Technical Literature

Cortland AeroLock™ Synthetic Connector User Manual

CORTLAND
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1 Purpose

This document provides Installation, Storage, Usage, Maintenance, Inspection, and Retirement Guidelines for Cortland's AeroLock™ Synthetic Connector.

2 Important Safety Instructions

Read all instructions carefully. Follow all recommended safety precautions to avoid personal injury as well as damage to the product and/or damage to other property. Cortland Company [Cortland] cannot be responsible for any damage or injury from unsafe use, lack of maintenance or incorrect operation. Do not remove warning labels, tags, or decals. In the event any questions or concerns arise, contact Cortland or a local Cortland distributor for clarification.

All products supplied and manufactured by Cortland are sold with the express understanding that the purchaser and user are thoroughly familiar with the safe and proper use and application of the product. The qualified person[1] and user has the responsibility for use, application, and maintenance and must have sufficient training and knowledge of all applicable standards to responsibly use our products.

This manual follows a system of safety alert symbols, signal words and safety messages to warn the user of specific hazards. Failure to comply with these warnings could result in death or serious personal injury, as well as damage to the equipment or other property.

The **Safety Alert Symbol** appears throughout this manual. It is used to alert you to potential physical injury hazards. Pay close attention to Safety Alert Symbols and obey all safety messages that follow this symbol to avoid the possibility of death or serious personal injury. Safety Alert Symbols are used in conjunction with certain Signal Words that call attention to safety messages or property damage messages and designate a degree or level of hazard seriousness. The Signal Words used in this manual are DANGER, WARNING, CAUTION and NOTICE.

DANGER Indicates a hazardous situation that, if not avoided, **will** result in death or serious personal injury.

WARNING Indicates a hazardous situation that, if not avoided, **could** result in death or serious personal injury.

CAUTION Indicates a hazardous situation that, if not avoided, **could** result in minor or moderate personal injury.

NOTICE Indicates information considered important, but not hazard related (e.g. messages relating to property damage). Please note that the Safety Alert Symbol will **not** be used with this signal word.

[1] Qualified person: A person who, by possession of a recognized degree or certificate of professional standing in an applicable field, or who, by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

General Safety Precautions

Failure to observe and comply with the following precautions will result in SERIOUS PERSONAL INJURY or DEATH. Property damage could also occur.

- The Cortland AeroLock™ Synthetic Connector may fail if damaged, abused, misused, overloaded or improperly maintained resulting in SERIOUS PERSONAL INJURY or DEATH.
- All personnel must stand clear of the AeroLock™ under tension. Personnel must not stand in-line with or next to lines under tension. An unplanned release of tension could strike personnel with deadly recoil force. Do not stand within recoil (snapback) area.
- The AeroLock™ shall not be shortened or lengthened by knotting or twisting and/or be joined by knotting. Never shorten the AeroLock™ by tying a knot.
- The AeroLock™ should only be used for towing as it has not been validated for lifting applications yet.

2 Important Safety Instructions *Cont.*

⚠ WARNING **Failure to observe and comply with the following precautions could result in SERIOUS PERSONAL INJURY or DEATH. Property damage could also occur.**

- It is recommended that Cortland AeroLock™ Synthetic Connector users are properly trained in the inspection and proper use of the products. Failure to follow proper use, care and inspection criteria for AeroLock™ Connectors could result in SEVERE PERSONAL INJURY or DEATH.
- Wear personal protective gear when handling AeroLock™ Connectors. Safety equipment such as gloves, eye protection, non-skid safety shoes, hard hat, or hearing protection (used as appropriate) will reduce personal injuries.
- Do not drive or walk over AeroLock™.
- Ensure that the AeroLock™ and lines connected to it have suitable characteristics for the type of load, and environment in which they will be used and that they are not used with loads in excess of the rated load capacities. Do not exceed the working load limit (WLL) rated capacity or shock load the AeroLock™ Connector.
- The AeroLock™ is not designed to be in contact with other hard surfaces aside from what it is being connected to. It is not designed to run through staples or fairleads. Avoid dragging AeroLock™ Connectors over abrasive surfaces such as “non-skid” vessel decks during use, and from under the load. Make sure wear protection is in place or replaced when needed.
- Temperatures exceeding 140° Fahrenheit (60° Celsius) will reduce the load bearing capacity of the AeroLock™ Connectors. Cortland should be consulted if the AeroLock™ is to be used in environments where this temperature is expected to be exceeded.
- Ensure that fittings are compatible with the mechanical and environmental requirements of the AeroLock™ Connector, have a rated load at least the same as the AeroLock™, and have clean surfaces with no damaging edges.
- Only the synthetic ends of the AeroLock™ should be used to pull loads. Always try to keep the alloy hardware component centered between the connection points and never place it right at the connection points.
- Never attempt to load the AeroLock™ or any ropes if any part of the load bearing path is resting under an object.
- Never place heavy objects on top of the AeroLock™.
- Never run over the AeroLock™ with a vehicle.

