

Making Kite Bridle Lines by Anthony

Warning: Kiteboarding is addictive. This document is only a guide on how I build kite bridle lines. There are many ways to build a kite bridle line. The author of this document is not responsible on how you apply this knowledge. Only you can prevent accidents or failures. The knowledge shared in this document only applies to Amsteel Blue 7/64 inch line (2.8 mm). I suggest that before you start that you review all the videos listed here to understand the differing Brummel Splice Methods. This document and the videos suggested below should be used together. This document is edit and copy protected, you can print it out. All photos and video made with an iPhone.

The kite industry needs to publish on their web sites technical data for the bridle lengths, diagram, bridle labels and pig tails. How can I measure a line on vacation if I do not have the correct dimensions, measuring the other side stretched line does not count.

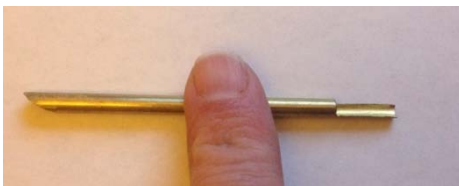
I want to **Thank** the www.nwkite.com community for their assistance and advice. Without them this document and video would not exist. I would suggest that you search their website for other great jewels of information.

Materials

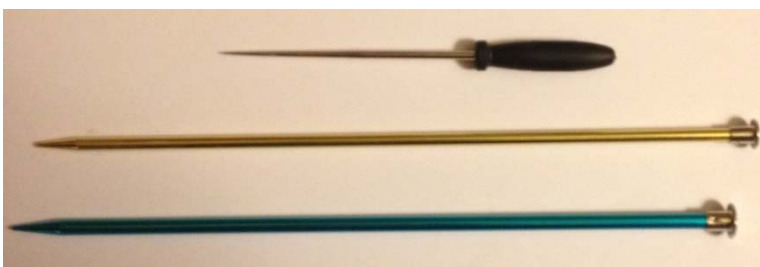
Line – Amsteel Blue, 7/64 inch or 2.8 mm, 200 feet from Seattle Marine. This is an 8 strand hollow core Dyneema line. Not the 12 strand as most places advertise. There are other types of line you can order. I have found the prices vary quite a bit from 22 cents to 78 cents a foot. I was able to get the line on sale for 14 cents a foot.

Tools

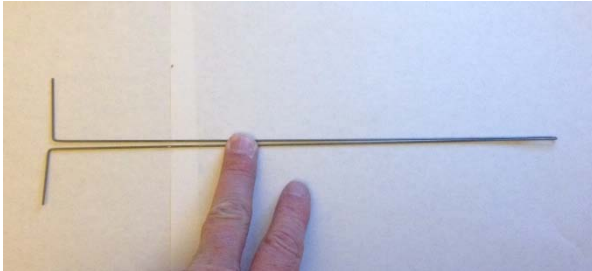
1. Block of wood to cut on.
2. A razor blade or utility knife. Must be sharp!
3. Fid made from 3/16 x .014 Brass Tube <http://www.ksmetals.com/26.html>, this is to pull lines through holes easier.



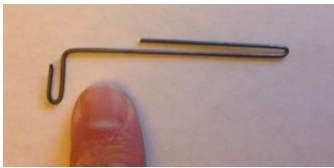
4. Pick to start holes in line and 2 large knitting needles to expand hole.



5. Small diameter steel music wire .047 x 36" bent for pulling the tail line through the center of the line (Splicing needle). <http://www.ksmetals.com/17.html>



6. Loop puller helper on final Brummel Splice to remove twist in line or pull loop through final hole.



7. Sharpie fine point marker. Sharpie extra fine is better.
8. Measuring Tape in Metric. Can be challenging to find.

Total cost of all tools is under \$20 at a good Ace Hardware store in South Salem and Craft Store.

Pre-stretching the line

I struggle with this one. How much to stretch? In the end, I bought 200 feet of Amsteel blue and tied figure eight knots and stretched it between a concrete block (several tons) and the pickup truck. I would increase the length it out a few inches at a time than check the feel. From the feel of it I was in the 200-400 pound range for about 20 minutes. Close enough! The line has set for 40+ days before I used it. You can probably reduce the wait time to a few days. I was hoping to reduce back stretch. Do your research on this one, there are many options on line stretching.

