITY VARIATIONS: The Barry D.E.W. Line® dielectric longline properties may be affected by temperature and humidity variations. Storage conditions should be dry with low humidity and preferably be climate controlled. Adjust storage temperature to minimize condensation or moisture build-up on these products at all times.

3. SYSTEM REQUIREMENTS

⚠ CAUTION ***IMPORTANT: Do not modify the original product by altering, adding or removing components, unless approved in writing by Barry***

3.1 COMPATIBILITY OF COMPONENTS: Barry equipment is designed for use with Barry-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 Barry 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.

⚠ CAUTION ***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.

- Barry standard longlines should be kept in their bag or container until they are used and immediately stored back in their bag or container after use.
- Barry D.E.W. Line® dielectric longlines should be kept in their bag or non-metallic container with moisture-depleting medium (desiccant) until they are used, be taken directly from their bag or container if possible, or laid on a tarp to prevent contact with ground, 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 Barry 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. Using 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 Barry 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.

WARNING: Oils and greases can contaminate the surface of Barry D.E.W. Line® dielectric longlines and greatly reduce their dielectric (insulating) properties. These insulating rope products should always be handled with clean gloves as to reduce contamination with skin secretions or other substances.

- **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. In such work situations, use a clean and dry Barry D.E.W. Line® dielectric longline which has been visually inspected and electrically tested by a competent person prior to use. Never use a remote hook (electrically-activated) and remove electrical wire (or other conductive material) from your synthetic longline assembly. For qualified workers, use energized work methods, Minimum Approach Distance (MAD) industry references and appropriate personal protective equipment (PPE). All non-qualified workers should stay at least 50 feet (15 meters) from all energized lines. Refer to a competent person to validate work method in these situations. Contact Barry to discuss your specific requirements.

⚠ WARNING ***WARNING: Barry D.E.W. Line® dielectric longlines are made to withstand high voltage environments as well as offer protection against static discharge. It should be noted, however, that accumulation of conductive dust particles trapped in moisture on the surface of the line is a possibility caused by downwash and turbulence during lift-off in certain environments. This can lead to higher, and potentially dangerous leakage currents on the surface of the line. It is therefore recommended that the line be properly inspected and cleaned before usage in high voltage environments, and that it is not flown above ground that has a high concentration of conductive particles.***

⚠ WARNING ***WARNING: In accordance with industry best practice, all work near electrical lines should be considered energized at all times. Several forms of accidental energization can occur unpredictably through such events as lightning, static discharge, induction, generator feedback, equipment failure, dropped conductors into energized crossings, switching errors, etc.***

⚠ WARNING ***WARNING: Never use a longline with an electrical cord when performing underslung operations near energized power lines.***

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 ***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 ***WARNING: "Slingshot" loading (intended dynamic loading) of the Barry 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 ***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:** 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 ***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).

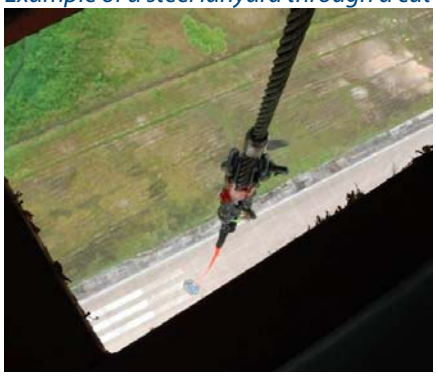
- **Multiple loads:** If and when permitted, extreme care should be practiced whenever multiple loads are carried to avoid twisting, spinning, torsions, abrasion, friction, etc.

- **Flying speed:** Adjust helicopter flying speed according to load carried. If necessary, add a weighted end-cover (Barry part # LLEC-Wxx) at the bottom end of the longline. Caged hooks and other heavy remote hardware may also help create distance from the tail rotor.

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

This section contains additional mandatory inspection requirements which are applicable to the Barry D.E.W. Line® dielectric longline. Additional information specific to the Barry D.E.W. Line® insulating rope equipment is found in the user instructions manual for these products. Contact Barry to obtain a copy.

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

If the user notices any other fault that isn't stated in this manual and that he/she feels might compromise the mechanical and/or dielectric integrity of the longline, then its use should be discontinued, and Barry 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.).

⚠ WARNING ***WARNING: Always wear clean and new gloves when manipulating Barry D.E.W. Line® dielectric longlines as natural skin secretions can contaminate the rope.***

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.

