

# Technical Bulletin

## Proper Handling Techniques for Samson 8-Strand High Performance Ropes on H-Bitts



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

To overcome slippage, a common issue with high performance ropes, Samson created Proton®-8 and Quantum-8. These unique 8-strand ropes were engineered with surfaces that allow them to grip when needed.

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 the strand in which core yarns have protruded through the surface yarns, shown in Figures 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 un-twisted 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 attention to technique can prevent over-twisting. This can be accomplished by alternating wrap directions each time the line is used. As the H-Bitt is wrapped, twist is induced 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 opposite, not simply 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 automatically induce an opposite twist is to switch sides of the H-Bitt when starting a new job. As shown in Figures 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 pre-set the line. Once these ropes have been loaded, they do not return to their original dimensions. A rope that has been pre-set is less likely to accept permanent twist. **Pre-setting should be performed only on new and unused rope, and with extreme caution.** In order to pre-set the line, couple it with a force gauge to monitor 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 5 minutes is adequate to pre-set the line. Once the line is pre-set, use of the alternating wrap pattern during application is still recommended.

Samson products are built for 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 twisting as described in this bulletin above will extend service life and provide greater long-term cost savings. Please see the following page for detailed illustrations on the proper wrap pattern of 8-strand ropes on an H-Bitt.



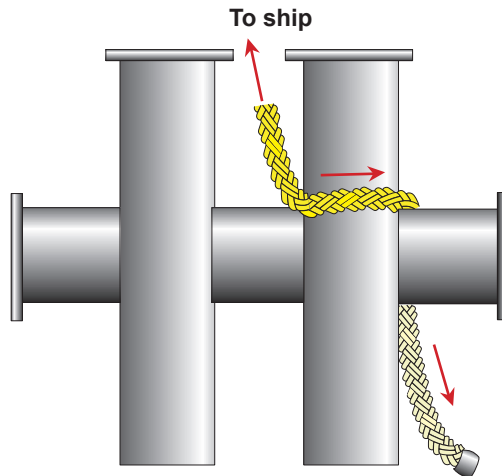
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## Recommended wrap pattern for 8-strand Ropes on an H-Bitt

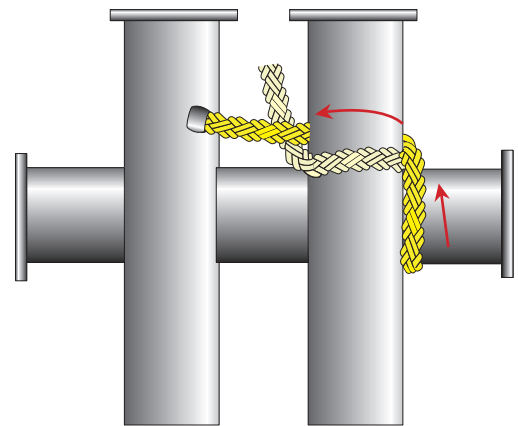
Minimizing slippage is vital to prolonging the life of the rope. The following diagrams illustrate how to properly wrap an H-Bitt to minimize slippage. Testing has shown that using this wrap pattern can reduce slippage as much as 50% over other wrap patterns. Care should also be taken to ensure each 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.

### STEP #1



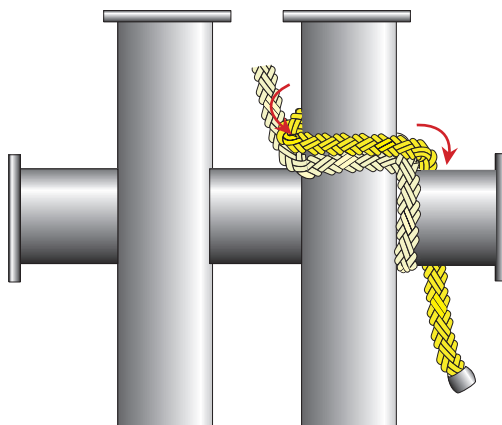
Make the first wrap by going around the vertical pin 180 degrees, going over the horizontal pin.

### STEP #2



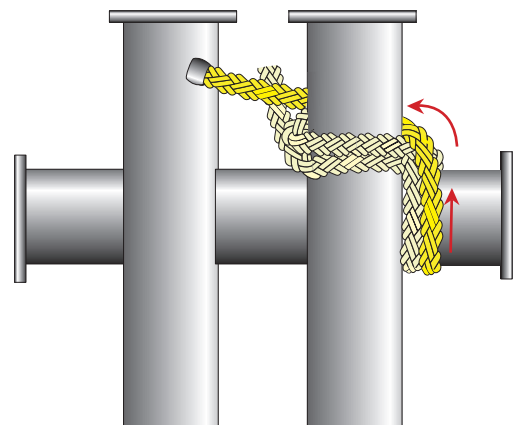
Wrap the horizontal pin 360 degrees, then cross back over the rope, forming an "X", and behind the vertical pin.

### 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 #3 and #4 at least 5 wraps.



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