Line splicing system to use

I reviewed several bridle lines to determine their construction. Most bridle lines are made with a specialized sewing machine.



A lot of the lines that work with pulleys are the tuck and cross stretch sew method.

http://samsonrope.com/Documents/Splice%20Instructions/12Strand_C2_Eye_Splice_WEB.pdf



For myself, I am not in the bridle construction business. I need a system that I can do at home with few tools. Through my research, I came to the Brummel Splice. It takes a little practice to get this splice right and consistent.

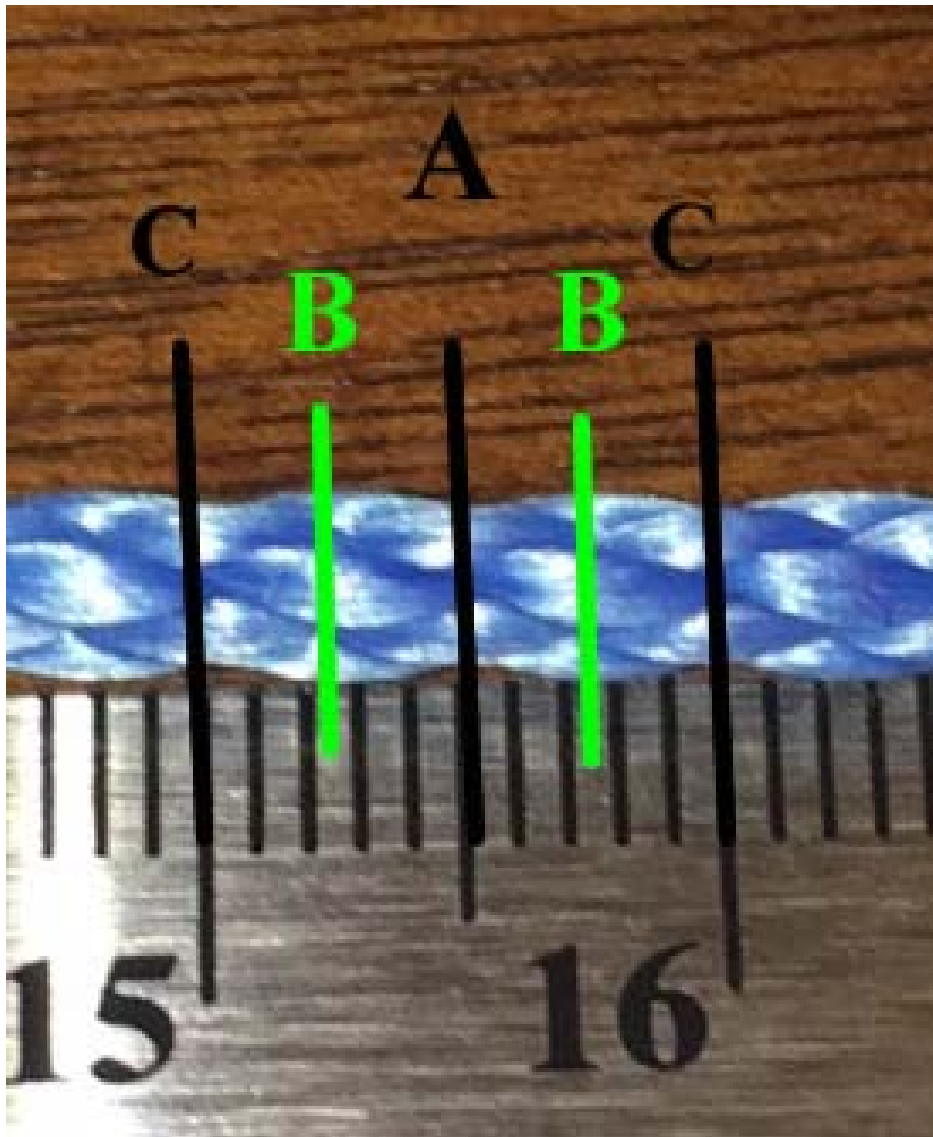


The Brummel Splice has around 90-100% for the strength of the line from what I have read.