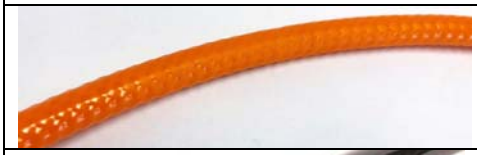
If any defect or contamination is found which can adversely affect the mechanical integrity of the product (and/or the insulating qualities of a Barry D.E.W. Line® dielectric longline) during or after inspection, it shall be removed from service, examined, repaired (if possible) exclusively by Barry, and tested before it can be returned to service. A Barry longline that cannot be repaired or which fails the electrical testing criteria after cleaning shall be permanently removed from service.

Special care and precautions should be taken to prevent contamination and/or moisture build-up on Barry D.E.W. Line® dielectric longlines. For example, it is recommended to use a tarp or some equivalent method to prevent contact with the ground, soiled surfaces or any source of humidity. Barry D.E.W. Line® dielectric longlines must be stored in a clean, dry bag or container with an appropriate moisture-depleting medium (desiccant) when not in use.

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.

	**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. Barry 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.
 	**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. *Barry D.E.W. Line® dielectric longlines showing excessive external abrasion or exposed core fibers must be removed from service. Light external abrasion is acceptable if the glossy finish can be restored by silicone wipes.
 	**CUT STRANDS:** Longlines made of 12-strand rope that have cut strands should be retired from service. ⚠ CAUTION ***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.***
 	**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.
 	**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.

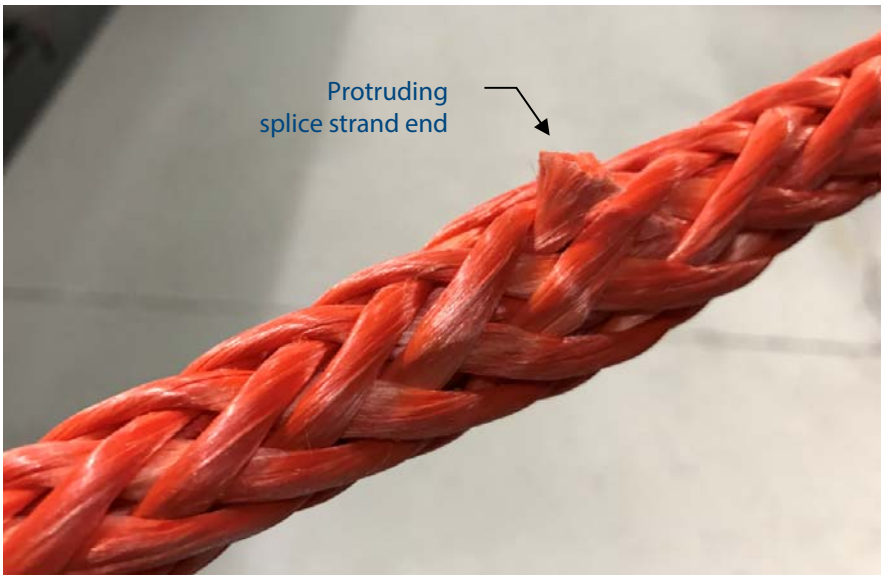
	**COMPRESSIONS OR DIAMETER INCONSISTENCY:** If the rope exhibits fiber-set due to compression, visible in the area where the rope is loaded, it often has a slight sheen on the contact area. For braided ropes without a thermoplastic jacket, this condition is often corrected by flexing the rope. Rope with thermoplastic jacket must be inspected for damages in the extruded jacket. Remove from service if a cut is observed, or if a localized inconsistency or reduction of diameter, flat areas, lumps or bumps are felt by manual inspection.
	**EXTERNAL AND INTERNAL ABRASION:** Pictures show examples of moderate external abrasion. For braided ropes, if moderate external abrasion and internal abrasion of the fibers are observed on the same rope, then the longline must be retired from service. Barry D.E.W. Line® dielectric longlines have an orange outer thermoplastic jacket over a black inner jacket, acting as a wear indicator. If the orange outer jacket is abraded to the point that the black inner jacket or inner fiber is showing, then the longline must be repaired or retired from service. Heavy external abrasion may also have created damage to the internal fibers.
	**LOSS OF GLOSSY FINISH:** If the external rope surface of Barry D.E.W. Line® dielectric longlines is no longer glossy, it must be restored (refer to Section 7) or removed from service.
	**CUT OR CRACKED JACKET:** Barry D.E.W. Line® dielectric longlines must not show any cuts on their thermoplastic jacket. Remove from service if any cut or crack is observed. Inquire with Barry if a repair can be made.
	**CONTAMINANTS OR MOISTURE:** Rope surface of a Barry D.E.W. Line® dielectric longline should be exempt of contaminants such as grease, oil, salt, calcium, frost, ice, water, moisture, etc., which may not be apparent to the unaided eye. Refer to cleaning instructions (Section 7) to remove contaminant.

