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Inventor's Notes for The Splicing Wand &

Instructions for the Double-Braid Eyesplice

Excerpted from *Working Rope - Book 5*, by Brion Toss & Margie McDonald

The idea of this tool is to make splicing braided rope easy, and thousands of people have found that it does just that. But splicing is still an art, and takes some practice to master. So, do a few practice splices, using new, good-quality rope, before making a real working splice.

If you find it hard to tuck the rope, **STOP!** It means something is very wrong. Back up and try again. In particular, avoid yanking and twisting hard to milk the cover in step **2C**.

Enclosed with your tool are the most recently expanded instructions, developed to make using the tool as clear as possible. If after reading the instructions you are still having a hard time, or if you would like to learn other splices – specifically for Spectra, Sta-Set X, T900, and others, send for our ***Making Your Own Eye Splices DVD***, and splice along with me! Or send for our latest book, ***WORKING ROPE Book 5 - Basic Braided Splices***.

The items are warranted against any manufacturing defect and will be replaced if found so. This does not include: breaking the snare, fraying the snare, bending the tube, or any abuse of the tool.

Splicing braided line with this tool is a gentle operation and this tool should last for thousands of splices if properly cared for.

Extra Snares are available through Brion Toss Rigging Chandlery.
Call 1-800-488-0855, or go online at www.briontoss.com.

DOUBLE-BRAID EYESPLICE (FOR DACRON, NYLON, AND POLYPROPYLENE)

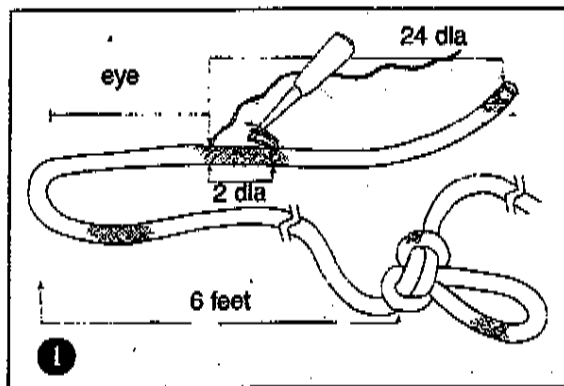
Double-braid rope eclipsed the previously dominant construction — 3-strand — by being considerably stronger and less elastic for a given diameter, as well as running fairer on winches. Nowadays, 3-strand is most often used where a little elasticity is a *good* thing, such as on mooring lines and anchor lines.

Double-braid possesses its advantages because, basically, it packs more yarns, arranged more efficiently, into less space. But these advantages only obtain if the core and cover share the load equally. If there is slack in either one, the strength of the rope can drop by 50%.

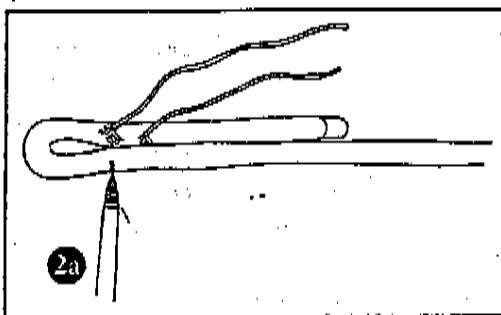
All cover-and-core splices require that the relationship between cover and core be disturbed, so it is crucial that the original, even tension be restored when the splice is finished. Hence the assorted measurements and marks, all calculated to compensate for the balance-disturbing effects of splicing.

It's not an intuitively obvious arrangement, like the weaving of 3-strand splices. At first, the splicer must act on faith at every step, and must be sure that every step has been taken. It can be a surprise when the splice is successful. But over time, and with sufficient study, the elegance and logic of the structure will reveal itself. Like all other skills, it just takes practice and focus.

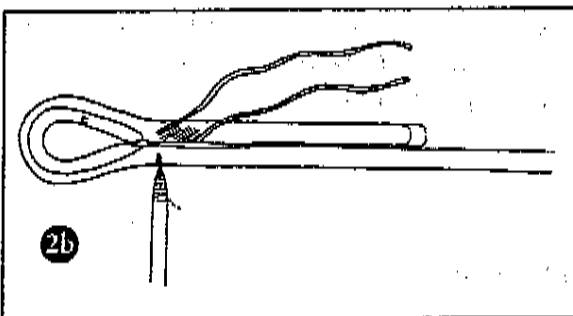
As noted above, this splice is for Nylon, Dacron (polyester), and Polypropylene. It should never be used for HM ropes; for these, see the "Core-to-Core" splice.



