

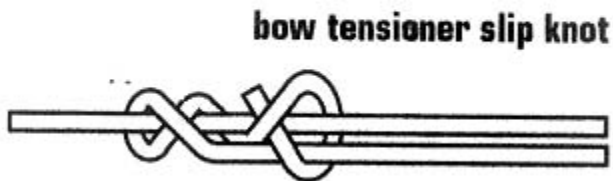
KNOTS OFTEN USED BY FIGHTER KITE MAKERS AND FLYERS.

Bruce Lambert.

There happens to be quite a few of us who don't know much about knots. We don't know how to tie them and don't know which knot to use in a particular situation. And both are important to know when making and flying fighter kites, I posted an email on the fighter kite Topica.com email list asking for contributions about what knots are used for tying bridles, tension lines, etc. Here's the result of the request along with some on-line research I did to provide more options. If you want to know about knots, search the internet for tons of more information.

DENNIS ISCHE'S BOW TENSIONER SLIP KNOT

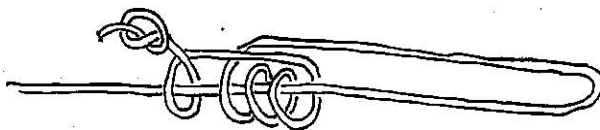
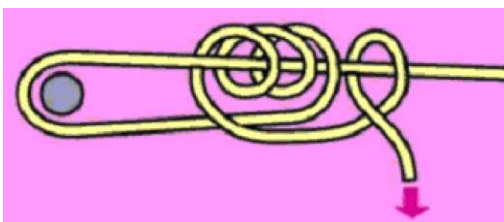
This is a great knot to use for the tensioning line on the back of the leading edge of a Buka and for putting a bend in a carbon fiber spine of a diamond fighter kite.



To adjust this knot, you slide the knot along the line it is tied around. It locks and securely stays in its place when there's tension on the line. To move the knot you must release some of the tension. This functions similar to a tautline hitch.

TAUTLINE HITCH The **tautline hitch** is used by many fighter kite makers as the adjusting knot in a tension line on the back of a buka or on the carbon fiber spine of a diamond shaped fighter kite. You can increase the number of turns around the line it's tied to which increases the ability of the knot to hold more securely. I copied this image from **STAN KELLAR'S** website, http://www.s90434184.onlinehome.us/gentle_giant_buka.htm

The diagram on the right and photos below are from Chuck Lund; it shows a 'stopper' knot on the tail end of the line.





The above photos are from a rope Chuck Lund tied and I photographed.

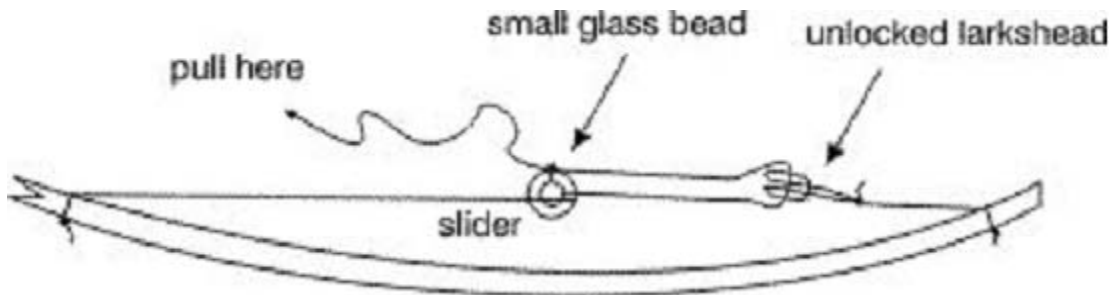
MANNY ALVES 'double' TAUTLINE HITCH

This knot is an adjustable knot, it slides on the line it is tied around just like the tautline hitch, but holds more securely because the knot has twice the number of turns wrapped around the line compared with a tautline hitch.

