

LINE MAINTENANCE

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LINE MAINTENANCE

Synthetic and HMPE lines can be susceptible to cuts and abrasion and should not be exposed to conditions that might damage them. If they are used in fairleads previously used with wires, it is necessary to ensure that surfaces have not become grooved or roughened by the wires. Consideration should be given to fitting chafe protection to the section of line passing through the fairlead (Figure no. 1).

Care should be taken when dragging synthetic and HMPE lines along a deck. Contact with sharp edges and rough surfaces should be avoided. When possible, small lines should be carried instead of dragged.

Maintenance activities for HMPE and other fibres lines vary slightly by line design and construction, but may include the following:

- Monitor and remove inducted twist (see below)
- Maintain the chafe protection to make sure it is working properly and can be safely deployed
- Keep deck equipment surface conditions free of defects and sharp edges
- Mitigate excessive localised damage. When dirt, grit or rust particles are allowed to cling to or penetrate into line, internal abrasion will result. The line be brushed or cleaned before storing.
- Cover winches when lines are not in service
- Monitor the condition of jacketed HMPE (if used) lines and repair in accordance with retirement manual
- Cleaning lines when they are contaminated with oil or other commonly used petroleum lubricants. If a rope becomes oily, it is more difficult to handle. Dirt and grit will adhere to the oil and cause internal abrasion of the rope. If a line becomes oily or greasy, it should be scrubbed with fresh water and a paste-like mixture of granulated soap. For heavy accumulations of oil and grease the line should be scrubbed with a solvent, such as mineral spirits, and finally rinsed with a solution of soap and fresh water.

Ships should take care to maintain the effectiveness of the chafe protection during visits to exposed terminals. Ships calling at floating terminals should discuss chafe protection with the terminal in advance to make sure that any HMPE lines passing through the floating terminal fairleads are protected.

For Panama leads, the steel should be highly polished. If this is difficult to achieve consideration should be given to fitting stainless steel or polymer lines (Figure no.2). Roller fairleads or other rotating deck equipment should be well maintained and kept free to rotate as originally designed.

In all cases steel wire ropes or towing pennants should never be used on the same deck equipment, fairleads and rollers that HMPE or other synthetic mooring lines are to be used on.



Figure no. 1: **Chafe protection on lines and in fairleads**



Figure no. 2: **Polymer and stainless steel insert in fairleads**

Inducted twist

Although braided and plaited ropes will not twist on its own under load like a laid rope, there are various ways a braided rope can become twisted; for example when it is attached to a laid synthetic or wire rope. As a laid rope is loaded, it unwinds, transferring twist to the braided rope component.

Induced twist may reduce a mooring line's strength.

To prevent twist do not connect a braided rope to a laid rope or wire rope!

It is also important to handle the rope correctly and not introduce twist into the line. Rope should never be taken from a reel lying on its end (Figure no. 3). It is best to support the reel horizontally so it may spin freely and then pull the rope off the top (Figure no. 2).

