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## slipping Blake's hitch

Posted by Dietley - 08/15/2004 02:08am

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I've been using a Yale XTC rope for two years without any problems, but recently my 4/2 Blake's hitch started slipping. I started using a 5/3 version instead, and thought I'd solved the problem, but today it started slipping too! What's up with that!?

I know the knots were tied right, I double and triple checked them (although I am still uncertain as to how tight one needs to keep a Blake's hitch). The rope certainly doesn't look worn, and it isn't glazed or anything. It doesn't seem to be terribly dirty, but there was a lot of dusty crud settling over me and the gear (this time, but not when the original 4/2 started slipping). Also, it seems to happen mainly on descent, not ascent or dangling.

What factors can cause this slippage, and what measures can be taken against them? Should I try washing the rope? Do something different with the knot? Help! Climbing is already thrilling enough; I definitely don't need the extra rush of adrenaline that this causes!

Brad

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Posted by Jim W - 08/15/2004 11:07pm

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Hello, Brad--

I don't have an answer for you, but I do have some questions/thoughts:

1--Could moisture/humidity have anything to do with it? Has that been different?

2--How much did it slip? I assume that you grabbed the rope to stop the descent--did that take much work on your part?

3--Is it that the knot would hold you in place until you "pushed" on the top of it (to begin your descent), and then it didn't catch and hold once you took your hand off the knot?

4--How much do you and your gear weigh? And that prompts the thought, are you carrying more weight aloft now?

If #3 is true, then the answer from the engineering and physics worlds is that the dynamic coefficient of friction of the knot is too low to hold you, whereas the static coefficient of friction is high enough to hold you. What that refers to is that the frictional force may be enough to hold you \*until\* it begins slipping, but once the slipping has begun, it ain't gonna stop. I'm sure you've experienced that when pushing a heavy object across a floor: you have to push with a certain amount of force to get it started moving, but once it is moving, you don't have to push as hard to \*keep\* it moving; and once it has stopped, you have to push harder again to get it going.

Of what value is that to you in your situation? Probably none, but you did get a free physics lesson. The next time it slips, instead of screaming and grabbing for the rope, you can calmly say, "Dear me--the dynamic coefficient of my Blake's hitch is too low."

Seriously, the knot does need more friction. Why now and not before? Beats me.

You commented that you were uncertain as to how tight it should be; I snug mine down pretty tightly--no slack.

I'm looking forward to hear what some who have experience with XTC, and others with a ton more experience than I have, might have to say.

Good luck!

Jim

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Posted by Bradley Ford - 08/16/2004 04:53pm

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The only time I've had a Blake's hitch slip with XTC was when the rope was brand new. My "fix" was to tighten the hitch, producing more bend of the rope through the middle of the hitch, and thus increasing the friction/holding ability of the hitch.

Testing your hitch by going up and down once or twice just off the ground, before ascending, may help catch descent problems before they become major risks. And some kind of "stopper" knot, tied below you but sufficiently off the ground, could be the difference between you sliding all the way to the ground or coming to a hard stop still on the rope if your hitch ever does allow an uncontrolled descent.

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Posted by Dietley - 08/17/2004 02:04am

Thanks, guys.

In answer to your suggestions:

-- the moisture/humidity wasn't extremely different that day; somewhat warmer and drier than usual.

-- once the slip started, it seemed like it simply didn't want to lock up at all. There was enough friction that it took only a little work with one hand to control, and even stop, the descent. I could come to a complete stop, and as soon as I relaxed my grip, it would slip again. I was a little too nervous to try letting it go and see what happened!

-- yes, the knot held until I pushed it down for my final descent, and then wouldn't hold again. I should point out that I wasn't on the same knot for the whole climb; I was working with both ends of my rope, and had advanced my rope four or five times, re-tying the Blake's each time. On the last knot, I checked and re-checked visually, then hung on it and bounced my weight a bit, before untying my other anchor and unclipping my Monkeytail. At that point it gripped just fine! Jim, in terms of your explanation, I guess the initial static coefficient of friction was sufficient, but the subsequent moments of static coefficient of friction weren't?

-- I weigh about 190 lbs., and was carrying maybe 15 lbs. of gear and water. This would be about normal for most of my climbs. Is 200 -- 210 lbs. too heavy for a 4/2 or 5/3 Blake's hitch?

-- yeah, I keep my knots pretty snug, too. Enough that I sometimes wonder if I'm subjecting my rope to more wear than is necessary!

-- Bradley, your suggestions are good. Tying knots below your hitch as you climb is a good safety measure and I make my kids do it all the time. Maybe I should start practicing what I preach! As for testing, I've always limited it to testing the static position, both initially and after one or two pulls. I think I will definitely get into the habit of doing a trial descent, as well.