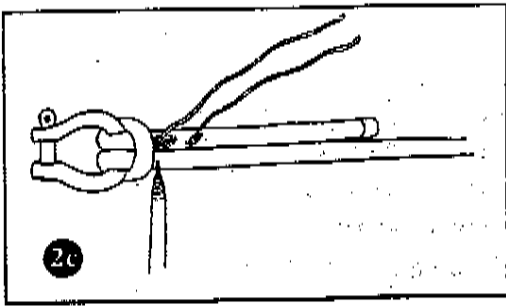
1. Pull out a single marker yarn, 24 diameters from the end. Pull out another single marker yarn about 2 diameters towards the end from the first. The first yarn marks one side of the eye. The second yarn marks where the core will enter the cover. Tie a Loop Knot about 6' beyond the eye.



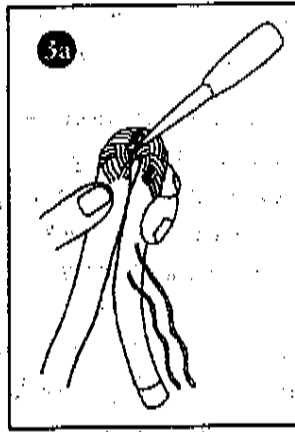
2a. Determine the size eye you want, and make a mark on the other side of the eye.



2b. For a thimble eye, allow a little space below the thimble. This will make it easier to finish the splice, and then if necessary you can seize the thimble in snugly. After marking, remove the thimble. You'll install it during Step #21. For "keeper thimble" installation, see Step #8.



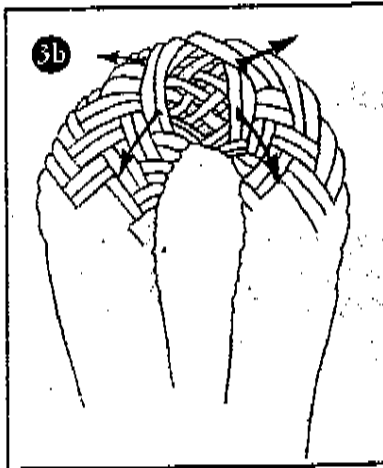
2c. For a Ring-Hitched eye, snug the hitch firmly before marking. After marking, remove the shackle. You'll hitch it back on after the splice is done.



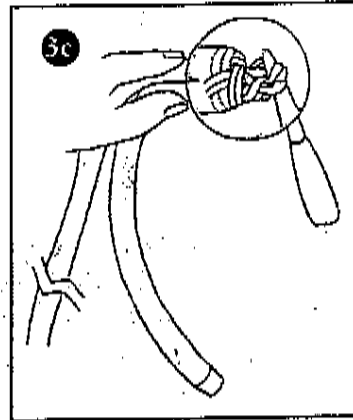
3a. Remove the core at the side of the eye that you just marked.

Hints to make the core easier to remove: Ho the rope on either side of the mark. Flex the rope sharply and repeatedly to loosen the cover fibers. Bend the rope 180° at the mark, and keep it bent while removing the core.

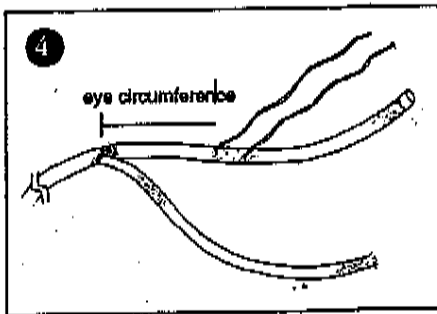
Hold an awl like a pencil, and use the tip to nudge the cover yarns gently aside, in all four directions, to make a small hole in the cover. For very tightly-woven covers, begin with yarns a short distance from where you want the hole to be, and work your way towards the hole. At all costs, avoid snagging or distorting individual yarns.



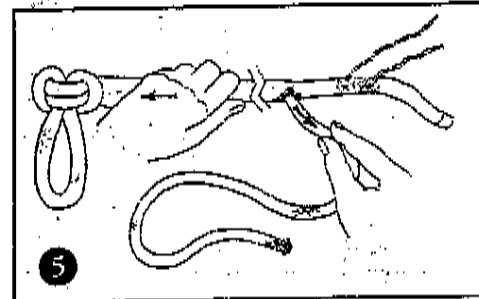
3b. Make a space just big enough to skewer the core with the tip of the awl. You can use your fingernails to "peel" the cover away as you pull the core out.