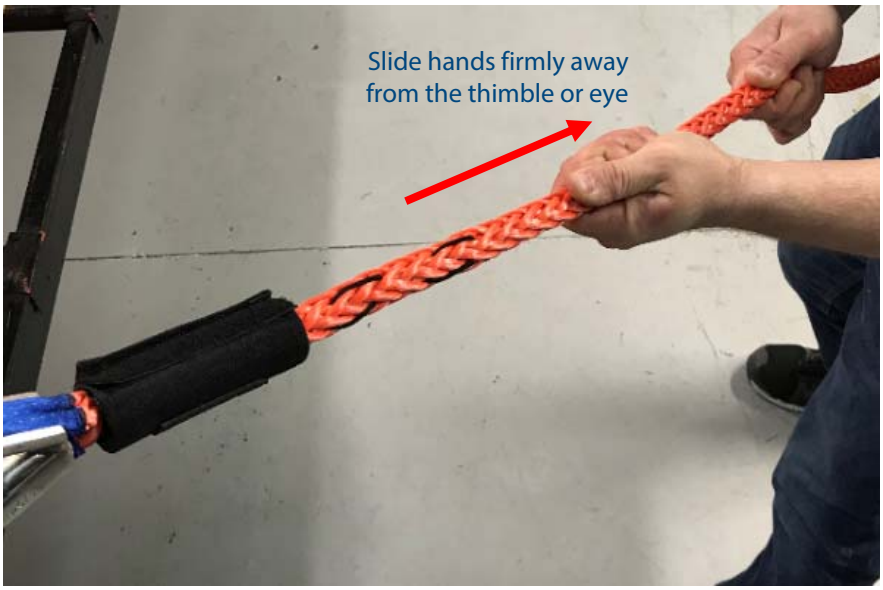
6.2.3 SPLICE/TERMINATION INSPECTION: Splice terminations at each end of the rope must be carefully inspected. The spliced eyes should not have opened and allow the thimbles to be easily removable. Inspect the lockstitch and make sure the thread is not broken or frayed. Verify the whipping and make sure that the sewing thread is not cut. Inspect molded terminations of Barry D.E.W. Line® dielectric longlines for cracks, cuts, burns, discoloration and changes in texture.

⚠ CAUTION

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, hooks, rings, telemetry load pins, mechanical terminations) 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-covers 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 Barry for replacement jackets and covers for your specific longline.

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

6.2.7 BARRY D.E.W. LINE® DIELECTRIC LONGLINE INSPECTION AND TESTING: If the Barry D.E.W. Line® dielectric longline is to be used in or near energized electrical fields or for work requiring that the Barry D.E.W. Line® dielectric longline's insulating properties be solicited, electrical testing (refer to sections 6.4.2 to 6.5.2 for guidelines) should be performed by competent persons on each Barry D.E.W. Line® dielectric longline.

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.

Loss of insulating properties can be the result of surface conductivity (from contamination or loss of gloss), internal conductivity (from moisture ingress or internal structural changes) or a combination of both.

The Barry D.E.W. Line® dielectric longline should look glossy and have a smooth and uniform surface. Water sprayed on the rope should form beads rather than streaks. The hydrophobic properties of the Barry D.E.W. Line® dielectric longline may be restored by following cleaning procedures in Section 7.

