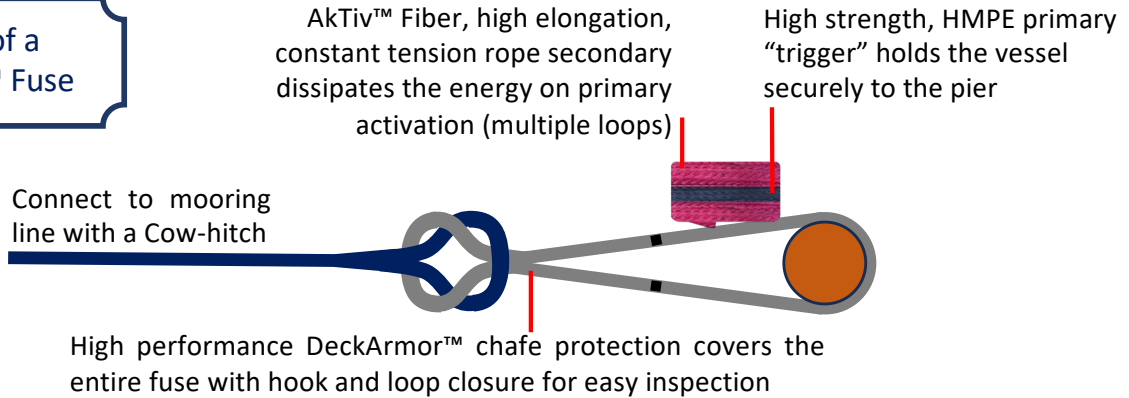




## LifeSaver™ Fuse

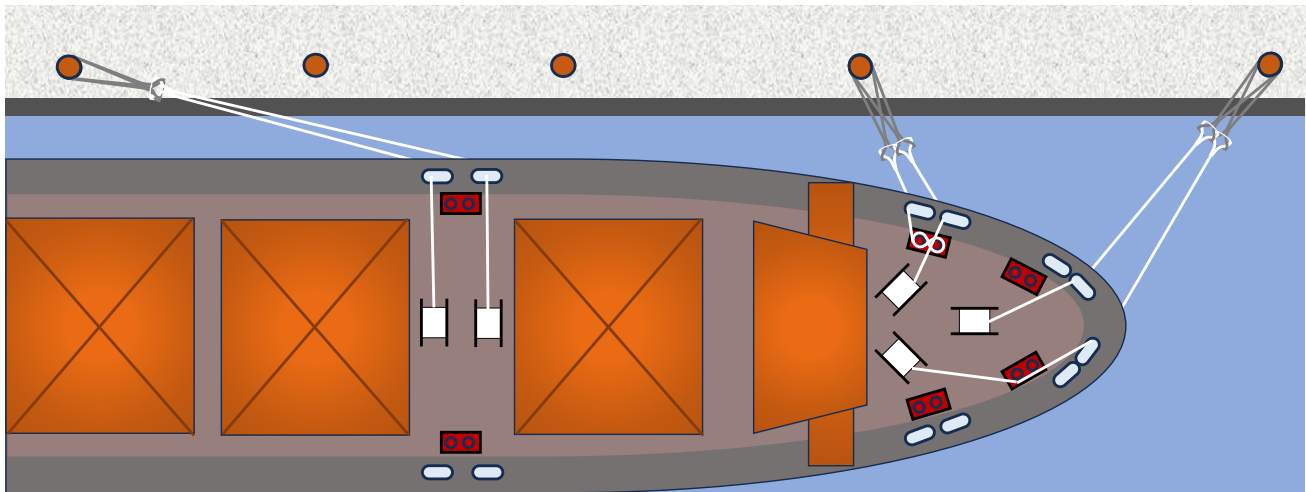
### USE & RETIREMENT GUIDELINES

#### Anatomy of a LifeSaver™ Fuse



### SELECTION

MoorGuard’s LifeSaver™ Fuse is designed to prevent a mooring line from being loaded past the safe working load and to reduce the risk of recoil that can result from the release of energy stored in mooring lines under tension.



Rope manufacturers specify a safe working load of 20% (Safety factor 5) of a new rope’s minimum breaking strength. Mooring lines are often subject to loads above the safe working load. Repeated loading above 40% of MBL for polyester or polypropylene ropes or 33% of MBL for nylon ropes causes accelerated decay of the rope and greatly reduced breaking strength.

MoorGuard™ recommends a maximum fuse capacity of 30% of new rope MBL when installed on used lines and 40% for new lines. Higher capacity fuses can be installed after adequate engineering evaluation of the vessels’ line maintenance and management programs.

**ADDED SAFETY** – An additional level of safety can be achieved by reducing winch brake rendering to at or slightly below the installed fuse capacity, providing local overload protection both inboard and outboard the vessel.

## COW HITCH INSTRUCTIONS

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1

Start with the mooring line (Rope A) and LifeSaver™ Fuse (Rope B).



