

Line Splicing Tips and Techniques

A finger trap is the most common, and strongest method of joining 2 sections of braided line, or placing an eye in the end of the line. There are a few different tricks for manipulating the line, but by far the easiest is to use a small aluminum splicing fid. After trying most of the splicing tools available, we determined that most of the tools available were designed for line much larger than what is typically used for towing either paragliders or hang gliders. Those that were small enough were cheaply made from plastic and held the line poorly, or wore out quickly. We knew there had to be a better tool, so we used our CNC machines to build a splicing fid to our high standards. TowMeUp.com manufactures a Fid specifically for each size line we carry. We supply several different sizes of line for military applications, and we are required to provide splicing fids for each size. As a result we have a wide range of fids available from stock. If you happen to have a special line size, feel free to contact us, since we can quickly manufacture one for most any size or application using our CNC equipment. Splicing fids are custom made from 6061 or 7075 Aluminum solid bar stock, heat treated, and anodized. The internal threads are cut, rather than rolled so they grip Spectra, Technora, Polyester, Polypropylene, or Kevlar line firmly. For custom sizes that we do not stock, we REQUIRE you to send us a sample of line to enable us to design and fabricate a fid that will work properly for your application.



Please note though that we only know exactly what size fid is the correct one for the line products that we carry in stock. Not all Spectra is easily spliceable. Samson, or Amsteel line for example is VERY DIFFICULT to splice, even when using our fids. The best way to ensure we can get you the right size fid is to send us a short sample of the line you wish to splice and we will attempt to splice it and tell you the best fid to use, if it is even possible to splice.

If you bought your towline from another vendor and find it almost impossible to splice it's helpful to know that you're not alone. It's useful

here to note that one of the reasons we have our line custom made to our specifications is that we require the ability to quickly insert a splice in the material when the need arises, and our line is manufactured in a way that facilitates this.

PLEASE, If your line has a braid that is so tight you can barely get it to open, don't bother calling us for advice. We've tried lots of solutions. The electrical tape on the ends, melting the line and drawing it to a point, a "Shanty Sleever" tool that is typically used with smaller kite lines. It can't be spliced. If your line is made with KernMantle construction (ie. it has individual fibers running through the core of a braided sheath) it can't be spliced. If it's a 3 strand line, our fids will fit the individual strands and make it easier to splice, but this guide won't help you. Finding an old fashioned sea pirate would be more helpful.

If you bought your line through TowMeUp.com though, you are in luck. All our line is super easy to splice. Here's how to go about accomplishing the task.

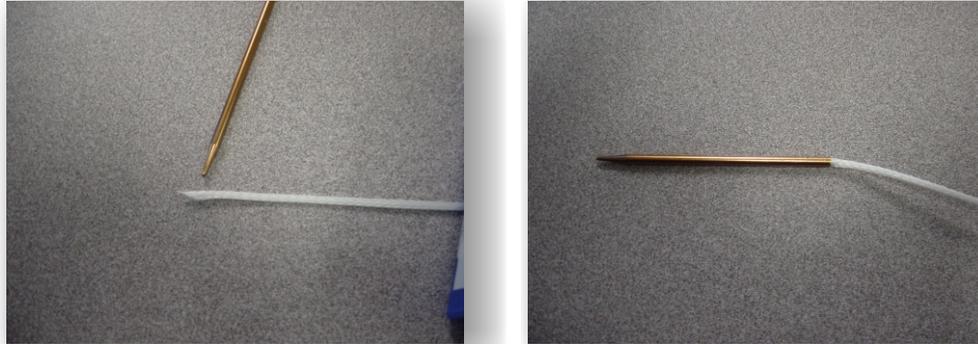
Installing an Eye Splice in a line

Select a Fid appropriate to the line size being spliced. The larger the Fid, the easier it will be to screw the line into the back of the Fid. For very small lines you may find it easier to use a slightly larger Fid and fold the line to get enough bulk to hold the material tight into the end of the Fid.

Determine how long you want to insert the material into a finger trap, and cut the material to the appropriate length. Typically Spectra line splices are finger trapped 6 - 8 inches or more.

