

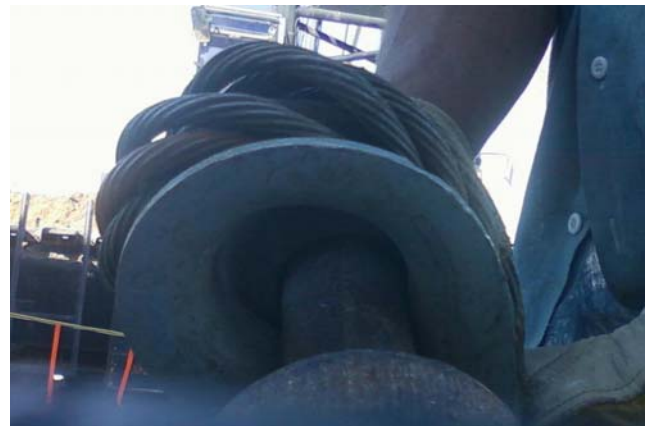
To: Lift-All Customer Date: 6/21/13
From: Lift-All Quality Assurance Department
Re: Loose Strand(s) in the Eye of a Flemish Splice, Wire Rope Sling

This bulletin has been produced in response to questions that have been directed to Lift-All in regard to wire rope slings containing one or two high strands located in one or both sling eyes. Slings containing such high strands can possibly raise a question in the mind of some sling users about the possible impact this may influence on the performance of affected slings and whether sling strength may be affected.

We hope that the following information will serve to alleviate any of these concerns on this matter:

What is High Stranding?

Wire rope contains numerous strands of wire that are wrapped about the core section of the rope. The number of strands existing in wire rope most commonly ranges from 6 to 19. The predominant constructions of rope that are used to produce wire rope slings utilize a quantity of 6 strands. High stranding is variation in tightness of these 6 wire rope strands about the core of the rope. If one or several of these strands exhibits looseness when compared to the remainder of the strands, then *high stranding* exists.



What Causes High Stranding?

High stranding in wire rope products can be caused during several different stages in the production process. The location of the high stranding in the product can serve to indicate which stage caused the high stranding:

- *High Stranding existing along a straight length of rope* – If high stranding exists uniformly along a straight section of the rope then this generally reflects that the high stranding was generated during production of the rope.

- *High Stranding existing in one or both eyes of a sling, but not along the straight length of the rope body* – If high stranding exists only in the eyes of a wire rope sling then this most commonly reflects that the high stranding was generated during formation of the mechanically spliced eyes. Lift-All uses a *Flemish* splice eye construction method, which is typically used by sling manufacturers throughout the United States. This method does naturally tend to create some separation of the strands at the top of the eye. And any variations in the strand performing can become more visible when this process is completed. The Lift-All production process minimizes the formation during the eye restranding process, but some amount of high stranding can form during the sleeve swage/press process. This characteristic also tends to become more pronounced as the eyes size is reduced. Thus thimble spliced eyes will tend to evidence high stranding more frequently than standard length, full sized eyes.

Effect of High Stranding

High stranding in running lengths of (operational) rope – If lengths of rope are used for operation on cranes, hoists and similar equipment, the durability of the rope can be affected as the high/loose strands will tend to become abraded more quickly as the rope feeds through sheaves or is wound on drums.

High stranding in eyes of wire rope slings – Loose strands located in sling eyes will not affect the strength or durability of a wire rope sling. This is because two parts of rope effectively share the applied sling tension within the eye portion of each sling, while the sling body contains only a single part of rope. Hence, the weakest point in a wire rope sling will always be located in the sling body. This finding is well known in the sling industry, and our testing of sling samples has reconfirmed that one or two high strands within the eye section of a sling will not have any effect on sling strength.

Possible Procedures to Eliminate High Stranding

The most common methods used in eliminating the tendency of a particular rope type to high strand is to either not push up substantially on the sleeve prior to swaging or to use an alternative splice technique, other than the *Flemish* splice technique.

Such techniques include the *Return Loop* splice and the *Texas Tuck* splice. Lift-All's policy is to not use either of these methods. With the *Return Loop* technique, the strength of the sling is 100% reliant upon the pressed sleeve. Should the sleeve become damaged, sling safety can be rapidly affected, more so than for *Flemish* splice slings. In regard to the *Texas Tuck* method, it is not used by Lift-All because this method results in a lower sling strength/efficiency.

Another procedure which can assist in avoiding "high stranding" of strands in the eye is to use a longer length of the wire rope tail where the strands enter the sleeve. One drawback in using this procedure is a resulting slight increase of the strand gap where the strands enter the sleeve. A larger gap or opening between the strands where they enter the sleeve is allowable and will not affect the strength or performance of the rope.

Our concluding comment is again that while the *Flemish* eye splice method tends to result in varying degrees of high stranding in the sling eye, we suggest that this is not cause for removal from service as sling strength is not affected. And this result is still better than the choice of using an alternative method that compromises sling strength.

We understand any concern or potential reduced sense of quality that this issue may have yielded. However, we hope with an improved level of product knowledge that you will value our position on this issue, and understand that our mission is to be the trusted name in quality lifting products and that we do not make compromises in product quality.

We hope this information adequately addresses your inquiry. Please contact me if you have any further questions.

Sincerely,

A handwritten signature in black ink that reads "Greg S. Babinchak" with "6/13" written below it.

Gregory S. Babinchak
Manager of Technical Services

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