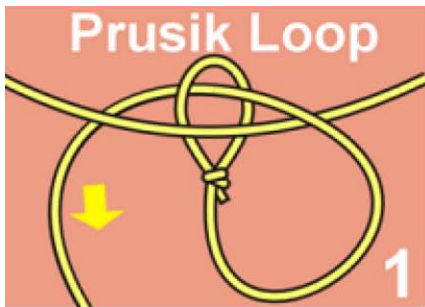


SCOTT BOGUE'S CARBON FIBER SPINE TENSIONING MECHANISM

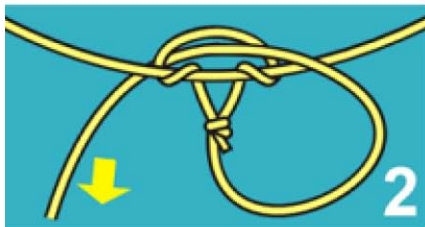
The diagram below was submitted by Scott Bogue. This is a carbon fiber spine tensioning mechanism Scott developed. The way I find it works best is to pre-bend the spine to release tension on the line; pull on the bead to shorten the line. When the spine pre-bend is released, the shortened tension line causes a slight bend in the spine. This is an alternative to using an adjustable knot such as the tautline hitch or bow tensioning knot discussed above. The benefit of Scott's method is it allows easier 'micro' adjustments in tension.



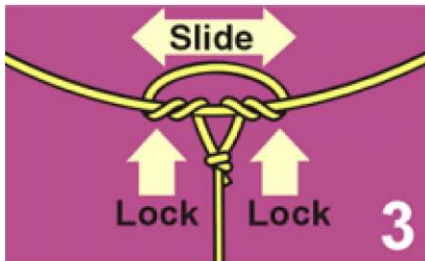
LARKSHEAD KNOT & PRUSIK KNOT Two often used knots are the **larks head** and the **prusik** knots. They are used interchangeably. The prusik has a little more holding strength than the larks head knot. Both are locking and releasable knots used mostly in the bridles of fighter kites. The prussic knot images I copied from **STAN KELLAR'S** web site http://www.s90434184.onlinehome.us./gentle_giant_buka.htm . A great web site!



When the line near the yellow arrow is tightened, the resulting knot is a larks head.



When you continue with the knot by feeding the end of the line through the loop again, and tighten it, you have the prusik knot.



With both knots you **lock** them by pulling the two sides of the remaining portion of the loop used for making the larks head or prusik knot away from each other. This actually squeezes the two parts of the knot toward each other and locks it around the object it is tied to. If the object is another line, as in the diagrams, the knot changes its shape to look like photo #4.



To **unlock** either, grip the line the knot is tied to on either side of the knot and pull in opposite directions like you are trying to straighten the line. The knot will unlock and in the process will change its shape to look like figure #3.

When the knot looks like figure #3, you can easily move it along the line it's tied to.

When the knot is locked, it looks like figure #4 and it can not be moved along the line it's tied to.

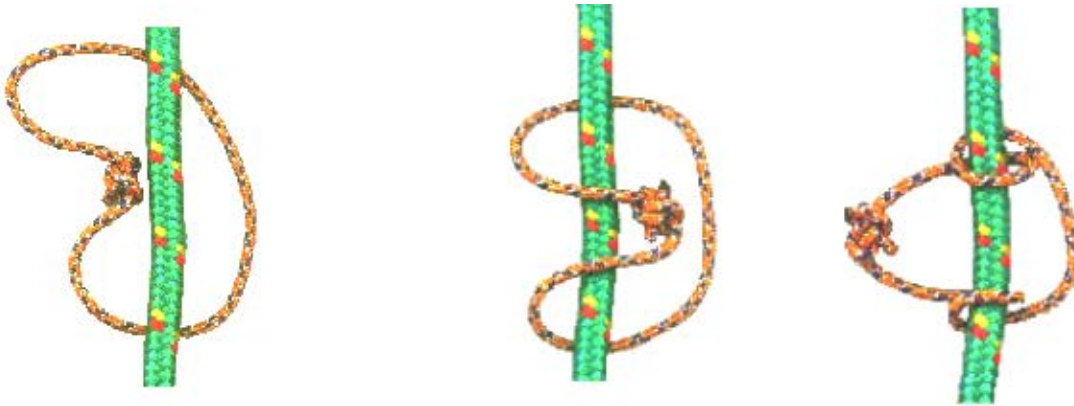
ANOTHER SET OF ILLUSTRATIONS OF THE LARKSHEAD AND PRUSIK KNOTS

This is different series of diagrams showing both the **larks head** and **prusik** knots. I took these images from a knot website.

