

Splicing Instructions

# Cross Stitching

# Introduction



## Cross Stitching

This document provides instructions on how to cross stitch splices. Cross stitching with appropriate sized nylon twine prevents splices in braided lines from becoming loose or pulling out when the rope is not under load or when it might be mishandled.

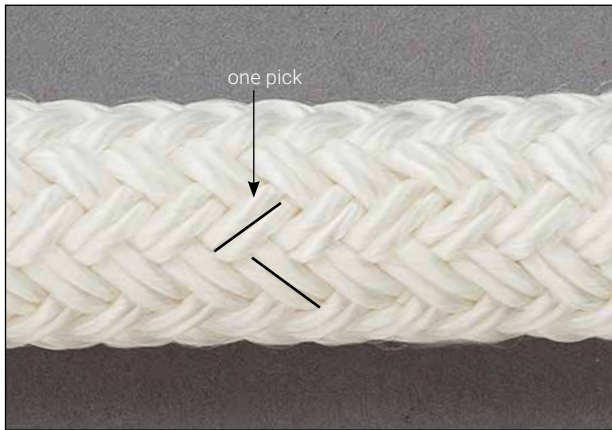


The following items are needed to cross stitch the rope:

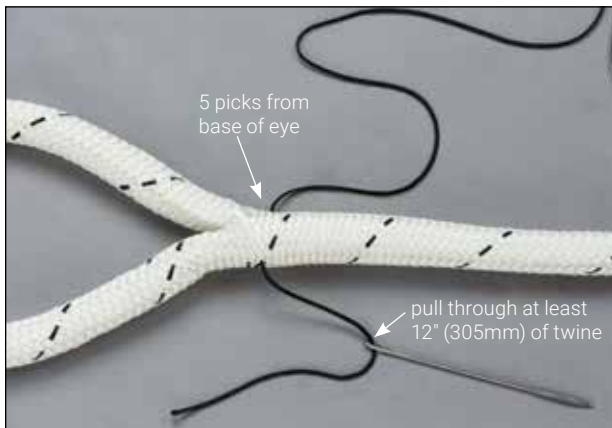
- Scissors
- Large needle
- Appropriate sized twine

Note: Nylon twine is the best material to use; however, other materials can be used if necessary. The size of the twine should be approximately equal to the diameter of one of the twisted yarns in the braid.

## Execute the Cross Stitch



**NOTE:** A pick is a point on the braid in which one strand in the left or "s" direction crosses over or under a strand in the right or "z" direction. This is illustrated in the image to the left.



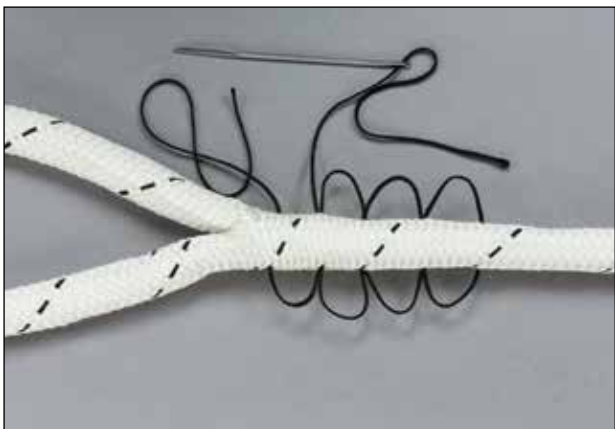
**1.1** Thread the needle with the twine and insert the needle directly through the rope at a point 5 picks below the base of the eye. When inserting the needle and pulling it out the other side of the rope make sure to go between strands, not through them. Pull through at least 12 inches (305mm) of twine when making the first stitch.



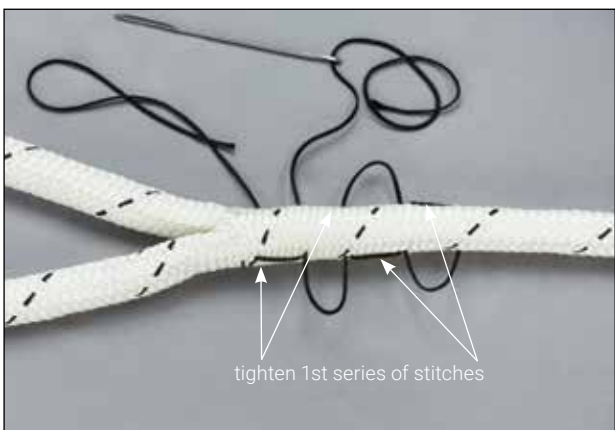
**1.2** Continue to stitch a total of 4 loops down the length of the splice following the same line of picks on each side of the rope. Each stitch should be 5 picks down from the point where the previous stitch comes out of the braid. This completes the first series of stitches. Do not pull the loops tight.