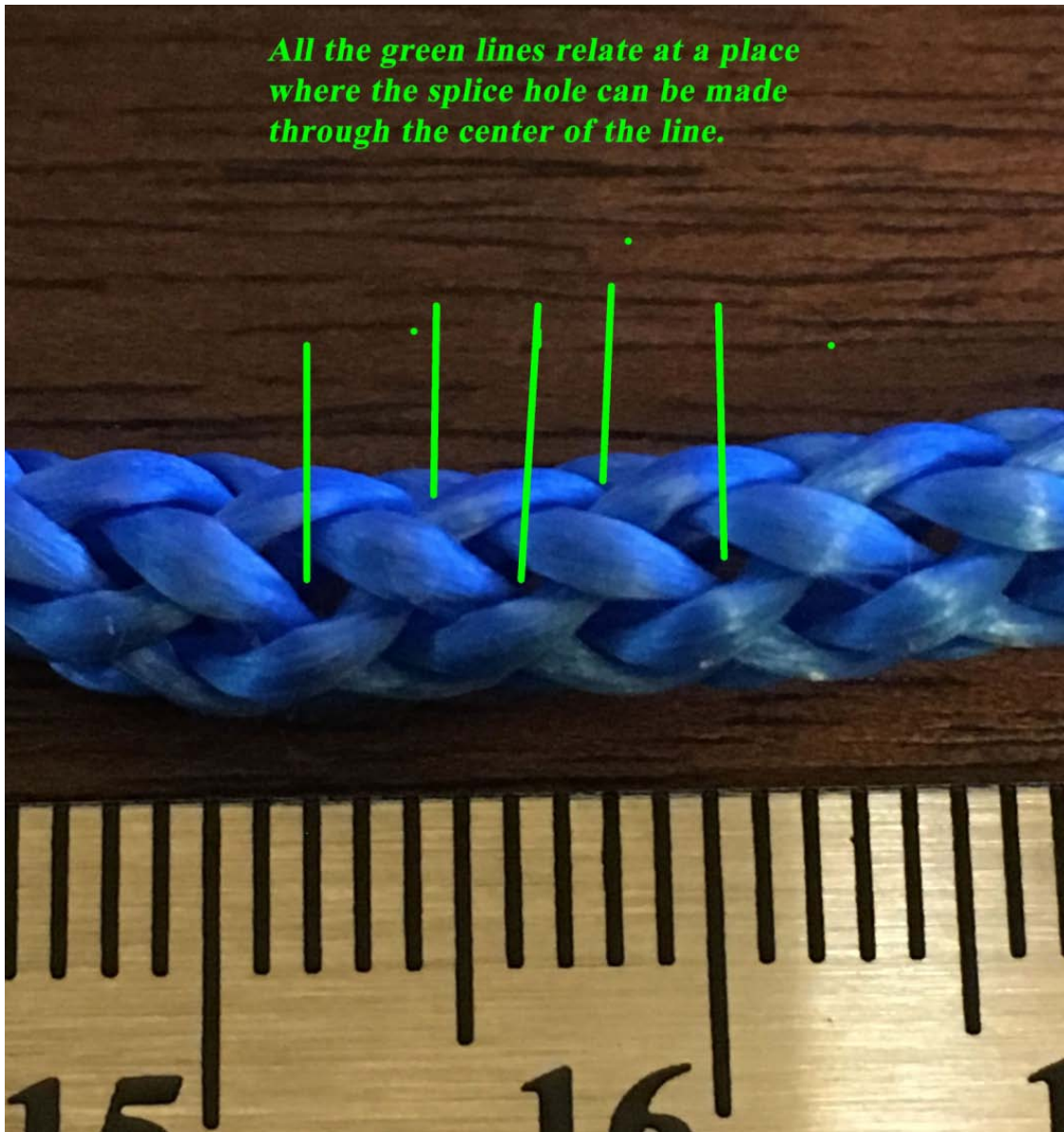
Determining dimensions / length and splicing details.