2

Insert the eye of rope A into the eye of rope B.



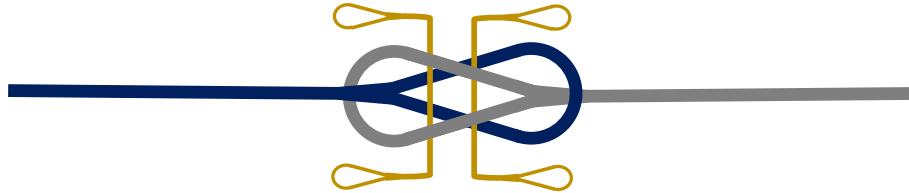
3

Insert the end of rope B into the eye of rope A.



4

Insert the pig tails between the cow hitched eyes as shown here:



5

Tighten the cow hitch and attach the loose ends of the pig tails to each side.



6

Use the pig tails to disconnect the cow hitch by pulling in opposite directions.



## COW HITCH INSTRUCTIONS *continued*

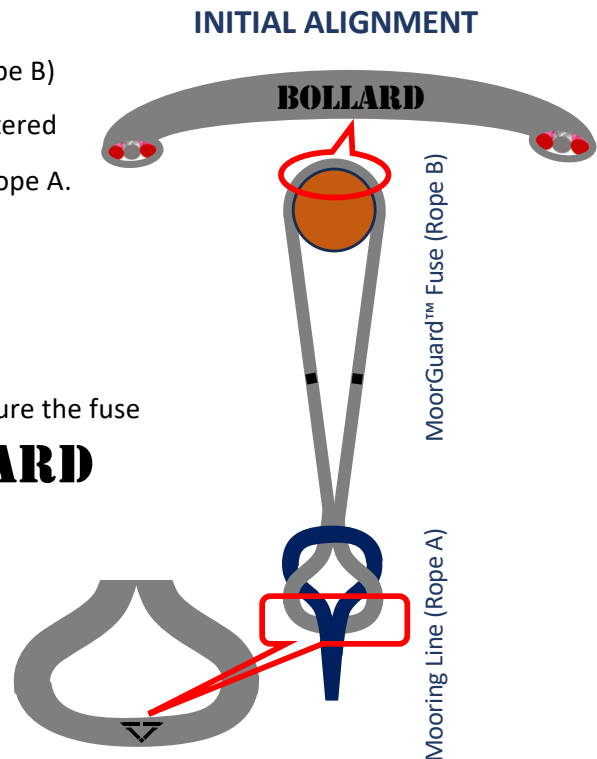
7

When initially installing the fuse (Rope B) ensure the alignment triangle is centered in the cow hitch when installed in Rope A.



8

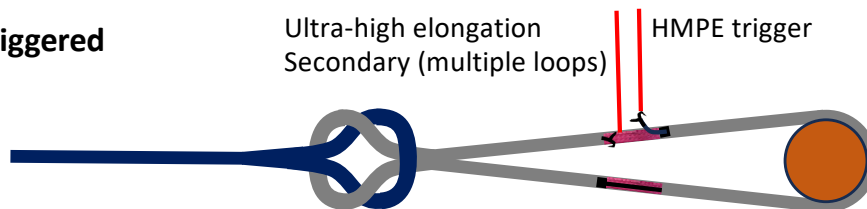
Before tensioning the cow hitch ensure the fuse is aligned so that the **BOLLARD** mark is facing in toward the bollard.



## RETIREMENT

In the event that a peak load in the mooring system exceeds the trigger deployment load, the HMPE trigger component in tension will separate, transferring tension to the ultra-high elongation catch component or secondary. With energy released by the mooring line the secondary will elongate significantly as it absorbs the corresponding energy. This deployment is an indicator requiring immediate action to address the overload condition as the secondary will continue to stretch and will eventually fail if elongation is left unchecked. Once activated the fuse should be removed and replaced immediately.

### LifeSaver™ Fuse Triggered



*Once the LifeSaver Fuse is triggered, the internal rope structure is exposed as a visual advanced warning of the overload. The ultra-high elongation rope will continue to elongate. Up to 150% additional length, until complete rupture.*

## RETIREMENT continued

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Damage to the LifeSaver Fuse resulting in chafe deterioration must be monitored during the routine inspections of mooring equipment. If the chafe is worn to the point where internal components become visible, the LifeSaver Fuse must be removed from service until it can be repaired, should validation of core Components confirm no internal damage, or it is replaced.



### LifeSaver™ Fuse Chafe Damage



*If the chafe is worn to the point where internal components become visible, the LifeSaver Fuse must be removed from service until it can be inspected and the chafe gear repaired if the core components are undamaged.*

## EXPECTED SERVICE LIFE

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The standard expected life for LifeSaver Fuse units is three (3) years in service unless dedicated evaluation specific to the vessel or mooring pattern has validated an alternate lifetime.