Water sprayed on the rope surface should form beads:

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-covers, 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. Wear clean gloves when manipulating the Barry D.E.W. Line® dielectric longline.
- **C.** Check the longline's ID tag and make sure it matches the info on the provided Certificate of Compliance.
- **D.** If applicable, immediately store the Barry D.E.W. Line® dielectric longline back in its bag or container after inspection procedure and ensure that the moisture-depleting medium (desiccant) is new or in good condition (check for color variations or hardening which may indicate a contact with a source of humidity or fluid). If such a condition is found, further investigation is required. **Do not rely solely on the condition of the moisture-depleting medium or desiccants to determine whether the Barry D.E.W. Line® dielectric longlines are to be used** (refer to section 6.4.2).
- **E.** 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.
- **F.** Validate that the copy of the user instructions manual provided with your longline is the latest revision (consult the Barry website at www.barry.ca) 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 (refer to 6.4.2 for additional procedures for Barry D.E.W. Line® dielectric longlines as well as the most recent version of the Barry D.E.W. Line® insulating rope equipment user instructions manual):

- **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).
  The Barry D.E.W. Line® dielectric longline must be inspected and tested for its dielectric properties accordingly to section 6.4.2 prior to being use. Immediately store the Barry D.E.W. Line® insulating rope tool back in its bag or container after inspection procedure.
  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 Barry 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 Barry with the serial number identification so that Barry can update its logbook of manufactured products.

6.4.2 PRE-USE DIELECTRIC TESTING: If the Barry D.E.W. Line® dielectric longline is to be used on electrical apparatus or near energized electrical fields or for work requiring that the Barry D.E.W. Line® dielectric longline's insulating properties be solicited, a dry electrical test should be performed by competent persons on each Barry D.E.W. Line® dielectric longline prior to such use.
Barry D.E.W. Line® dielectric longlines can be tested in the field with the use of portable testing units. The user's competent person shall ensure that the portable test equipment will provide suitable testing. Some portable testing units have proven to be effective at verifying changes to the Barry D.E.W. Line® dielectric longline's dielectric properties and to detect presence of moisture both on the outer surface and the inside.

The acceptable current leakage should be determined by the user's competent person depending on the application for the Barry D.E.W. Line® dielectric longline.

⚠ CAUTION ***IMPORTANT: A wet test should never be done immediately prior to use.***

6.5 FORMAL INSPECTION: Every Barry 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 (refer to 6.5.2 for additional procedures for Barry D.E.W. Line® dielectric longlines as well as the most recent version of the Barry D.E.W. Line® insulating rope equipment user instructions manual):

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).
The Barry D.E.W. Line® dielectric longline must be inspected and tested for its dielectric properties accordingly to section 6.5.2 prior to being use. Immediately store the Barry D.E.W. Line® dielectric longline back in its bag or container after inspection procedure.
If the inspection is unsatisfactory, the longline should not be put in service. It should be tagged accordingly and either be sent to Barry 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 Barry with the serial number identification so that Barry can update 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).

6.5.2. FORMAL ELECTRICAL TESTING: Each Barry D.E.W. Line® dielectric longline must be tested dry and wet at least once per year after being put in service, by competent persons, in accordance with an acceptable testing method as determined by competent authorities. Contact Barry if assistance is needed.

Intensive and severe usage of the products, local jurisdiction, policy, etc. may require testing at more frequent intervals which are to be determined by the user. Users may determine that lower leakage current thresholds than those cited in the rope testing standards may be more appropriate for their specific use.

All electrical testing of Barry D.E.W. Line® dielectric longline must be recorded in its log book or tracking management system.

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.
- **Cut thermoplastic jacket:** Any cut or crack on the Barry D.E.W. Line® dielectric longline surface.
- **Dynamic loading:** Longline that has been subjected to accidental dynamic loading.
- **Failed electrical testing:** Longline no longer passes the acceptance level of dry and wet dielectric testing.
- **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 Barry.
- **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 OF STANDARD UHMWPE LONGLINE: 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 Barry if required.

7.2 CLEANING OF BARRY D.E.W. LINE® DIELECTRIC LONGLINE: Before each use, clean Barry D.E.W. Line® dielectric longlines should be wiped with a clean microfiber silicone impregnated hot stick wiping cloth or silicone hot stick wipe. The rope can be visually inspected during the cleaning. Do not use cloths that have been washed in harsh solvents as some residues on the cloth can remain on the rope surface and adversely affect the Barry D.E.W. Line® dielectric longlines. Never wipe a dirty or contaminated Barry D.E.W. Line® dielectric longline with silicone impregnated hot stick wiping cloth or silicone hot stick wipes as this may only temporarily conceal the contaminant underneath the silicone film.

If the Barry D.E.W. Line® dielectric longline is not clean or is contaminated, proceed with the following cleaning method.