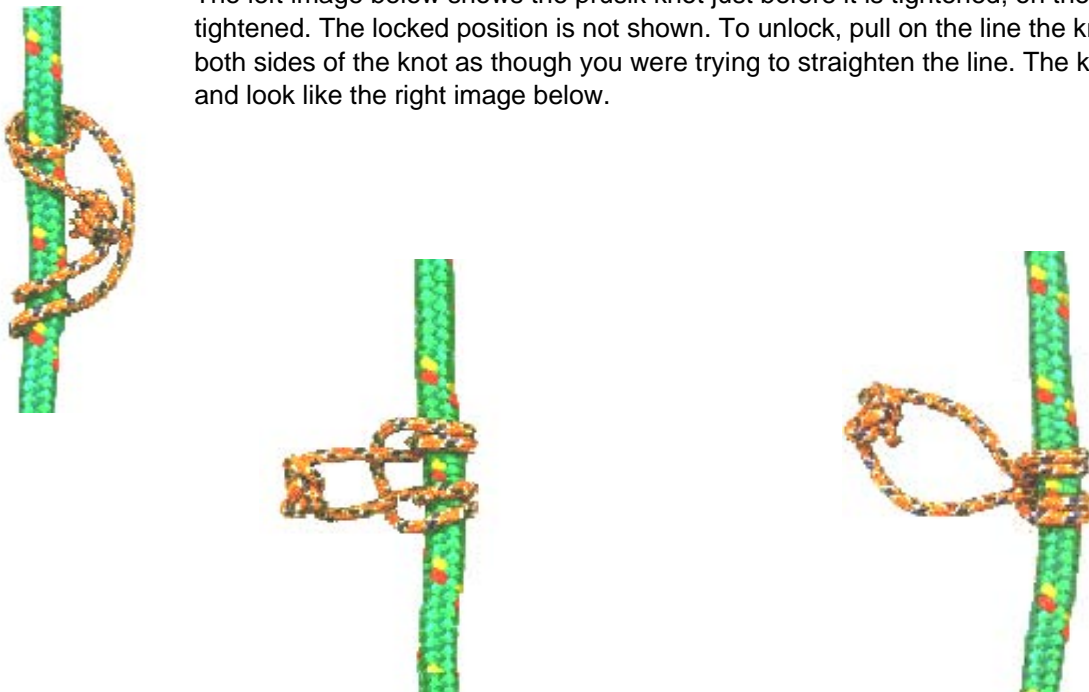
Often a larks head or prusik knot is used to tie a loop to a line. For example, this is how the tow connection loop is attached to the lower bridle line of most North American style fighter kites.

When the loop is pulled tight and locked it is securely tied to the line it's tied to. In the diagram on the right below shows the larks head knot before it is tightened or locked. Most kite makers use the larks head knot more often than the prusik because it holds securely enough and is simpler to tie and use.

By poking the loop through itself one more time around the line or object you are tying it to, you create a prusik knot. Since it has two loops of line wrapped around the object it's tied to, it holds more securely than the larkshead knot.



The left image below shows the prusik knot just before it is tightened; on the right after it is tightened. The locked position is not shown. To unlock, pull on the line the knot is tied to on both sides of the knot as though you were trying to straighten the line. The knot will unlock and look like the right image below.



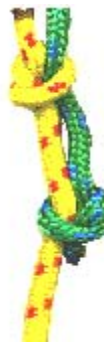


These **double half hitch** images I took from a knot website page. The double half hitch is often used to secure the bridle lines to the bow or the spine. This knot seems to hold best if the line is waxed first. It also favors lines that have a rough outer texture. It doesn't seem to hold as securely with slippery lines such as Spectra



FISHERMAN'S KNOT

I took the photos below from a knot website. They show a knot often used to tie broken flying line together. This knot is called the **fisherman's knot**. It is two overhand knots; one tied on one line and one tied on the other.



THE UNI-KNOT

I took the diagrams below from a knot website. As you can see, this is a popular fishing knot. It is called the **uni-knot** and was developed to securely hold when using slippery line such as Spectra.

After tying the knot to the point shown in the right hand diagram, you pull to tighten and it acts like a slip knot as it snugs up against what you are tying it to.

This knot is used often by fighter kite makers to secure bridle lines to the bow and/or spine of a kite. Just substitute a bow or spine for the metal in the eye of the fishing hook shown in the diagrams.