From research, the Brummel Splice tail embedment of 50 times the diameter (2.8mm) of the line for 14 cm. From examining other bridle lines, I set the loop length at 7cm. Measure the bridle line length of the line you are going to replace or have the dimensions, add 41.5 cm to that and that will be the final line length of cut line. Example: I need a bridle line that is 202 cm long. I would add 41.5 cm to that length and cut a line length of 243.5 cm. From experimentation, I found 41-42 cm in length added is the range to get the correct length. If you think the line will shrink. I would add 43 cm. To be sure of consistency with both sides of the kite, I suggest that you make two bridle lines of the same length and replace them as pairs. Even with making what I thought was perfectly paired lines they could be off the 0.5 cm. If the Brummel splice holes are just on strand above or below the mark can cause the line to off. See the photo below

A magnified photo showing locations to push through the pick for creating the center line hole.

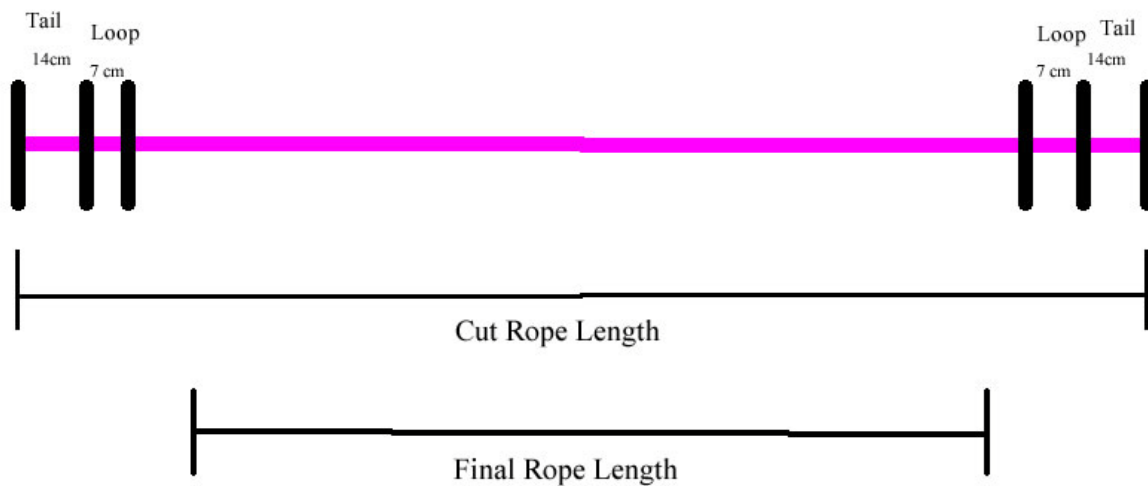


All the green lines relate at a place where the splice hole can be made through the center of the line.



There are 5 places on one cm of rope where the hole can go when you puff the lineup. "A" is where you want to be, but if you are off by one hole "B", you have moved the length the line by a 0.25 cm. If you happen to put the hole on "C" you are off a 0.5 cm. I suggest using a very fine Sharpie Pen and get the hole as close to the mark as possible.

When you make of few lines yourself you will understand. Moving the loop hole in the line just up one strand can cause that difference. After cutting the line to length you need mark the two points of the loop with Sharpie. Getting the loops marked and measured correctly is the most important thing!