3c. Skewer enough of the core that comes out whole. Avoid skewering part of the cover. Bring the core on the cover.

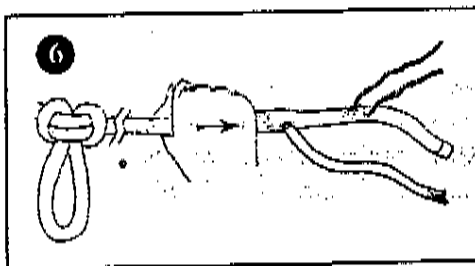


4. The core is extracted.

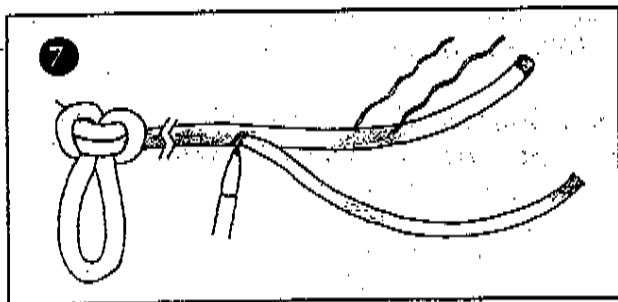


5. The next step is to "balance" the rope. This is an important step in any core-and-cover splice, as it assures that the core and cover will be under even tension.

Slight differences in tension between the core and cover are not significant over the length of a rope, but an imbalance in the part that you are splicing could throw off the reference points (marks, marker yarns) that make the splice work. With one hand, hold the rope near where the core emerges. With the other hand, pull as much core out as you readily can. This will bunch up the cover.

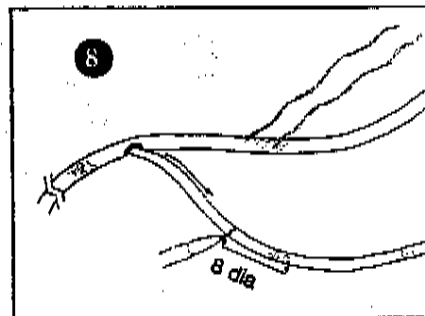


6. Very firmly smooth the cover from the knot to where the core emerges. You can use the Bungy Strop (pg. 14) for this step. The section of the rope you will be splicing in is now balanced, with an even strain on core and cover.

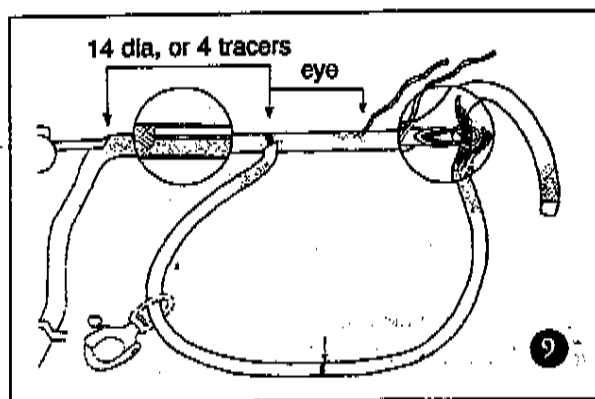


7. Make a small mark on the core right where it exits the cover.

8. Pull some core out and make a 2nd "prominent" mark on the core, 8 diameters from the first one, measuring away from the end. This step pulls a little extra core out of the rope, putting a little extra slack in the cover, so it can swallow the bulk of the splice. If you are going to splice directly to a shackle, slide it onto the core now.



8a. If you are going to use a "keeper thimble" — the kind with bands to encircle the rope — slide it onto the core now. This is a rarely used application. Please refer to Book 6 for further instructions.



9. Pull as much core out of the rope as you readily can. This will bunch up the cover making more room inside the rope for the tuck. Keep the cover bunched up as you tuck.

Tuck the core into the cover at the second marker yarn. Bring the core out of the cover about 4 tracer lengths (14 diameters) past where the core emerges.

If you are splicing directly to a snapshackle, you must thread it onto the core before tucking the core.