**1.3** For the second series of stitches, insert the needle back into the rope at the point where the last stitch on the same side is located and out on the opposite side of the rope where the previous stitch is located.



**1.4** Continue to stitch 3 more loops working back up the splice towards the base of the eye. Each loop should enter and exit the rope at the same point as the first series of stitches. When completed the needle and one end of twine will be on the same side of the rope as the other end of twine.



**1.5** Starting with the first series of stitches work out the slack in each loop until they are pulled flush against the surface of the rope. Do not pull the loops too tightly.

tighten 1st series of stitches



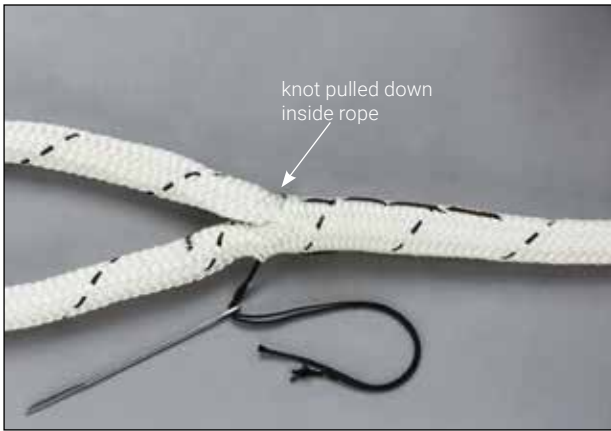
**1.6** Repeat this process with the second series of stitches.



**1.7** Remove the needle and then tie the two ends of twine together using a reef or square knot. Tie the knot so that it is about 1 inch (25mm) above the surface of the rope.



**1.8** Insert both ends of the twine back in the needle. Insert the needle back into the body of the rope at the point where the first stitch starts. Angle the needle up towards the base of the eye so that the needle exits from the rope above the point where the first stitch is located on the opposite side of the rope.



**1.9** Pull both ends of the twine completely through the rope. Pull on the ends to bury the knot into the body of the rope.



**1.10** Cut the excess ends of the twine close to the rope's surface.



**1.11** Completed cross stitched splice.

# Glossary

**Bitter End** – End of the rope closest to the working area.

**Core** – Inner braid of a double braid rope. The core is contained within the cover braid.

**Core Dependent Rope** – A double-braid rope in which the core carries the entire load and the cover is primarily for protection from abrasion and external damage.

**Cover/Sleeve/Jacket** – Outer braid of a double braid rope that covers the core braid.

**Cross Stitching** – A series of sewing stitches using twine that locks a splice into place to prevent it from slipping or being pulled apart. Reference Cortland's Cross Stitching Instructions, CT\_TL\_060 document.

**Crossover** – The point in a splice where the core enters the cover and the cover enters the core.

**Eye Allowance** – Length of the rope that determines the final eye size.

**Eye Splice** – The splice that is necessary to form an eye at the end of a rope.

**Fid** – A metal, wood or plastic tool used as an aid in splicing. Fids typically are tapered at one end and have a method to allow attaching the cover or core of the rope being spliced at the other end. Some fids are also intended to be used as a measuring tool when laying out the splicing marks on the rope.

**Fid Length** – A fid length is a unit of measurement originally based on the design of tubular fids used for splicing double braids. A fid length is now generally defined as 7 x the rope circumference or 21 x the rope diameter.

**Grommet** – (or Endless Grommet or Endless Loop) – A line that is spliced into a loop rather than having eyes.

**Milk** – The act of removing slack in the cover or core by sliding the loose braid back over the rope element that has been buried inside the loose section.

**Pick** – A point on either the core or cover braid in which one strand in the left or "S" direction crosses over or under a strand in the right or "Z" direction.

**Splice** – The process used to make an eye or join two ends of rope together.

**Standing End** – The end of the rope not in use.

**Standing Part** – The central section of rope away from the end being used or spliced.

**Strands** – A twisted (S twist or Z twist) bundle of yarn comprising one of the discrete components used to make a braided rope.

**S-Twist** – A strand in which the fibers are twisted in a left-hand direction.

**Taper** – Trimming or cutting a strand or braid so that it gradually becomes thinner toward one end.

**Thimble** – A ring or tear-drop shaped form, often of metal or plastic, that fits on the rope on the inside of an eye splice. It is used to prevent sharp bending of the rope at the top of the eye & to protect the inside of the eye from chafing or cutting.

**Unlay (Unbraid)** – To take apart and separate the strands of a rope into individual components.

**Whipping** – Securing rope ends or sections of a rope or splice by wrapping twine tightly around the object to be whipped.

**Z-Twist** – A strand in which the fibers are twisted in a right-hand direction.

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