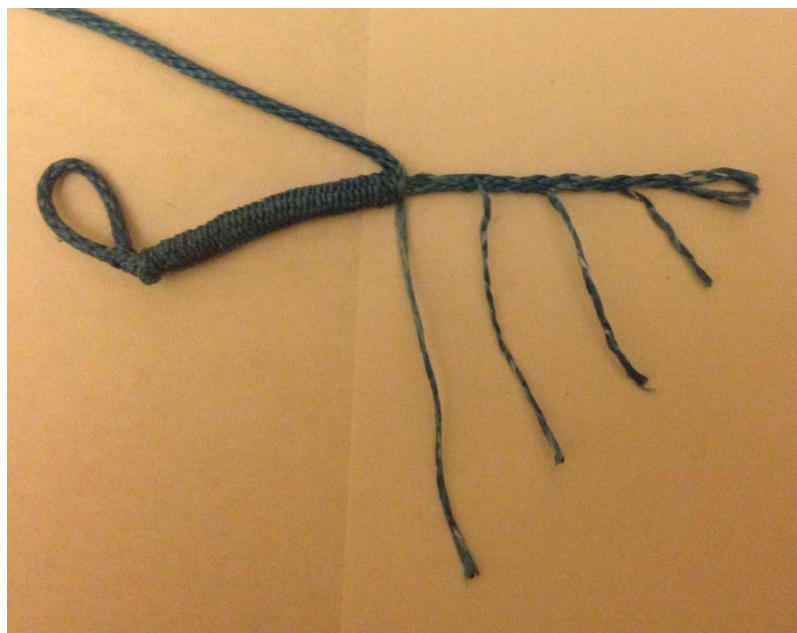
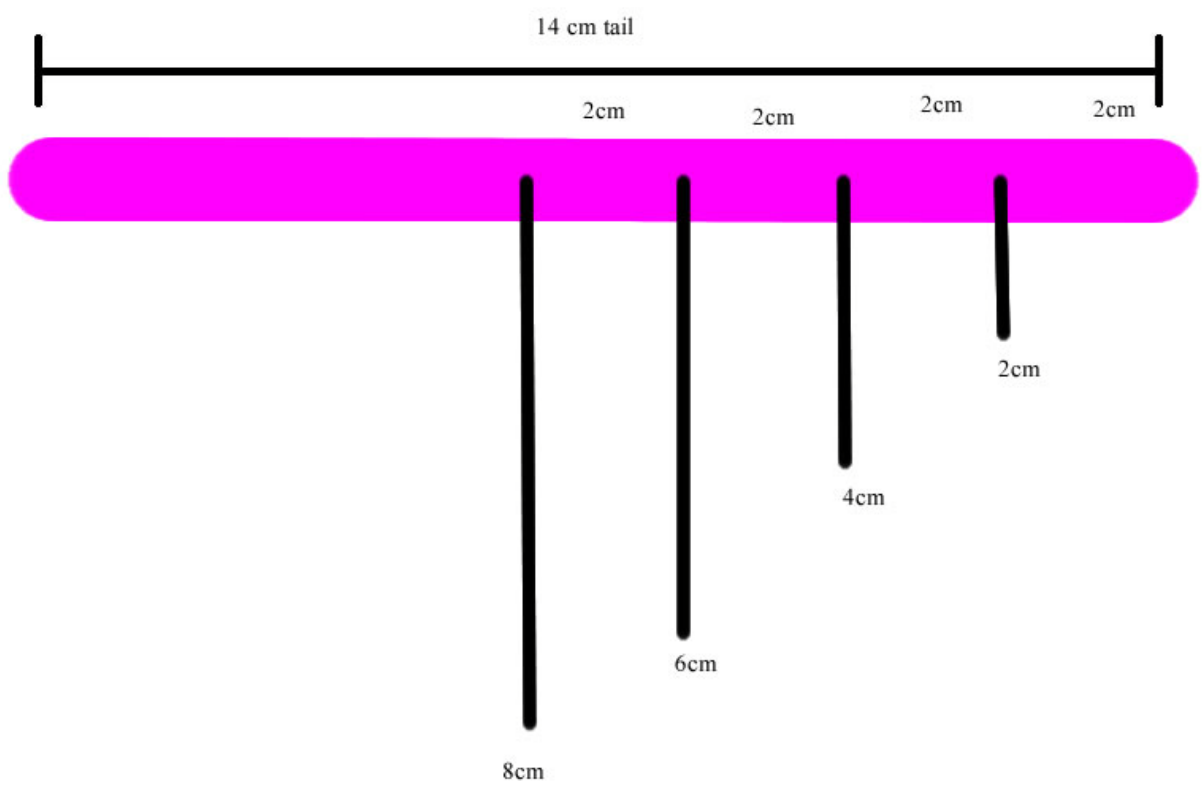


First Splice

Let's make an easy version the Brummel Splice. I suggest this video.