The two parts of the core will overlap for part of this tuck; be careful to avoid snagging either part of the core.

*Hint: after the core is tucked, try smoothing the cover towards the end of the rope. This should cause the core to draw back into the cover. If it doesn't, you have snagged something inside. Pull the core end out of the rope, and try again.

If you are using a Splicing Wand:

Enter on top of the core, 14 diameters past where the core emerges.

Bring the Wand out on the bottom of the cover. This avoids having a twist in the eye later.

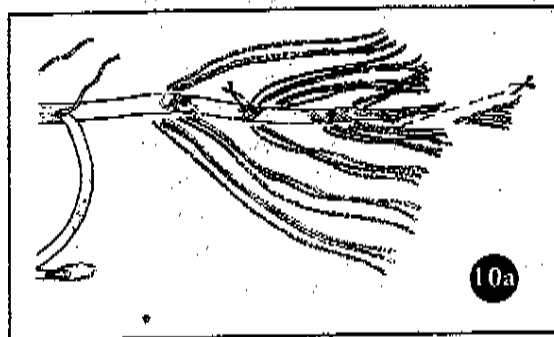
With the Wand, you can make the tuck easier if you snare only half or so of the core yarns.

It is also an option to cut short the yarns you do not snare.

If the core or cover braids distort when you tuck the core, stop and untuck.

Check to make sure that you haven't snagged a core or cover yarn with the tool.

If the core end ravel more than an inch or so, cut it square where it is still braided, so the yarn ends aren't as likely to pull out of place while tucking.



10a. Taper the cover: Beginning about 1 tracer length from the second mark yarn, remove any 3 sets of yarns. Alternate left- and right-laid sets.

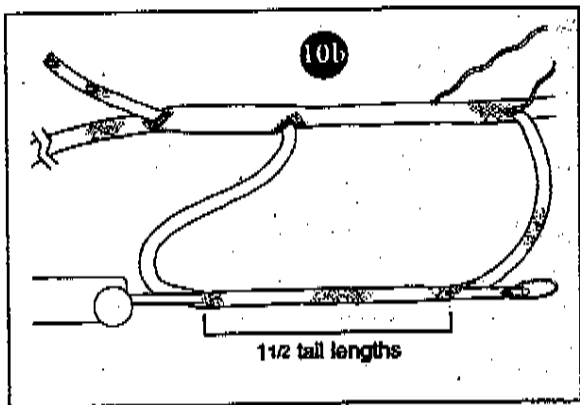
Hint: to keep the braid more intact, avoid removing entire sets of yarns. example, instead of removing an entire set of 3 yarns, take 2 yarns from one and one from another. By this method, you'll remove the same number of yarns but the braid will remain more coherent and easier to manage.

Some ropes have 3 yarns per set (shown); some have 2, and some have 4.

Leave at least one tracer yarn as you taper, as a reference point.

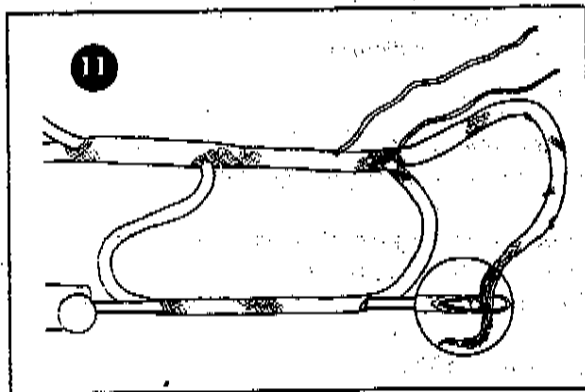
Taper at 3 or 4 points.

Ravel the last 8 diameters or so of the end, and cut the yarns on a long as with scissors or a matcutter.



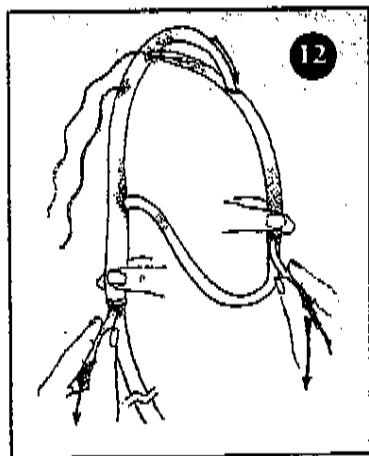
10b. If you are using a Splicing Wand, enter it into the core about 1 1/2 cover tail lengths on the standing part side of the prominent core mark. Bring it out the mark.