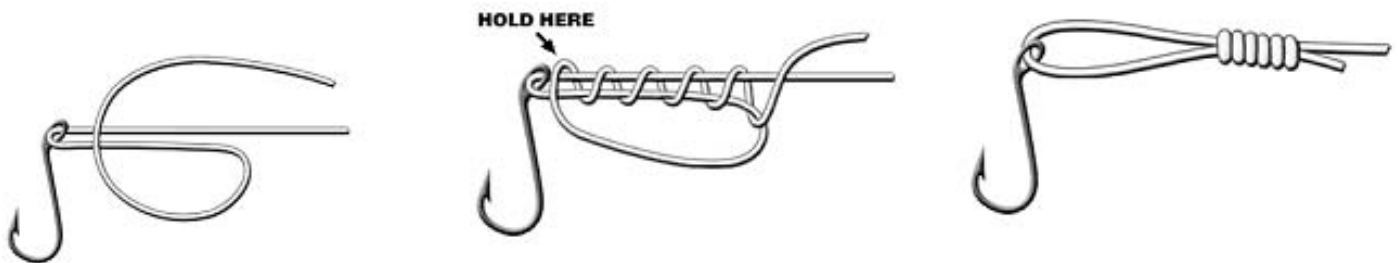
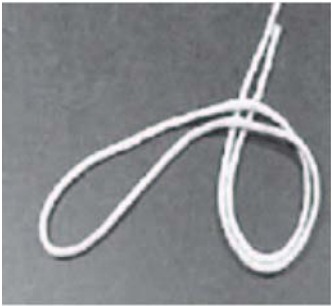


FIGURE EIGHT KNOT.



This knot holds much more securely than a simple overhand knot. I use it when tying broken line together as well as for creating loops at the end of my flying line or loops I tie anywhere else.

When tying broken flying line together, instead of a loop as shown below, there would be the two ends of the broken line; tie the knot in the same way as shown. Then trim off the ends of the flying line. I've never had this knot fail after tying broken flying line.



After you make the initial loop to tie the knot in the line(s), make one twist in the loop, then feed the end of the line through the loop and pull tight. This is a very quick and simple knot to tie and very secure in its holding power.



BELOW IS CHUCK LUND'S ' knot cheat sheet' THAT HE USES ON HIS WORKBENCH

These are various knots Chuck uses in his kite making.



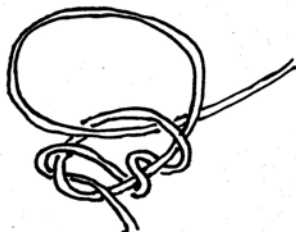
Tautline hitch, left.



The knot on the left Chuck uses for tying the bridle line to the bow or spine.



Three versions of slip knots

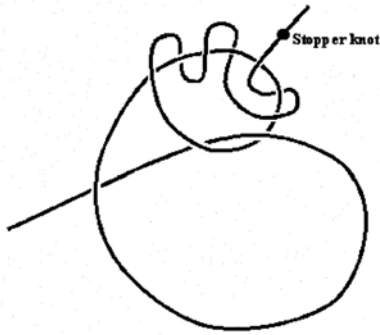


Some flyers use a tiller hitch, left, for tying flying line to the tow connection loop



... and the tiller

GENERAL TIPS AND COMMENTS FROM FLYERS REGARDING KNOTS AND FLYING LINE



CARL ANDERSON says about tangled flying line "I found that pulling as much of the tangle out and then cutting where it hard knots up, then tie two overhand knots and pull snug and trim of excess, makes a small knot but hasn't bothered me yet."

TERRY MCPHERSON says he cuts out any tangle in his flying line, ties it back together, and continues flying. Then when he's home, he untangles the 'bird's nest' of tangled line....he finds enjoyment in the success of untangling it.

BRUCE LAMBERT says when I get a snarled tangled mess in my flying line, I cut out the tangle, using a figure 8 knot I re-tie the cut line and as quickly as possible get back to the fun of flying. I throw the 'birds nest' in the garbage and never think about it again.

STEVE BATEMAN says that when tying knots remember that the sharper the bends in the line, the weaker it makes the knot.

MARTY SASKAI suggests using a double fisherman's knot for tying broken flying line back together.

**BigFighterKiteGrins,
Bruce.**