Thanks again for the help!

Brad

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**slipping**

Posted by Patrick - 08/17/2004 10:37am

I've had a similar thing happen on XTC. It hasn't happened to me on 7/16" ropes like Sportline or Fly. Maybe the thicker rope isn't turning quite tightly enough around the down rope?

Anyway, what I usually do before I descend is to grab the tail end of the rope (the last few inches of rope that come out of the Blake's hitch) and pull straight up. That compresses the Blake's hitch a little more and increases friction.

Patrick

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**Slipping**

Posted by Icabod - 08/17/2004 09:10pm

Brad,

I have a 3yr old XTC, and I've just started noticing this problem. I have discovered though, that it seems to happen more after significant climbing in a tree with smooth bark. I have ben climbing a pair of willow oaks on a reguar basis, and I tend to see a little slipping while in those trees. In a white oak or a yellow poplar I've yet to have the problem. Interesting thing is that I've always just let it go, after a few inches the knot seems to remember it's job and cinches down.

As far as the blake's configuration, I always use 4-2 with my XTC. 5-3 locks solid on that rope. On my sportline either

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works fine, but I'm so used to the 4-2 that I don't like to use the larger knot. Interestingly, my kids have difficulty advancing the hitch on the XTC, because it grabs so well, there is a paradox for ya!

Climb Safe! See ya between the trees!  
Icabod

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## Friction Saver

Posted by Icabod - 08/18/2004 09:26pm

Actually I do often use them...

The more I think about it I think that it may have to do with what is at the bottom of the tree. I've never had slipping in a wild tree, there you have leaf cover on the ground below. On the trees where I have seen the problem there is bare ground, which is constantly wet. I am starting to think that my rope is just getting grimy on the ground, and that is causing the issue. To further this theory the two times I've used the sportline in those trees I deployed from a ropebag (I was using only one end, setting a rope for the kids.)

Dietly, how's the ground under your trees in the great white north? I bet you are climbing on ground with pine needle cover, which would be similar to my nasty dirt. Either that or my theory is complete bunk!

Carelessly spouting forth poor theories, instead of getting into the trees.  
Icabod (I'd rather be climbing)

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## XTP slippage

Posted by Treeman - 08/19/2004 07:59pm

I've been using XTP candy striped rope for years now. I use the slower B-53 knot because I hate sudden "skips" on my descents. I have experienced knot creep a few times. The creep is usually slow, but any creep- uh- gives me the creeps, and I respond with a vigorous upwards tug on the tail which stops that nonsense and brings my internal chemical reactions down to a tolerable level. I have never known the Blakes to create a free fall situation. A safety knot as backup down low on the rope might be a good idea until you regain trust in the knot. Like you said, we always tie a safety knot for the kids. Let's not forget that it is that same kid in a grown up body that gets us into the trees.

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## good feedback!

Posted by Dietley - 08/20/2004 01:39am

Thanks everyone!

I'm glad that I'm not the only one experiencing this. I guess we still don't know exactly what is causing it, but it is extremely comforting to know that many others have experienced slipping and not only survived to tell about it, but still enjoy tree climbing!

Patrick, I don't know if size has anything to do with it or not, but I can certainly second your statement that a Blake's hitch never seems to slip on a Sportline. And, I'm going to cinch up a little before descending, too.

Icabod, I agree that it likely isn't the bark; I always use a sleeve-type cambium saver or a false crotch. It could be the ground. The ground where I most recently had the problem was buried under a thick layer of leaf mulch and sword ferns, along with some rotten, moss covered logs, all covered with about 7 feet of salmonberry bush and devil's club. However, under my "practice tree" is mostly just bare dirt, and even though I use a rock-climbing-type rope tarp, the rope still gets considerable time in said dirt. It doesn't look super grimy, but it sure doesn't look pristine white anymore, either. Furthermore, the soil around here has a high clay content, so the dry stuff tends to have a texture similar to talcum powder! You may certainly have something here; keep the theories coming!

Treeman, thanks for your input. I feel very encouraged by your comment that you have never known a Blake's to allow a freefall. It's true that it'll take a while to trust the knot again, and I will use some safety knots for that while, but just from

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the feedback I've received here I'll feel more confident on my next climbs. Please tell me, though, what's a B-53 knot? Is it a 5/3 Blake's?

I thank you all, and my inner kid thanks you, too!

Brad

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Posted by Bradley Ford - 09/14/2004 04:40pm

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Originally posted by Dietley

I know the knots were tied right, I double and triple checked them I'm not ignoring your original post; I'm just sharing this experience.