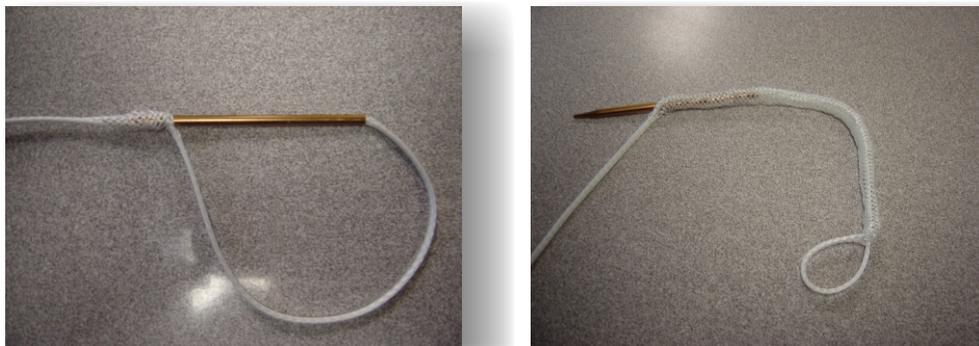


Using a sharp knife, cut the line at a 45 to 60 degree angle. Cutting the line at an angle allows for smooth termination of the line inside the splice. Screw the Fid onto the line by rotating it clockwise while holding the line. Keep rotating the Fid until resistance is felt and a gentle tug on the line won't dislodge it from the Fid. (Please Note - If you use a hot knife to cut the line, cut the line quickly to avoid excess melted material, and be certain to screw all the melted material into the Fid. Leaving some of the melted section exposed may cause it to snag, and ruin the line you are trying to finger trap. Failing to cut off the melted end as you complete the splice will also leave a hard, sharp piece inside your splice that tends to cut strands of line, resulting in wear and premature failure of the line).



The photo on the left above shows the line properly cut at an angle. The photo on the right shows the line properly inserted into the Fid prior to splicing. It is important to ensure the line is secure inside the Fid to preclude the possibility of it slipping out of the Fid while it's inside the line.

Measure down from the end of the Fid twice the length of the loop, plus the length of the desired finger trap and squeeze the line on either side of that location. The weave of the line will open up, allowing you to insert the Fid into the center. Insert the Fid and push on the free end of the line, opening up the braid. Slide the Fid into the line and out the side at a distance sufficient to ensure the end of the line will be inside the opened up braid when you smooth out the line. Rotate the Fid counterclockwise while holding the line to remove the line from the fid. Do not simply try to pull on the line because you may damage the threads on the fid. Snug up the weave by milking the line away from the loop. The length of the loop should be $\frac{1}{2}$ " to 1" in length. Longer loops are slightly stronger than shorter ones.

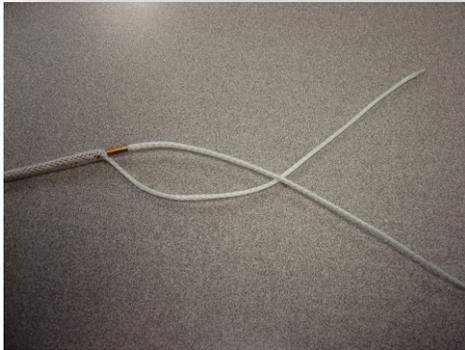


The strength of the loop is determined by the amount of line trapped inside the other one, since the tighter you pull on the line, the harder it grips, much like the Chinese finger traps you may have played with as a kid. It is possible for the line to slide out if the tension is removed from the line so it is good practice to sew the loop using either a bar tack, zig zag, or even a straight stitch close to the entry point. The stitch must not be the length of the finger trap, however, because the stitching would then prevent the line from pulling tight.

If you are splicing our 1100# test Spectra line to the winch drum, or through the shroud lines to secure the drogue to the end of the topline, we recommend that you use a 3 to 4 foot long splice. That will ensure the eye splice holds without stitching, yet it is easy to undo.