If the Barry D.E.W. Line® dielectric longline cannot be cleaned or treated to a point where the surface is glossy with good hydrophobic characteristics, it must be properly identified, removed from service and either destroyed or sent back to Barry for inspection and testing.

7.2.1 CLEANING METHOD: The cleaning method for Barry D.E.W. Line® products consists of three steps which use standard FRP tool cleaning products and accessories. All handling should be done with clean and new nitrile disposable gloves or equivalent.

WARNING: Do not use soap detergents in either liquid or in powdered form as they may leave a conductive residue and will destroy the surface gloss on the rope surface. Do not use any solvent based cleaners, acetone or isopropyl alcohol on Barry D.E.W. Line® insulating rope tools.

Step 1: Moisten a Kleenex® Hand Towels (or equivalent) with Blue Stripe® General Purpose Cleaner (or equivalent) and wrap around the complete surface of the rope and wipe in order to remove all dirt and dust from the surface.

Step 2: If required, scrub lightly the complete surface of the rope with a 3M Scotch Brite® No-Scratch Scour Pad (or equivalent) with Blue Stripe® General Purpose Cleaner (or equivalent) to remove all grease and surface contamination.

Step 3: When the rope is dry, use Blue Stripe® silicone wipes (or equivalent) on the complete surface of the rope.

7.3 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 Barry D.E.W. Line® dielectric longline, ensure that it is not compressed or exposed to damage from sharp or heavy objects, batteries, chemical and acid fumes. Thoroughly inspect the Barry D.E.W. Line® dielectric longline after extended storage.

The Barry D.E.W. Line® dielectric longline must not be stored soiled with any contaminants such as grease, oil, salt, calcium, frost, ice, water, moisture, etc. Refer to cleaning instructions (Section 7) to remove contaminant.

⚠ CAUTION

IMPORTANT: All Barry D.E.W. Line® insulating rope tools must be stored and transported in their bag or non-metallic container with new moisture-depleting medium or desiccants to limit humidity buildup in a clean environment out of direct sunlight.

The Barry D.E.W. Line® insulating rope tools may be affected by temperature and humidity variations. Storage conditions should be dry with low humidity and preferably be climate controlled. Adjust storage temperature to minimize condensation or moisture build-up on these products at all times.

Moisture-depleting medium or desiccants may change in color or harden when in contact with humidity or fluids. If such a condition is found, further investigation is required. Do not rely solely on the condition of the moisture-depleting medium or desiccants to determine whether the Barry D.E.W. Line® insulating rope tools are to be used (refer to sections 6.4 and 6.5). Contact Barry if needed.

7.4 REPAIRS: Repairs and other servicing procedures must only be completed by Barry. Do not attempt to disassemble the splices or mechanical terminations.

8. LIFETIME

8.1 SHELF AND SERVICE LIFE: The following best practice recommendations for Barry 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)
Barry longlines manufactured after Feb. 1st, 2020	10 years after manufacturing date	10 years	10 years
Barry longlines manufactured before Feb. 1st, 2020	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		

Note: Certain custom Barry longlines may have different life limits than those in table above. Refer to the longline ID tag for correct life limits for these longlines.

⚠ CAUTION ***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 Barry longline is involved in an incident or a failure, please notify Barry immediately so that prompt corrective measures can be taken by Barry. Product Safety Alerts are posted on the www.barry.ca website.

10. WARRANTY

Products made by Barry are warranted against factory defects in workmanship and materials for a period of one (1) year from date of shipment. Upon notice in writing, Barry will promptly repair or replace all defective items. Barry reserves the right to elect to have the defective item returned to its plant for inspection before making a repair or replacement. The cost of transport to deliver the product to and from Barry shall be covered by the Buyer. Warranty does not cover product damages resulting from abuse, damage in transit, normal wear and tear or other damages beyond the control of Barry. The warranty applies only to original Buyer, is the only one applicable to products made by Barry and/or under the Barry label or trademark, and is in lieu of all other warranties expressed or implied. For products made by other manufacturers and sold by Barry, only the original manufacturer's warranty shall apply.

THE FOREGOING IS BARRY'S SOLE WARRANTY, ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF FITNESS FOR PURPOSE AND MERCHANTABILITY, ARE EXCLUDED AND DISCLAIMED TO THE FULL EXTENT PERMITTED BY LAW. IN NO EVENT SHALL THE BUYER BE ENTITLED TO MORE THAN THE PRICE OF THE PURCHASED GOODS AT THAT TIME AS FINAL PENALTY AND DAMAGE. IN NO EVENT, WHETHER AS A RESULT OF CONTRACT, TORT, STRICT LIABILITY OR OTHERWISE, SHALL BARRY BE LIABLE FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, INCLUDING BUT NOT LIMITED TO, LOSS OF USE, PROFIT OR REVENUE.

