Technical Literature

Core-Dependent Rope Inspection Guidelines

CORTLAND®

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Maintenance and Inspection Guidelines

Maintenance and Line Management Plan

General maintenance guidelines:

1. Establish and execute a routine line inspection program. Training of personnel may be necessary. See following page for more details.
2. During each use, ensure wear protection sleeves are positioned properly and in good repair. Reposition, repair, or replace, as necessary.
3. Monitor the line for twist and remove any twist that is present or induced.
4. Keep running surfaces and deck equipment clean and free of sharp or rough edges.
5. Note any damage to the line and disposition according to the repair and retirement criteria on the following page.
6. Cover winches when lines are not in service.
7. Clean contamination from lines. Dirt, debris, and some chemicals can often be rinsed off with fresh water. If lines are heavily contaminated, refer to repair and retirement criteria on following page.
8. Greases and oils should be removed when possible, using mild soap and fresh water. Use of harsh or damaging cleansers must be avoided. Washed lines must be air dried before storage. Lines must NOT be pressure-washed.

Maintenance and Inspection Guidelines *Cont.*

The following is a list of damage types that may occur on high-performance core dependent lines:

Surface Abrasion

Surface abrasion is the most common type of damage. Abrasion is the tearing or wearing of fiber. Abrasion is readily identified by the ragged appearance of the damaged fiber. Abrasion can take place wherever a line runs over a fixed surface or sheave, or when it is cycled while loaded against a fixed surface (such as a fairlead), or when it is dragged across the deck.

When a new line is placed in service, contact with various surfaces will break some of the very fine filaments on the surface of the line, giving it a slightly “fuzzy” appearance. This slight surface abrasion is normal and, to a certain extent, beneficial as the broken filaments act as a protective cushion. This condition should stabilize after the line has been in service for a period of time. Surface abrasion on the jacket does not have an effect on the strength of the line as the jacket is non-load bearing and its sole purpose is to protect the load bearing core underneath.

Abrasion can be localized, caused by contact with an object during loading as shown below, or can be distributed throughout the line due to normal wear by running over a roller or surface. Examples of each type are shown below:

Localized abrasion due to contact with an abrasive surface

Distributed heavy abrasion due to normal wear

Maintenance and Inspection Guidelines *Cont.*

The following is a list of damage types that may occur on high-performance core dependent lines:

Cuts

Although not as common as abrasion in the course of routine applications, cuts represent a greater potential hazard to overall line performance since they could expose the load bearing core.

Cuts may be identified by the even, squared-off fiber ends at the point of damage. Line strength is affected at the location of a cut on the jacket unless the cut has penetrated deep enough to cut the load bearing core. Cuts which have not penetrated to the core should be repaired.

If the cut has penetrated to the core, then an assessment as to the severity of the cut should be done. The percentage of fiber loss can be estimated, and the capacity of the line can be reduced by that amount. It is recommended that a Cortland representative be consulted if any cuts have penetrated to the core of the line.

Cut jacket strand; the cut has not damaged the core of the line

In this case the cut was severe enough to damage the core which results in strength loss

Maintenance and Inspection Guidelines *Cont.*

Pulled Strands

Pulled or snagged strands are caused when the line snags onto a sharp edge while handling or during loading. Snagged strands on the jacket should be repaired as per the jacket repair section outlined later in this document.

Snagged strands on the jacket; the load bearing core is intact

Structural Deformation

Any changes to the shape or diameter of the line should be assessed. A localized diameter change may show signs that the line was shock loaded.

Twist

Twist will reduce the performance of the line, especially if the line has twist when it is put into service. If twist is observed during an inspection, the cause of the twist should be examined and addressed. Often twist can be induced into a torque-neutral line such as core dependent rope by connecting it to a non-neutral tail such as a 3-strand laid rope. Twist can also be introduced or trapped into the line when loading the line onto a winch. Care should be taken to minimize fleet angles if using a rolling sheave during level winding, and operators should continually observe the line for line twist that may already exist in the payoff reel or container.

If twist is observed in the line every effort should be made to remove the twist before using it in operation. In extreme cases where the twist is permanent the line should be retired.

Contaminants

The line should be checked for the presence of abrasive contaminants and/or chemicals that can work into the interior of the line structure. Abrasive particles, such as rust or grit, can damage the fiber over time. Any surface dirt or grit should be washed off the line. Do not use degreasing compounds or any harsh or damaging chemicals and avoid using high pressure hoses.

While the materials used to make HMPE rope are relatively impervious to most common chemical compounds and petroleum products, exposure to these, and other chemicals, should be avoided as a routine precaution. Damage due to chemicals is sometimes difficult to verify. The fiber may become brittle and/or discolored or show some other form of degradation. If there are any visual signs of chemical contamination, a strong chemical smell, discoloration in the coating or brittleness in the fiber, a Cortland representative should be contacted.

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, medical, research, subsea, marine, and energy industries.

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