2 Important Safety Instructions *Cont.*

⚠ CAUTION **Failure to observe and comply with the following precautions could result in minor or moderate personal injury. Property damage could also occur.**

- Inspect AeroLock™ Synthetic Connectors for damage before each use. Inspections must cover the entire length of the AeroLock™, including wear protection and hardware; and include those components that come into contact with it. If a an AeroLock™ Connector has been idle or in storage for more than one year since the last periodic inspection, it must be thoroughly inspected by a qualified person before use.
- Use only AeroLock™ Synthetic Connectors in acceptable condition without cuts, pulled strands, or other damage. Do not use AeroLock™ Connectors if there are areas of heat or compression damage, braid diameter size inconsistencies, stiff and flat areas unable to be worked back into shape, glazed or melted fibers, or discoloration caused by unknown sources.
- Residual strength in AeroLock™ Connectors is subject to many considerations and a visual inspection can only provide a subjective estimate on retained strength.
- Twist and rotation should be taken out of an AeroLock™ Connector before application.
- AeroLock™ Connectors should be stored in a clean, dry area, out of direct sunlight and/or any source of ultraviolet light and away from sources of extreme temperatures. The storage location should also be free of environmental and mechanical damage, corrosion, dirt and grit. If on a pallet, make sure other items which can damage or cut the AeroLock™ are not stacked on top of it. Do not use or store near damaging chemicals.

NOTICE

- AeroLock™ Connectors can be washed in warm or cold water to remove particulate matter without damage or loss of strength. It is recommended that only fresh water and mild detergents like dish soap be used. Washed AeroLock™ Connectors should be air dried prior to storage. AeroLock™ Connectors must not be pressure-washed.
- Low temperatures are generally not a concern. Ice should be removed from the AeroLock™ and connecting ropes before usage.

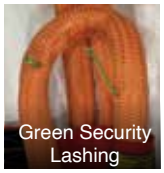
3 General Information

The AeroLock™ is a semi-synthetic connector that provides a light weight, effective and durable option for connecting ropes together in towing and pulling applications. The AeroLock™ makes it very quick and easy for the user to make connections, saving the crew valuable time and making the overall operation safer.

The synthetic load bearing rope component of the AeroLock™ Connector is made from 100% UHMWPE fiber which is extremely strong, lightweight and abrasion resistant. The load bearing rope component is covered with SX braided UHMWPE sleeve for maximum durability. The alloy hardware component is made from anodized aluminum.

4 Synthetic Connector Usage

To connect two lines together, unhook the noose of the load bearing member from the alloy hardware component and lay straight. Open the Velcro® keeper and disconnect the green security lashing (if connected).



Place the eyes of the two lines to be connected in close proximity to each other. Slide the AeroLock™ underneath the eyes.

Make a loop and close/connect the noose using the alloy hardware component as shown below. The AeroLock™ can also be used to connect a tow sling to a piece of hardware in a similar fashion.

The alloy hardware component should always be placed on the inside of the loop. It should also be centered between the two connection points.

After connecting, close the Velcro® keeper and connect the green security lashing to secure the AeroLock™ as shown below.

5 Handling and Storage

The following guidelines should be followed when handling Cortland AeroLock™ Synthetic Connectors.