Barry Cordage Ltd.
6110 boul. des Grandes Prairies
Montréal (Québec) Canada H1P 1A2

1.514.328.3888
1.800.305.2673 (Canada / USA)

CONTENTS OF EC DECLARATION

(Refer to EC Declaration of Conformity for specific model number)

Barry Cordage Ltd. 6110 boul. des Grandes Prairies, Montréal, Québec, Canada, H1P 1A2

We hereby declare that the products described hereafter, in the versions we have marketed, conform in their design and construction to the fundamental safety and health requirements of the EC Machinery Directive 2006/42/EC. Any unauthorized alteration of the longlines renders this declaration null and void. The longlines must be used only for the purposes described in the User Manual and within the limits described on their label.

Model numbers: **BLL, DLL, BSLR, BSLRH, BLLNDR-3900**

Description: **Helicopter longlines and short lines**

Type: **Lifting accessory**

Are in conformity with the applicable EC Machinery Directive 2006/42/EC and EASA CS 27.865 / 29.865 Helicopter External Loads.

The Examination and Technical files issued for these products are kept at Barry.

These products are subject to the quality assurance procedures under the supervision of the Quality Manager and follows our Quality Management System.

This page is intentionally left blank

FORMAL INSPECTION FORM

FOR HELICOPTER LONGLINES (applies for longlines and short lines)

Model #: _____
Serial #: _____
Length: _____
WLL: _____
Manufacturer: Barry Cordage Ltd.
6110, Boul. des Grandes Prairies
Montreal, Qc, Canada H1P 1A2

User identity (company)
Name: _____
Address: _____
Phone: _____
Fax: _____
E-mail: _____

Age and Service Life Information

Date of manufacture:	Date of purchase:	Date of first use (put in service):

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, cut thermoplastic jacket, contamination			
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, broken plugs			

Part C – Electrical Testing

Refer to section 6.5.2 FORMAL ELECTRICAL TESTING of the User Instructions Manual

Electrical test	Test method and criteria	Pass	Fail	Comment
Dry electrical test				
Wet electrical test				

Part D - 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			Cut thermopl. jacket	No cuts in thermoplastic jacket		
Fiber strands cut	No cut strands			Diameter inconsist.	Change in diameter of rope		
Melting /Glazing	Caused by heat or abrasion			Loss of confidence	Not properly taken care of		
Dynamic loading	Accidental dynamic loading			Modifications	Modified by other than Barry		
Overloading	Loading beyond WLL			Identification	ID tag fully legible		
Failed electrical test	Acceptance levels of tests						
Verdict:	The product **is fit** to remain in service				The product **is unfit** to remain in service		

Part E - Inspector Identification

Name: _____ Signature: _____

Company: _____ Title: _____

Date of inspection: **Date of next inspection:**

FORMAL INSPECTION LOG SHEET

FOR HELICOPTER LONGLINES (applies for longlines and short lines)

Model #:		**User identity** (company)	
Serial #:		Name:	
Length:		Address:	
WLL:			
Manufacturer:	Barry Cordage Ltd.	Phone:	
	6110, Boul. des Grandes Prairies	Fax:	
	Montreal, Qc, Canada H1P 1A2	E-mail:	

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** ☐ **Unfit** ☐		
Approved By:	Verdict: **Fit** ☐ **Unfit** ☐		
Approved By:	Verdict: **Fit** ☐ **Unfit** ☐		
Approved By:	Verdict: **Fit** ☐ **Unfit** ☐		
Approved By:	Verdict: **Fit** ☐ **Unfit** ☐		
Approved By:	Verdict: **Fit** ☐ **Unfit** ☐		
Approved By:	Verdict: **Fit** ☐ **Unfit** ☐		
Approved By:	Verdict: **Fit** ☐ **Unfit** ☐		
Approved By:	Verdict: **Fit** ☐ **Unfit** ☐		
Approved By:	Verdict: **Fit** ☐ **Unfit** ☐		
Approved By:	Verdict: **Fit** ☐ **Unfit** ☐		