Note: if you are using a different splicing tool, this will be a tricky phase; other tools have a hard time attaching to a cover that is already tapered. Proceed carefully.



11. If you are using a Splicing Wand:

Just snare the bulk of the yarns at the end; there's no tight overlap section in this tuck, so it is easy to pull the cover through.

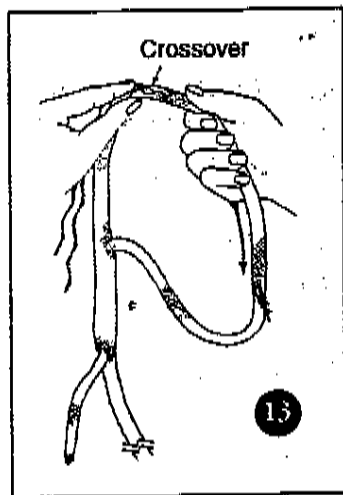


12. With one hand, hold the rope just above where the core tail emerges.

With the other hand, pull on the core tail, to pull the Crossover, where the two ends go into each other, closer together.

Repeat this process with the cover tail.

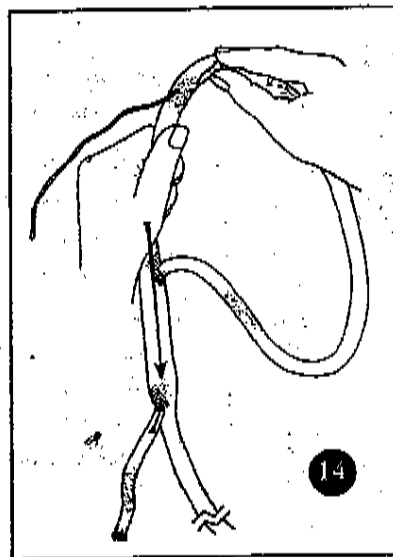
Repeat once again with both ends, to make the Crossover tight and compact.



13. Hold the cover side of the Crossover with one hand.

Smooth the core away from the Crossover with the other hand.

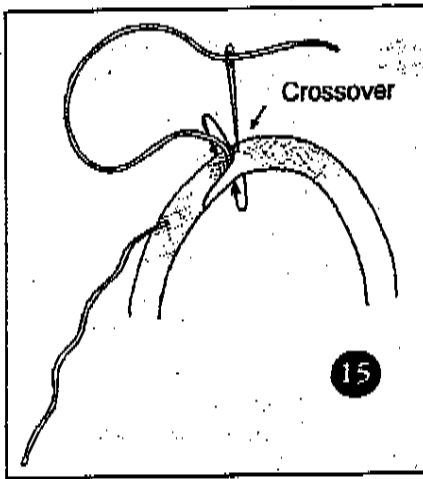
The cover should disappear inside. If it doesn't, it wasn't buried far enough; bury it a little further, then smooth the core again.



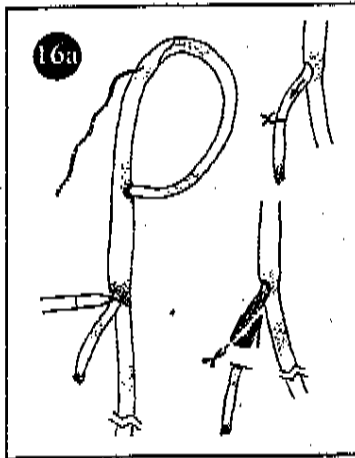
14. Hold the core side of the Crossover with one hand.

Firmly smooth the cover away from the Crossover with the other hand, the way down to where the core emerges.

The core will withdraw partway into the rope.



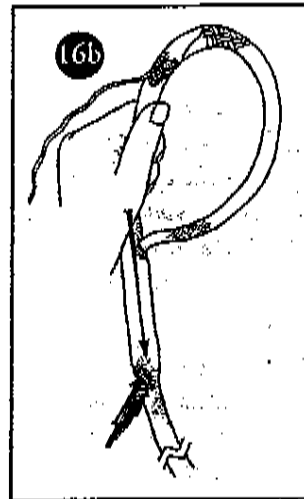
15. Using the second marker yarn, stitch the Crossover to make it secure and more compact. Pull the yarn home gently for the first 2 or 3 stitches, to avoid distorting the cover bra. Make subsequent stitches at varying angles, and seat them firmly. The idea is both to secure the Crossover, and to make it more compact, so that it will be easier to bury at the end of the splice.



