

Overview To overcome slippage, a common issue with high-performance ropes, Samson created unique 8-strand ropes engineered with surfaces that allow them to grip when needed. Samson recommends the following handling techniques to maximize the service life of these lines when used on H-bitts.

Although *Proton*[®]8 and *Quantum*-8™ have many desirable advantages, these types of 8-strand ropes have a longer "lay length" than traditional 8-strand ropes and are more susceptible to twist damage. Care should be taken during use to avoid excessive twisting that can occur when wrapping H-bitts. Over-twisting can cause permanent damage to the lines, evidenced by hockles, or bulges in strands where core yarns have protruded through the surface yarns, as shown in Figs. 1 and 2.

Hockles are created by excess twisting in one direction. As the rope is twisted, strands are twisted in the same direction as the rope twist. At the same time, twist is removed from the strands that are twisted in the opposite direction. This creates uneven fiber lengths in the strands and will cause the strands that have been untwisted to become overloaded, which can cause a premature failure. Although the hockles themselves are not damaging to the rope, they are good indicators that the rope has been over-twisted.

How to Minimize Twist

It is impossible to eliminate all twist when working on an H-bitt, but twist can be minimized by alternating wrap directions each time the line is used. As the H-bitt is wrapped, twist is introduced into the line. Repeatedly wrapping in one direction will add twist in that direction. If the H-bitt is wrapped in the opposite direction each time it is used, any twist that was created during the previous job will be removed. It is important to make sure that the actual twisting of the line is reversed and not just the wrap pattern or direction. A common mistake is to assume that starting the wrap pattern in a different direction will automatically cause the rope to twist in the opposite direction. This is not always the case. A right-handed person, regardless of the starting point, will typically induce a "left" twist into the rope. Caution should be taken to avoid this.

The easiest way to induce an opposite twist is to switch sides of the H-bitt when starting a new job. As shown in Fig. 3 and 4, using the opposite side of the H-bitt will force an opposite twist in the rope.

Another way to help prevent twist is to preset the line. Once these ropes have been loaded, they do not return to their original dimensions. A rope that has been preset is less likely to accept permanent twist. Presetting should be performed only on new and unused rope, and with extreme caution. In order to preset the line, couple it with a force gauge to monitor



FIGURE 1 Proton-8 with a hockle.



FIGURE 2 Proton-8 with severe strand hockles.



FIGURE 3 Proton-8 with "left" twist.



FIGURE 4 Proton-8 with "right" twist.

the load, then firmly attach the line to a fixed location strong enough to withstand the load. The rope should then be stretched to a load of 30–50% of the minimum breaking strength (as specified on the Certificate of Compliance). Holding this load for approximately five minutes is adequate to preset the line. Once the line is preset, use of the alternating wrap pattern during application is still recommended.

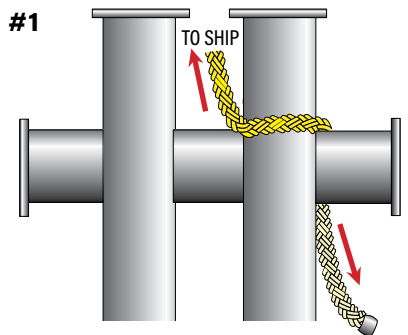
Samson products are built for a long service life, and proper care and use of ropes will ensure maximum value. *Proton-8* has been successfully used with H-bitts, and many users have continued to work these ropes without any issues—even after strand hockles have appeared. However, minimizing twist will extend service life and provide greater long-term cost savings. Please see the diagrams at right for detailed illustrations on the proper wrap pattern of 8-strand ropes on an H-bitt.

Proper H-Bitt Wrapping Techniques

Minimizing slippage is vital to prolonging the life of the rope. The following diagrams illustrate how to properly wrap an H-bitt to minimize slippage. Testing has shown that using this wrap pattern can reduce slippage as much as 50% over other wrap patterns. Care should also be taken to ensure each wrap is “snug” over the preceding wrap. It is also important to avoid surging the line, especially during initial loading. Easing into the load, allowing the rope to grip, will reduce the amount of slippage at full load.

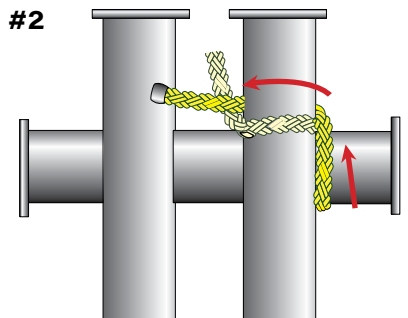
For additional information and other available Technical Bulletins, please contact your Samson representative or visit our website:
SamsonRope.com

STEP #1



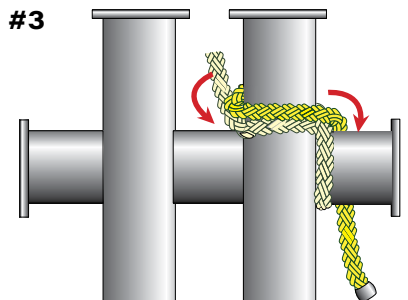
Make the first wrap by going around the vertical pin 180 degrees, then going over the horizontal pin.

STEP #2



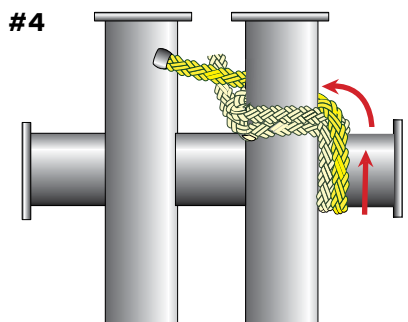
Wrap the horizontal pin 360 degrees, then cross back over the rope, forming a “X”, and behind the vertical pin.

STEP #3



Bring the rope around the vertical pin 360 degrees, crossing over the rope again to form the “X”, then behind the horizontal pin.

STEP #4



Repeat steps #2 and #3 at least five wraps.



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