<https://www.youtube.com/watch?v=d0B6tYTVHVM>

Tapering the line at the end. With all things in making this bridle line being consistent is the most important thing to get the line length correct. We have the 14 cm tail that was pulled through with a splicing needle. You will need to taper down the tail. I pull a strand out at the 8cm, 6cm 4cm and 2cm length from end. Cut off each individual strand. I measured the line with the Brummel Splice without embedment and with the line embedded. The embedment will decrease the line length by about 4.5 cm. You need to taper the tail exactly the same to keep the line length correct!





After you have made the first splice, see if you can pull it through the pulley. It might be a little too thick. If that is the case can remove the pulley from the kite and install it on the line before making the other end splice. You will need to use one of the alternative Brummel splice methods, not that method shown in my video.

Final Splice

The final splice is the same as the first splice except you pull the other end loop through the hole. That is where the loop puller comes in handy. You could probably make that same tool with a large paper clip.

There are other videos if you want to experiment, go to YouTube www.youtube.com and search for Brummel splice.

My Video

I made an iPhone video of the process that I use to build the bride line. The bridle line made is for 2008 Slingshot Rev 11m,"P" line for length of 222 cm. Using the dimensions from above with the total line length of 264 cm with of extra 42 cm length I ended up with a line tightly stretched to 223 cm. Because I was accurate on the placement of the holes for the splices the line turned out equal! I think the length is close enough for the line that is going to shrink overtime. I thank my wife for being the being the video taker! I did miss state some of the measurements as mm when it should be cm and I did not introduce the rope puller tool.

Making a kite line bride video: <https://youtu.be/YCJlfB2s4Xg>

Other videos

If you use the first video below, you need to pull the loop through to untwist the line. If you do not do it the correct way you will be double looping the line which will decrease the line strength and change the final length. I find pulling the loop through a challenge so I made a small wire tool at assist.

<https://www.youtube.com/watch?v=wMBG-Lvmh0k>

<https://www.youtube.com/watch?v=4WW7Qvg3Vjl>

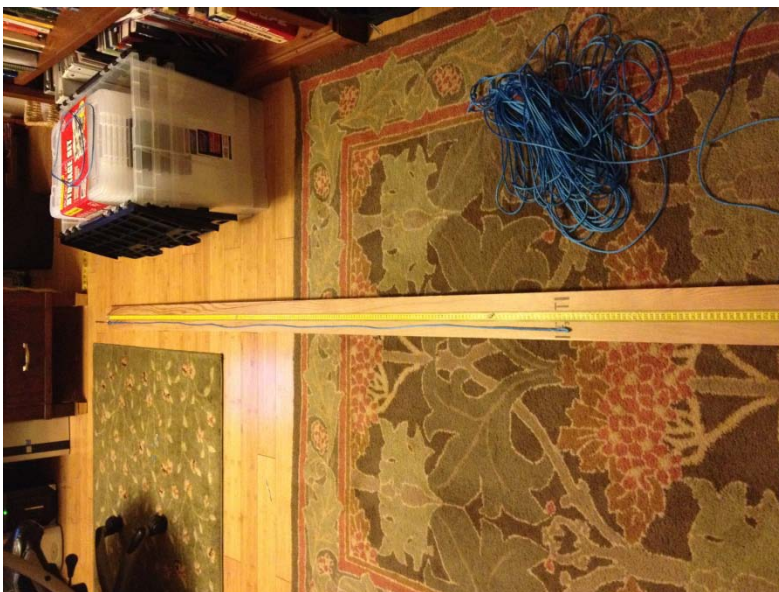
<https://www.youtube.com/watch?v=HUwd6jNuzIE>

Extras Tools

How I measure line length. In the field, I would use only a tape measure. At home, I have a 10 foot board with a cloth metric 300 cm measuring tape(bought on eBay under 3 dollars) installed on it. Measuring long line lengths is a challenge. I have found if I clamp the rope on one end, then pull it to measure and mark.

To measure the final finished length, I use two small metal rods in each loop, pull to get line length.

I check paired line lengths with a carbiner on door knob to confirm length (equal).



I am using a carabineer to check that both lines are equal under tension. If you are going to pull really hard find something better and a door handle.

