

Girth hitching slings to the cable on wired nuts

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Test Report - Sewn Slings on Wire Stoppers - Suicidal or Acceptable

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Thanks for Black Diamond for providing materials, information and testing facilities for this test. All conclusions are my own, and do not represent the opinion of Black Diamond Equipment LTD.

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Introduction:

The question comes up from time to time - how strong is a sling thrown through a wired stopper? Some say - really weak - never do it. Some say - it's not so bad. So I decided to run some tests and find out.

Black Diamond Wired Stoppers come with 3 sizes of cable: #s 1 and 2 use 1/16" 7x7 galvanized cable; #s 3, 4 and 5 use 3/32" 7x19 galvanized cable; and larger sizes use 1/8" 7x19 galvanized cable. I concentrated on the larger two sizes. BD was kind enough to make up samples of just the swaged cables.

Black Diamond Nylon 11/16" or 18mm runners are similar to slings in common use among climbers. These are probably a little stronger than average, and were chosen for testing largely because I had a bunch of new ones from the same batch that I could use. All results should be scaled down based on the rated strength of the runners you are using.

WARNING: evaluation of these tests requires experience and judgment. I do not recommend using slings on wires - but for the expert climber it MIGHT be a reasonable alternative IN SOME CIRCUMSTANCES.

The Tests:

Of course, we can't test every combination. So here's what I decided to test:

A. Data on the #2 stopper establishes the base strength of the 1/16" cable. B. Data on the #5 stopper establishes the base strength of the 3/32" cable. C. Data on the #8 stopper establishes

the base strength of the 1/8" cable. D. Data on Camalot slings establishes the base strength of the webbing loops.

Base Data:

1/16" cable: Average 724 lbs, Minimum 566 lbs, Rating 450 lbs, N = 131. 3/32" cable: Average 1747 lbs, Minimum 1409 lbs, Rating 1259 lbs, N = 220. 1/8" cable: Average 2970 lbs, Minimum 2607 lbs, Rating 2248 lbs, N=190. Slings: Average 5781 lbs, Minimum 5393 lbs, Rating 4946 lbs, N=236.

But, we're not going to be real sophisticated here, we'll just use the average.

1/6" cable = 724 lbs. 3/32" cable = 1747 lbs. 1/8" cable = 2248 lbs. Sling = 5781.

New Test Data - all tests use 4 samples. All strengths in pounds.

T1: Test actual batch of slings.

Average = 5880. Minimum = 5733.

Conclusion: this batch of slings a little stronger than average.

T2: Test slings, girth hitched together (as they normally are in the field), not neatly dressed.

Average = 4363. Minimum = 4084.

Conclusion: girth hitching sling to sling loses 26% of the sling strength. Given the high initial strength, the hitched system is still strong enough for most climbing uses.

T3: 1/16" cable with sling girth hitched to it.

Average = 936.5. Minimum = 911

Conclusion: compared to 1/16" cable average of 724 lbs - Sling is stronger when girth hitched to sling than when run over the head of a tiny stopper.

T4: 3/32" cable with sling girth hitched to it.

Average = 1301.5. Minimum = 1269.

Conclusion: compare to 3/32" cable average of 1747 lbs. Loss of strength of 26% on the cable.

T5: 1/8" cable with sling girth hitched to it.

Average = 1709.0 Minimum = 1624.

Conclusion: compare to 1/8" cable average of 2248 lbs. Loss of strength of 28%.

T6: 1/8" cable with sling doubled through it (rather than girth hitched).

Average = 3211. Minimum = 3054.

Conclusion: compare to 1/8" cable average of 2248 lbs. No loss of strength.

T7: 3/32" cable girth hitched with 3/32" cable (stopper to stopper extension).

Average = 1520. Minimum = 1439.

Conclusion: compare to 3/32" cable 1747, loss of strength of 13% - better than the sling.

Comments: The data is screwed up a little bit because the actual stoppers are tested with the aluminum stopper at the top and a 10mm pin at the bottom. These commonly break at the top, where the cable folds tightly going into the stopper. Thus, in these tests, we can achieve "stronger than average results" because we are running the tests differently.

Overall conclusion:

Yes and No.

1/16" cable (really small stoppers)

You probably would not think of tossing a sling through these, because the placement and the cable are so small and weak to begin with. Looks like the sling does not make it any worse, but this is of little utility, since this is an aid piece anyway. Not strong enough to rappel off of.

3/32" cable (small stoppers 4, 5 and 6)

I think these are usually considered pretty strong, but not truck. Girth Hitching the sling through gives you significant loss of strength, to down below the rating on the #5 Stopper. May be OK for rappelling and low-impact falls, but not for general use.

1/8" cable (large stoppers)

These are usually considered truck. Tossing the sling through results in a strength of 1709 lbs (loss of 28%). Sketchy still, even on the large size. OK for rappelling and low-impact circumstances, but not for general use.

Girth Hitch vs. Doubling the sling through:

Doubling through WINS big time. Yes, it takes twice as much sling, but it is definitely significantly stronger.

Wire Cable hitched with Wire Cable (Stopper to Stopper extension)

Stronger than the sling, but not that strong. Makes for a stiff unit, negating what is often the prime reason for extending the piece in the first place.

Conclusive Overall Conclusions:

Girth Hitching a NYLON sling through reasonable size Stoppers is OK for low-strength operations, but should be treated with caution. Doubling the sling through, especially on the smaller sizes, is acceptable. Extending with cables suffers from some of the same problems, though to a lesser degree.

Spectra Slings - No comment, not tested.

And of course, everyone will draw the line differently. Protecting a 60' runout and no biners to spare? Sure, it's better than nothing, but I'd try to double the sling through at the very least. For setting a rappel? Acceptable I guess, in the larger sizes, but repeated use might eventually cut the webbing.

Using smaller webbing than the BD 18mm nylon slings? Exercise more caution.

That's my story, I'm a stickin' to it.

(signed) Tom Jones aka Jrat aka Ratagonius Utahness