I tried tying a hitch like a Blake's except instead of finishing over the bridge and under the running end I went over the bridge and over the running end. This produced a hitch that mostly belayed as expected, except when it slipped. ;)

Are you still slipping? (Do you find your 2003-11-13 post ironic, too?)

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Posted by Dietley - 09/15/2004 03:19am

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Yeah, I find it rather ironic, too. Do you suppose if I loosen my Blake's a little, it might not slip? Having it good and tight hasn't helped!

I'm not visualizing the alternate version of the Blake's hitch you describe, but it doesn't sound like what I'm tying.....I hope. I screwed up my back at work and haven't climbed for several weeks, so I haven't had a chance to try any changes, so, no slipping. Unless you're referring to my sanity, in which case the slippage is no worse than usual!;)

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## a slipless climb!

Posted by Dietley - 10/03/2004 03:06am

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It took a while, but I finally got up a tree with the XTC. (It could have happened two weeks ago, but I got my new Fly and just had to try it out a couple of times, first!)

I washed the ol' XTC in a commercial front-loader washing machine, with warm water and soap flakes (not detergent). After being cleaned it was way whiter than I remembered, was a little bit fuzzier (but still pretty new looking -- you just have to love cambium savers!), and was softer and more pliable. The surface didn't seem any more "grippy" or anything, but the increased softness and pliability could certainly cause a hitch to grab better, I would imagine.

Between the encouraging words from you people and from the performance of the Blake's hitch today, it was very easy to trust it. I was up and down the tree three times, and never had the slightest bit of creep. I was using a 5/3 Blake's, but after today I will probably try a 4/2 version next time, with confidence.

Other than the laundering, nothing really changed. Same knot, same weight, same technique, similar climatic conditions. I don't know if cleaning a rope is supposed to make much difference, especially since it didn't seem terrible filthy to begin with, but based on my own experience here, I'm thinking that it might be reasonable to conclude that it makes a large difference. Is it?

Brad

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## AH! HA!

Posted by Icabod - 10/06/2004 01:43pm

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VINDICATION AT LAST! :)

So much for my poor theories! I knew it, dirty rope is the cause!  
Puts a smile on my face really. I just knew I wasn't (entirely) full of bunk!

Good to hear you are back in the trees Brad.

Climb Safe!  
Icabod

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## Rope Cleaning

Posted by JimK - 12/16/2004 11:55am

I'm currently making direct contact with the rope manufacturers, surveying for cleaning methods. I hope to post the results. I'm sure the known methods are fine. Sometimes a company optimizes a method, and it takes time for it to be publicly known. I'm just shaking the trees to see what's there. Though it's curious that the XTC is the focus of conversation. Does it have a design feature more prone to slippage?

Having worked on numerous projects where a miniscule change in friction (COF - coefficient of friction) could shut down a manufacturing process, I absolutely believe washing a rope is needed where sudden unanticipated slippage occurs.

Being North of the Ohio River, the cold days of the impending winter are a good opportunity to clean rope, which is why I'm touching base with rope manufacturers.

As I think about this, I think that I'll clean 1/3 of my Fly by hand just to see if I can detect differences.

Anyone have a preferred method or technique of cleaning?

Regards,  
JimK

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Posted by Dietley - 12/16/2004 05:57pm

Jim, what I'd like to know most of all is how to get pitch out of a rope, without resorting to rope-eating solvents and the like. Please let us know if any of the manufacturers have any suggestions. I live in the land of big Douglas firs and can't even appreciate it because I HATE pitch!!

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## Samson's Response

Posted by JimK - 12/16/2004 08:57pm

Dietley,

The first respondent from the survey was Samson this evening. They even timely addressed your question about pitch.

From Samson on general cleaning:

Our general recommendations are to use soap & warm water and lightly rub the rope (either with hands or rub the rope against itself (lightly!)) - Never use abrasive brushes to scrub.

The other part of the email from Samson on removing pitch:

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We generally recommend trying some of the general household tricks for removing sap, such as butter or mayonnaise, before trying any harsh chemicals. However, if these don't work, you can also try WD-40 (but be sure to wash the residual WD-40 off the rope with soapy water since it can leave a slippery film on the rope). If this still doesn't work, let me know and we can try and come up with some other cleaners that would be safe for the rope.

I would be tempted to try a cooking oil before before WD-40. Hint: (partially)/ hydrogenated oils are a main component of mayonnaise and butter. Another household product to test would be peanut butter. It has partially hydrogenated oil with the oil loving particulates of peanuts which could provide an absorbing substrate for the pitch. Oil absorbs oil the best. Pitch, though sticky, is a natural oil. Pitch would prefer dissolving in oil over contact with the fairly inert polyester surface of the rope.