16a. Mark the core right where it exits. Pull out extra core.

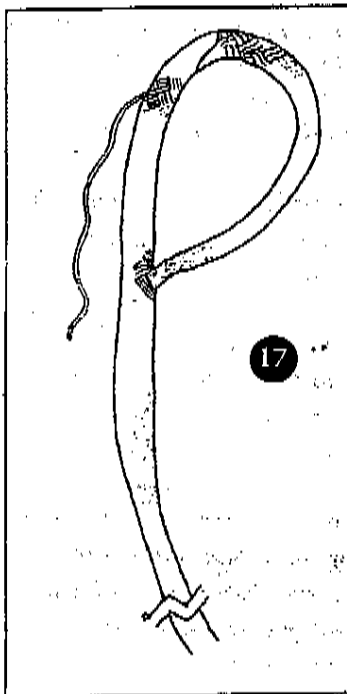
Cut the core end square at the mark.

Ravel about 8 diameters of the end, and cut the end on a long angle.



16b. Once again, firmly smooth the cover, as in step 14. This time, the core will disappear into the rope.

This completes the tucking phase of the splice.



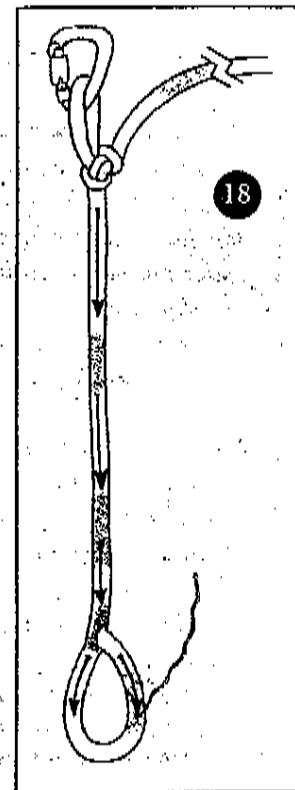
17. Time to "run the splice home." Setup and tucking pose their own challenges, but finishing the splice is the phase where most people encounter the greatest difficulties.

The rope must now try to swallow a large part of itself, and even if the previous phases were done correctly, there will be barely enough slack in the cover to swallow the extra volume. It can be physically difficult, but there are some tricks to make it less of a challenge.

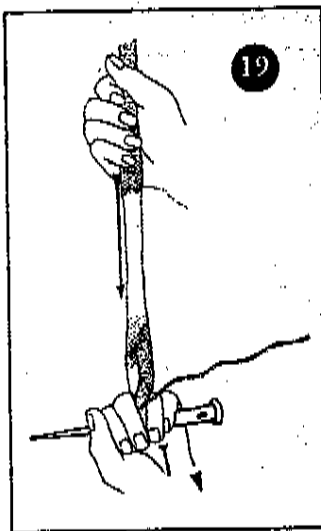
First, your splice should now look like this figure, with 1 marker yarn, a snug Crossover, and some slack in the cover.

If more core is showing than in the figure, smooth the cover towards the eye. Stop when the tapered cover, buried in the core, is about to enter the rope.

Smooth the exposed core out, starting at the crossover and working towards where the core goes into the rope; if there is any slack here the core can bunch up and refuse to go into the hole.



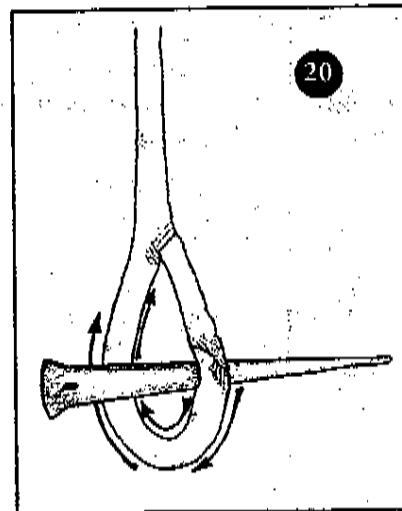
18. When the core smoothed, apply tension to the eye, pulling on both sides.



19. Keeping tension on the eye, start at the knot and firmly smooth the cover towards the eye. Depending on how far away the knot is, this could be a 2-person job.