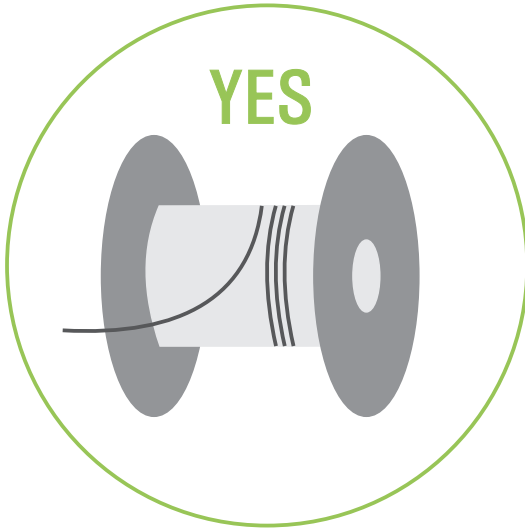


Figure no. 3: **recommended spinning of the reel**



Figure no. 4: **not recommended spinning of the reel**

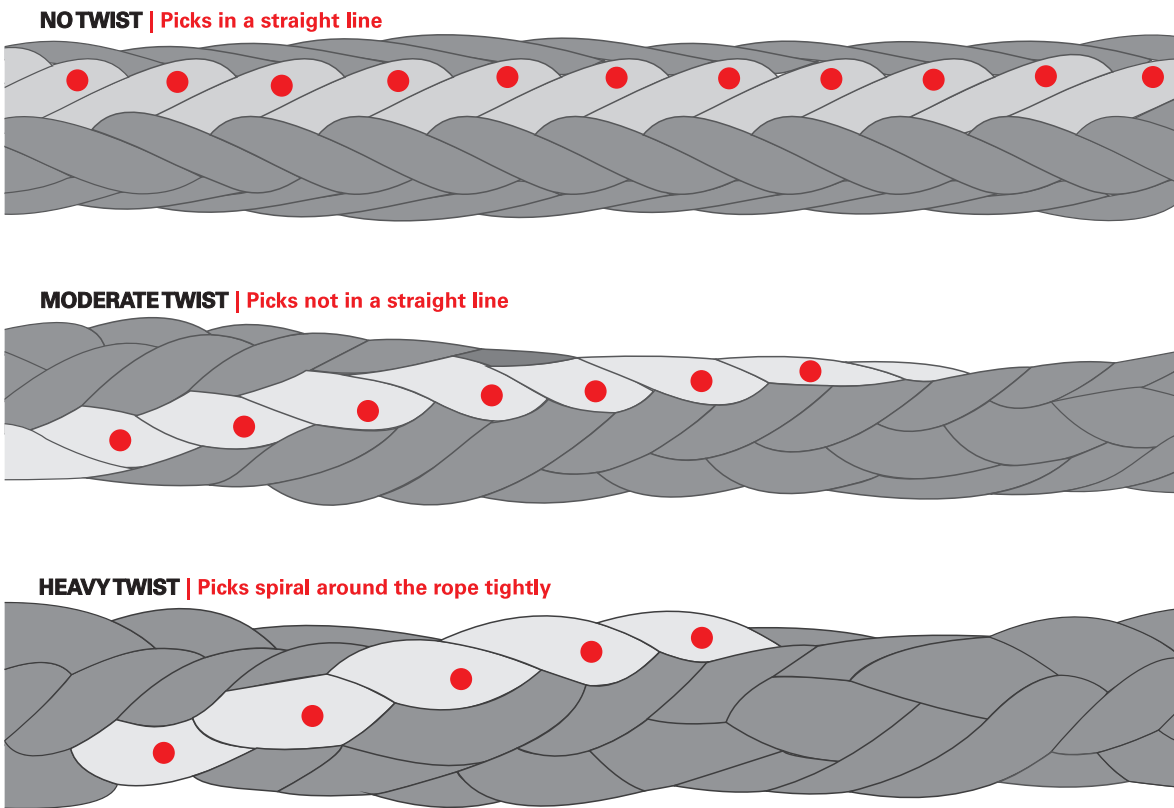


Figure no. 5: **Twist in the line identifiable by means of an imaginary curve formed by the picks of individual binding points**

Removing Twist

If a twisted line has been identified (Figure no. 4), take the following steps to remove the twist:

- Pay out as much of the twisted section of rope as possible onto a flat surface
- Manually untwist the line by flipping the eye repeatedly in the opposite direction of the twist until the twist is removed
- It may be necessary to milk the twist to the end of the line for the best results
- Wind the line back onto the winch or spool under reasonable tension taking care to prevent re-twisting of the line
- In case individual strands of the line are damaged and the twist cannot be removed, put the line out of use and contact the manufacturer

Other recommendations

Synthetic mooring lines shall be protected against high temperature and friction. Salted line is recommended to be rinsed with fresh water (density 1.000 g/cm³) and dried (not applicable in cases when we want the line to be protected against electrostatic discharge).

If the line is stored on board and could be exposed to sunlight, it must be masked.

Before a long oceanic voyage, it is recommended to move the line to the lower deck to prevent it from being lost during bad weather.

RESOURCES

1. Cordage Institute - International Guideline. CI 2001-04 Fiber Rope Inspection and Retirement Criteria
2. ISO/TS 14909:2012 Fibre Ropes for Offshore Stationkeeping - High Modulus Polyethylene (HMPE)

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