Splicing 2 lines together

To splice 2 lines together, or repair a broken towline proceed as above, and insert the Fid into one end of the line at a distance sufficient to ensure a strong splice. Insert the Fid onto the remaining short section and open the weave at a point close to where the first intersection occurred. Feed the Fid through the line and exit as shown for a looped line. Snug the center point of the splice up tight, and gently smooth the lines out towards the ends.



A properly completed splice will be very smooth at the transition, and this is the ONLY acceptable method of joining a towline, regardless of the style winch the line will be used on. For safety, the line should be stitched on both sides of the joint to ensure it won't come loose. If you break the line in the middle of a towing session you should at least hand stitch a short section to ensure the splice doesn't work loose. If this is not possible, you should finger trap the line for a length of at least 24 inches on either side (leaving a 48 inch fatter spliced section) and sew the line as soon as possible. A properly completed splice (without the stitching) is shown below



Incidentally, if you ever have an incident that causes your towline to become frayed or melted and you are considering throwing the line away, or at least cutting out the potentially bad section, you can often save yourself a lot of time and expense. Let's say you have a 10 foot section of line on your spool that looks questionable. You can either hope for the best and do nothing. Cut the line and re splice it, or you can cheat. When we find sketchy looking sections of line, we simply grab some spare Spectra, and cut it a couple feet longer than the questionable line. Insert a fid on it and then thread it up through the core of the questionable section of line. It will disappear inside the line and serve to strengthen it, making a permanent repair and avoiding a potential line break.

It never seems to fail. You can go for weeks or months without ever breaking a towline, and then when you break it, you simply can't find your splicing fids anywhere. After many frustrating and failed attempts you simply give up and tie the line, only to have it break at the knot on the next tow, dumping your best customer in the lake. There must be a better solution... There is of course, and it's a TowMeUp.com exclusive.

You need a pair of TowMeUp.com ShoeFids. The highlight of fashion, and worn by the best Tow Technicians. A special Fid designed to splice 700 - 1600 pound test Spectra towlines and made shorter than a standard splicing fid. Simply cut the end off your shoelaces, screw on your fids, and you will always have a fid available to quickly and efficiently splice your line when the need arises. They make lacing your shoes a breeze as well. Look for them in our online store.

Fid Sizing Information

We make an assortment of fids specifically for the lines that we carry. The most common fids are our # 5 fid which is designed to work with our 865# and 1100# test Spectra Tow Line, and the #6 fid which is designed to work with our 1200#, 1400# and 1600# test Spectra Tow line. We make thousands of these fids a year for our own and customers use as well as for certain military applications. Our shoe fids are essentially a shortened version of a #6 fid, or a Short # 5 fid.

A #5 fid is approximately 4.0 inches long with a .152 inch outside diameter and a 4/40 threaded opening in one end with a tapered ball point on the other end.

A #6 fid is approximately 4.0 inches long with a .178 inch outside diameter and a 6/32 threaded opening in one end with a tapered ball point on the other end.

You'll find splicing fids available at our Online Store at TowMeUp.com

It's possible to get other sized fids, but typically these are produced in limited quantities or have limited availability. They are typically a special production item, but we often have stock on hand since we tend to make up more than needed when we are set up to produce a run of a specific sized fid. If you need a custom size or color, we can easily produce it with reasonable minimum quantities. (Typically 50 pieces minimum unless we have over run stock on hand)

Sizes we've made in the past, and may have on hand, but we can easily make again if we don't are:

.197" Outside Diameter x 8/32 thread

.250" Outside Diameter x 10/32 thread

.270" Outside Diameter x 12/24 thread

.300" Outside Diameter x 1/4x20 TPI thread

.375" Outside Diameter x 5/16x18 TPI thread

.500" Outside Diameter x 7/16 SAE thread

.750" Outside Diameter x 5/8 SAE thread

1.5" Outside Diameter x 1.4" x 24 TPI thread

10.0" Outside Diameter x 9.5" x 24 TPI thread

We can make any size fid up through about 10 inches in diameter, so please feel free to contact us for a price quote on special sizes.