- Avoid dragging the AeroLock™ on the ground.
- Avoid putting AeroLock™ Connectors into contact with abrasive surfaces. Contact surfaces should ideally be smooth without burrs.
- AeroLock™ Connectors in storage should be kept in a dry environment, away from direct sunlight and heat.
- Do not weld metal, grind or cut around where the AeroLock™ Connectors are being stored. Welding material and sparks may damage the AeroLock™.
- Ensure that the connecting hardware has a pulling capacity equal to or greater than what is required. Make sure that the interfacing surfaces have a minimum bending diameter equal to or greater than the nominal rope diameter. Also ensure that the interfacing surfaces are smooth and free of defects and other irregularities which could harm the rope. The best way to verify an appropriate surface roughness is by hand, covering the entire area. If the interface surface is rough, special protective wear pads can be added to protect the AeroLock™.
- Keep tags away from the load bearing surfaces.
- Ensure that the AeroLock™ does not come into contact with any rough or sharp edges during an operation.
- Ensure that the legs are parallel and do not overlap prior to making a connection and that the lines being connected together do not have any twist.

6 Maintenance and Inspection Guidelines

It is recommended that inspections be carried out on the AeroLock™ Synthetic Connector before and after every operation by a trained person, prior to making a connection.

The following is a list of damage types that may occur on AeroLock™ Connectors that should be noted during an inspection.

Chemical Contamination

The strength of the AeroLock™ can be degraded by certain chemicals. This includes chemicals in the form of solids, liquids or gases. Cortland or a qualified representative should be consulted before an AeroLock™ is used in chemically active environments. If the SX chafe protection or alloy hardware component surface show any signs of chemical contamination, the extent of the contamination should be assessed. If the contamination is external to the SX chafe protection then the chemical should be washed off. If it is suspected that the contaminants have penetrated inside the load bearing strength member then the nature of the chemical should be documented and communicated to a Cortland representative for evaluation.

Surface Abrasion / Cuts / Broken Stitching

Surface abrasion is the most common type of damage. Abrasion is the tearing or wearing of fiber, resulting in a loss of strength-bearing material. Abrasion is readily identified by the ragged appearance of the damaged fiber. Since the load bearing strength member of the AeroLock™ is fully covered in SX wear protection, the condition of the wear protection should be inspected especially at the connection points. If the wear protection is sufficiently worn or cut such that the purple or red load bearing fibers are exposed, then the AeroLock™ Connector should be replaced. The stitches holding the wear protection in place should also be inspected for structural integrity. If the stitching is compromised, such that the SX cover moves or slides out of place and exposes the load bearing strength member, the AeroLock™ should be retired or sent back to Cortland for repair.

Surface Abrasion

Structural Deformation of Synthetic Component

It is normal for the connection ends of the AeroLock™ to deform after loading. However, any significant changes in cross section could mean that the load bearing strength member might be compromised. If lumps underneath the cover or significant changes in cross section are noticed, stop using the AeroLock™ and consult a Cortland representative.

Structural Deformation

Structural Deformation of Alloy Hardware Component

If any deformation occurs, or surface cracks or corrosion found on the alloy hardware component, this could signify that the strength of the component is compromised and should be retired from service.

7 Retirement Criteria

The following is an inspection guideline for Cortland's AeroLock™ Synthetic Connectors, and conditions that dictate that the AeroLock™ be removed from service.

Retirement Criteria

1	Surface Abrasion	• Red or Purple strength member underneath the cover is exposed	• Retire/Consult Cortland
2	Cuts	• Red or Purple strength member underneath the cover is exposed	• Retire/Consult Cortland
3	Compromised Cover Stitching	• Red or Purple strength member underneath the cover is exposed	• Retire/Consult Cortland
4	Alloy Hardware Component Deformation	• Any	• Retire
5	Structural Deformation of Synthetic Component	• Changes in Cross-section	• Retire/Consult Cortland
6	Contamination	• Dirt or grit • Chemicals • Oil or grease	• If moderate or heavy externally then wash material off of the AeroLock™. Inspect internally. If moderate or heavily contaminated, retire. • If any suspicion of chemical contamination: consult Cortland. • If moderate to heavy, wash rope surface with mild detergent or liquid soap. If it cannot be washed, retire.

Cortland is a global designer, manufacturer, and supplier of technologically advanced ropes, slings, and strength members. Collaborating with customers, our team uses its experience in high performance materials and market knowledge to transform ideas into proven products.

For more than 35 years, our custom-built solutions have been developed for work in the toughest environments and to overcome some of the world's greatest challenges. They consistently enable our customers to meet the demands of the aerospace, defense, research, subsea, marine, and energy industries.

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