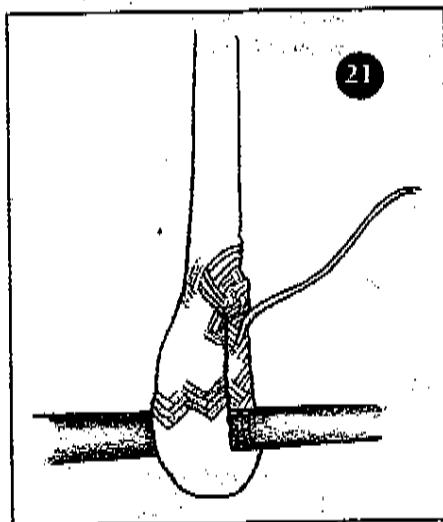
Option: use the bungy strop (page 14) instead of milking with your hand.

The core, with the cover tail inside it, will draw further into the rope. Especially if the eye is small, you may find it helpful to maintain tension on the eye with the use of a marlingspike or similar tool. Just do what it takes to keep tension on the eye.



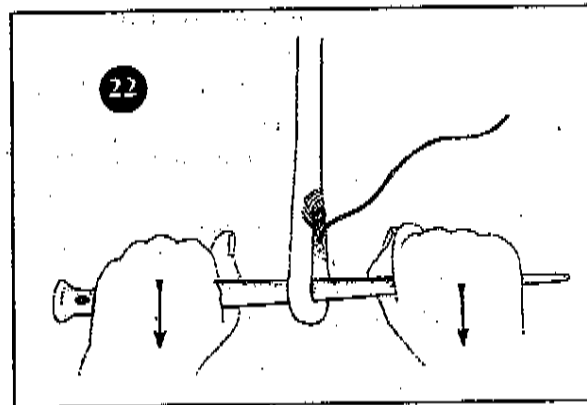
20. Watch the cover advance. If the eye starts bunch up, stop immediately to take the slack out of the eye.

Starting at the Crossover and working away from the eye, the core, milk the slack around the eye as far as you can.



21. Here we have the slack bunched up on the side of the eye away from the Crossover, with a spike in place to keep it from migrating back.

Note: If you are using a thimble, you will need to insert it when the core has almost disappeared.

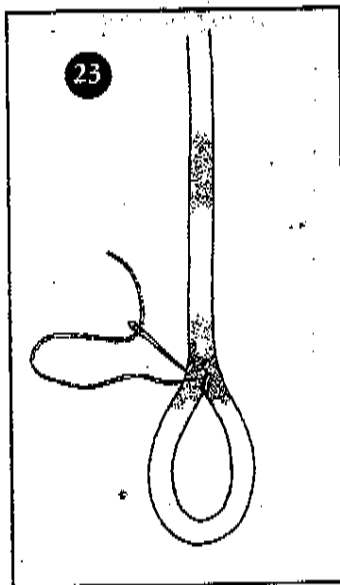


22. Pull on the eye with the spike and the cover should unbunch. If it doesn't, try a snapping motion to get it to move. If it still won't move, you may have waited too long to deal with the bunch. If this has happened, you'll have to pull a little core back out of the standing part, and start again. In the future, deal with this bunching as soon as you see it happening.

With the bunch gone, resume milking the cover to the eye, still keeping tension on the eye. Go all the way back to the knot, to make sure you haven't left any slack behind.

If the cover just doesn't want to go any further, assuming there is no bunching in the eye or on the cover, stop and flex the cover sharply and repeatedly where you are trying to swallow the splice. This will loosen the cover fibers.

With a combination of firmly smoothing the cover and flexing the cover fibers by flexing them, maintaining tension on the eye, keeping the eye from bunching, and some judicious snapping motions, you will have just enough slack to swallow the entire splice, so that the remaining marker yarn reaches the standing part.



23. Use the marker yarn to stitch the splice, locking it in place to keep it from sliding apart under low loads (under high loads, the splice compresses on itself, precluding slippage).

Make the stitches "invisible", with the needle going in at almost the same place it went out.

Use a sailmaker's palm to push the needle through dense rope.

Pull gently to seat the first 2 or 3 stitches, or you risk distorting the cover braid.

Take at least 8 stitches, seating all but the first ones firmly.

Vary the angle of the stitches, radially as well as longitudinally, to pick up a maximum number of interior yarns.

When you are done stitching, simply cut the yarn off flush.