Regards,  
JimK

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Posted by Ponderosa - 12/16/2004 10:00pm

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I too climb a lot of Doug firs, in addition to pondies, and often get pitch on my hands and hair. In addition to WD-40, mayo and peanut butter, I've heard of using witch hazel, bacon grease, and lard. Wouldn't recommend them, though.

I prefer a little alcohol. I also prefer to use alcohol in removing pitch. If I'm up a tree, I just grab an alcohol wipe out of my first aid kit and it works great. I couldn't comment on whether it would be OK for polyester rope, although literature I've read indicates it's OK for nylon.

I wash my ropes, after daisy chaining them, with Woolite or Ivory Snow and cold water. I'll line dry them after first putting throw rugs, thick towels or mats over the line to prevent abrasion.

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## Hand wash Procedure

Posted by JimK - 12/20/2004 01:19am

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This is to share a washing procedure that was successful (no pitch involved)

5-gal Pail  
Fill 3 gal cold water  
1 cap full of Woolite  
150 ft of Fly  
Hand plunge 3 minutes  
Soak 20 minutes  
Hand plunge 6 minutes  
Dump water  
Add new water as a rinse  
Plunge 3 minutes  
Repeat Rinse 3 times

If there was a tough spot, I used a coffee filter to rub it. Coffee filters are about the longest lasting paper product when wet and offer mild abraisive action.

Not very entertaining.

I'm not confident about my washer. I'm not sure if Fly and Maytag would enjoy each other.

Regards,  
Jimk

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Posted by Dietley - 12/20/2004 03:10am

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Jim, be careful if your washer is a top-loader. If you daisy-chain your rope and it comes undone, the rope would get tangled around the agitator and you might destroy your washer and/or (worse yet!) your rope. If you put the rope into a mesh bag, maybe it would be okay, I don't know.

I think front-loaders are the only way to go with something like a rope, so I go to a laundromat and use a coin-operated one.

Part of the reason I'm so reluctant to use a top-loader is the fact that even in the front-loader without an agitator bashing things around, my Sportline daisy chain came undone, inside a mesh bag yet, and turned into a horrid tangle! I can only imagine how much worse it would have been with reciprocating mechanical paddles in the middle of the rat's nest!

Does anybody have any horror stories about ropes and washing machines?

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Posted by Ponderosa - 12/20/2004 11:25am

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No horror stories, but I have a top loading Kenmore that I've used on my Fly and assorted XTC and safety blue without incident. I use the gentle cycle during which the agitator barely moves. I've had the daisy chain come partly undone without problems. Tried using a garment bag a few times, but always had balancing problems. Guess it depends on the machine. The first few times, I watched over the washer and just watched how it went.

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Posted by Ron - 08/30/2006 03:18pm

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Hey guys, I just joined the forum. I'm a newbie at tree climbing but love it. I have a bunch of tall pine trees as well as some other trees in my yard and I hope to give them all a try.

I have been reading with interest about the slipping Blake's hitch because I have experienced the same thing with my new Samson Arbor Plex rope. Being new and still experiencing "height phobia", it really spooked me when it started slipping.

I was climbing with a friction saver and I realize that less friction between the rope and tree means more friction will be required by the knot. It's just when you read the "books", it's like you just tie this knot and it holds when it's supposed to hold and slips when it's supposed to slip. My knot seems to be confused about holding and slipping.

The problem may be that it's a new rope so it may go away. In the mean time, I presume the B-53 means five wraps, but is the three the number of bottom or top wraps?

Thanks,  
Ron

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## Blakes configuration

Posted by Patrick - 09/01/2006 12:21am

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Ron asked: "I presume the B-53 means five wraps, but is the three the number of bottom or top wraps?"

A 5-3 Blakes means that there are 5 wraps around the climbing rope; 3 of those wraps are BELOW where the tail of the rope exits the knot.

(A 4-2 Blakes is another common configuration.)

Patrick

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Posted by Ron - 09/01/2006 08:23am  
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Thanks Patrick.

I used the 4-2 on my new Arbor Plex and it slipped. I want to try the 5-3; it'll probably take care of the slipping problem.

