

RETROFITTING SHIPS FROM WIRE TO HIGH-PERFORMANCE SYNTHETIC MOORING LINES

SWITCHING FROM WIRE TO SYNTHETIC

Samson has been successfully supplying torque-free, braided HMPE (high modulus polyethylene) synthetic fiber mooring lines to ocean-going vessels for more than 20 years. Samson mooring lines made with Dyneema® fiber have been proven to save operators money due to:

- > **Faster and safer mooring operations with less personnel required**
- > **Less mooring injuries due to line flexibility and light weight**
- > **Significantly longer service life than wire rope**

The proven savings that have been achieved on new-builds and modern vessels can also be reached on older vessels still using wire rope.

Preparing a vessel with chock, roller, and winch damage due to extended use of wire rope is as simple as grinding and re-surfacing. This procedure is best accomplished in normal shipyard or repair visits.

A metal surface that is as smooth as possible is optimal for extending the service life of a line. Many tug and marine customers now employ stainless-steel chock surfaces for their ropes. However, attention to elimination of rusted, uneven surfaces on chocks, rollers, and other metal objects that may come in contact with the lines, is the key to successful retrofitting of the ship from wire to synthetic mooring lines.

The following guide to correct preparation of all rope contact surfaces is extremely important when switching from wire rope to Samson's high-performance mooring lines. When employed correctly, surface-repair instructions and care will ensure a long and successful service life for Samson fiber mooring lines such as AmSteel®-Blue, Force-8, Proton®-8, DPX™-75, and Turbo-75.

SAMSON RECOMMENDATIONS TO MAKE YOUR ROPE LAST AS LONG AS POSSIBLE

Avoid chafing and cutting damage by first inspecting all contact surfaces for the following:

All metal surfaces in contact with the rope should be smooth. The surface roughness should be no greater than 300 μ" AA (arithmetic average), so its surface is free of snags, burrs, rust, and wire rope scoring.

All fairleads and rollers should be re-ground to remove all existing rust and wire rope induced defects (i.e. burrs and scoring).

All rough surfaces should be welded and ground smooth to eliminate inconsistencies in the contact surfaces.

The grinding needs to eliminate all barbs, sharp edges, or other significant irregularities.

Roller fairleads should be well maintained and able to roll.

Once all surfaces have been refurbished, periodic examination and maintenance should be performed to keep surfaces free of rust, and fresh paint should be reapplied.

Use the following International Marine Coatings primer or equivalent:

- Interbond 501 Primer Finish

Use the following International Marine Coatings paints or equivalent:

- Intercare 755 Cosmetic Finish
- Interthane 990 Cosmetic Finish
- Interguard 740 Cosmetic Finish

Paint should be dry on contact surfaces before the rope is deployed as to avoid taking paint off surfaces, bunching paint, or creating sharp paint shards.

The continued use of steel-wire mooring ropes on contact surfaces, such as fairleads and rollers that are intended for HMPE fiber ropes, may cause chafe damage and is not recommended.

Examples of UNACCEPTABLE contact surfaces



MOORING WINCHES

- > Samson ropes are commonly used on wire rope mooring winches. It is important to clean and prepare the contact surfaces on the winches to the same standard as the other contact surfaces.
- > Ropes made with Dyneema® fiber have a lower coefficient of friction than steel-wire ropes. Consequently, more turns may be necessary on the tension drum to compensate for this loss of grip. The lower coefficient of friction will result in the lines burying on other wraps.
- > To avoid or relieve the severity of this, the line should be installed under some tension (100 to 200 lb) on the storage drum and no more than one layer of wraps should be on the working drum.

SAMSON CHAFE SLEEVE PROTECTORS

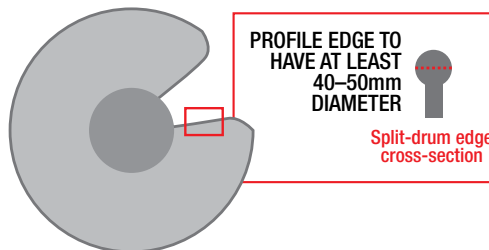
To further protect your Samson mooring lines and achieve the optimal service life, the use of chock chafe-protective sleeves is always recommended. Friction heat created in ship chocks and cut, uneven, or rusted areas in the chock can damage synthetic ropes. Therefore, these ropes must be protected.

One effective chafe protection option is Samson's Pro-Moor chafe sleeve, which can be sewn on to the mooring line. Samson also offers a replacement sleeve that is attached to the mooring line with a hook-and-clasp securing system. Both sleeves are designed to provide the lightest weight, most durable, and cut-resistant protection to your valuable mooring lines. Pro-Moor chafe sleeves are made from Dyneema® fibers and consist of two different "wear" surfaces:

- > The outer woven fabric is thicker and has a coating with a high coefficient of friction (COF), which grips the painted metal chock surface and prevents the gear from moving in the chock during mooring.
- > The inner woven material has a slick, or low, COF; allowing the mooring line to move inside the chafe gear during mooring without dislodging the gear from the chock.

To avoid chafing in the transfer section between the storage drum and the split drum, it is important to pay attention to the fairing edge — see diagram at right.

Lines should be ordered with a "back splice" or a seized end in one end. This section should be passed through the hole in the flange. The U-bolt that is used to secure the line to the flange should be secured at the base of this splice.



Both Pro-Moor chafe sleeves (the sewn sleeve and the hook-and-clasp securing system) have grommet "eyes" on each end of their 2-meter length to allow the attachment of "tag lines," which the crewmember can use to place the gear in chocks during mooring.



Samson's Pro-Moor chafe sleeve
sewn on to AmSteel® Blue

Examples of ACCEPTABLE contact surfaces