Ron  
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## Slippage on Blake's

Posted by Oldtimer - 09/01/2006 09:47am  
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Hello Ron Welcome to the TCI Site. I have Arborplex rope and when it was new ( like any rope) the knots slip a little. I now use a split tail all the time since it is better for my stile of climbing. And since I am a gear crazy person I do a lot of SRT climbing. Your rope will get more supple and pliable and the Blakes will hold better in the next few climbs. Make sure you "dress" the knot properly before leaving the ground and you will be fine. Make sure the knots are properly tied for sure. Anyone can make a mistake from time to time and it is better to find out before you leave the ground. :-)

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Posted by MarkF - 09/01/2006 09:44pm  
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Ron,

I climb on Arborplex sometimes. Not my favorite kind of line (I usually climb on New England Ropes Safety Blue - heavy but comfy and well-behaved), but for a while A-plex has been my only spare when climbing with others.

Even after A-plex breaks in it still squares off under load (like most other 12 strand ropes), and stays a bit stiff and squirrely. However, I find that a 5/3 Blake's pretty much solves the slipping problem, and the stuff seems to be plenty strong enough.

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Posted by Leon - 09/17/2006 03:43am  
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I know I'm repeating what others have already said here, but I've never had a problem washing daisy chained ropes in my top loading washer. A little bit of mild soap (woolite is good) and it's like having a new rope again. Very easy!

For pitch or sticky sap (e.g. banyan) I've had luck massaging veggie oil into the affected parts and then washing in the machine like usual. I have heard experienced west coast climbers endorse some of the citrus solvents for removing pitch, as well.

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Posted by SRT-Tech - 09/21/2006 11:23am  
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CMI rescue gear make a rope washer that you can hook up to your garden hose or laundry room taps. Works VERY well for rinsing the rope.

<http://www.cmi-gear.com/catalog/ropes/washer.asp>

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<http://www.cmi-gear.com/images/products/rope-washer.jpg>

also most new ropes,(esp Kermantles) come with a factory applied lubricant , that is permeated thru the rope to lubricate the individual fibers. This is a leftover from the braiding process. After a wash or two this lubricant goes away on the surface, making for a non slippery rope.

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Posted by Ron - 10/02/2006 06:24pm

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Wow! I got behind on this. But, here's what I've found:

The Blake's hitch didn't perform so well in ArborPlex or my Velocity rope.

I have since switched to a Helical hitch and all slipping and sticking problems have gone away.

The Helical holds securely and slides freely when unloaded in both ArborPlex and Velocity. I use it for DRT tail and as the friction knot for my foot loops.

I was immensely impressed by the increase in performance of the Helical hitch over the Blake's hitch. The Helical breaks completely free when unloaded and pushed upwards from the bottom of the hitch. It's also easier to descend on - it's smoother and takes less effort to get it to break and start descending.

The Helical is my goto hitch now. I doubt there will be any turning back.

I guess this is in order too. I developed my own version of the bowline terminating knot for the Helical hitch that allows it to be tied with only one end of the rope and it can be finished off in a Mountaineer's stopper which orients the tail of the bowline straight down.

Helical hitch  
a bit more close up

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Posted by SRT-Tech - 02/04/2007 02:56pm

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^ interesting Ron, (re blakes hitch on arborplex), i've had no problems with the blakes on the arborplex.

I wonder if maybe different batches of rope got more or less lubricant during the making process?

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Posted by Electrojake - 02/04/2007 04:20pm

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I have not heard of this Helical hitch.  
Can this be used as a full replacement for the Blake's hitch on DRT ?  
Are they becoming popular in REC climbing?

<http://www.cave.org.vt.edu/images-knots/jpg/small/hel4.jpg>  
Do I have the correct hitch here?

I would like to hear more about this which Ron had mentioned above.  
Thanks for any input on this,  
Electrojake

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Posted by NickfromWI - 05/03/2007 08:11pm

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Electrojake, I think you got the right not, and except for the previous post, I've not heard of people using this in rec climbing.

That's not to say it's not worth a try, though. I imagine it'd be quite bulky in 1/2" rope, though.

love  
nick

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Posted by JimK - 07/09/2007 04:39pm

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"On Rope" illustrates it as an ascending hitch. My theory is that the popularity of the book keeps the Helical alive.

I would imagine that the absence of the bridge running across the coils accounts for the quick release feature. Both the traditional Prusik and Blakes Hitch have this bridge feature that holds the form of the coiled friction hitch and that sometimes over-tightens.

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Posted by Electrojake - 07/09/2007 10:47pm

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I tinkered with the Helical and it felt a tad spookie to me. Additionally, it didn't look quite as pretty when it was loaded, (see "unloaded" picture in the above post).  
The good ol' Blake's Hitch is mighty hard to beat for a casual climber such as I.

Thanks for the follow-up on the Helical! :)  
-Ej-