Splicing Instructions

Moran 5-4-3 Tuck Splice

CORTLAND INTERNATIONAL™

Introduction

Moran 5-4-3 Tuck Splice

This document describes the steps required to perform a Moran 5-4-3 Tuck Splice. The Moran 5-4-3 Tuck Splice is a Cortland-approved splicing method for Plasma® and other 12 and 12 x 12 Strand rope constructions.

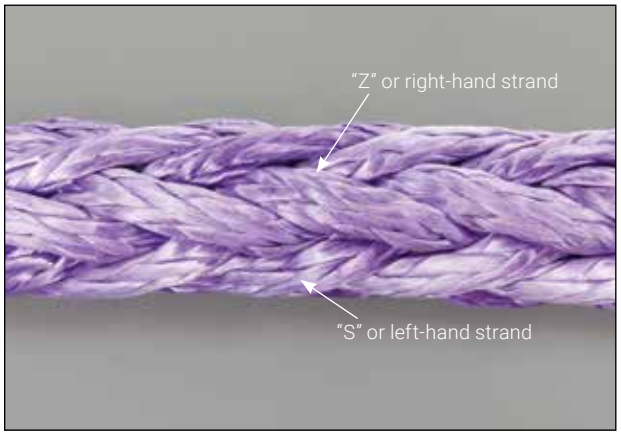
The following tools are required to perform the splice:

- Scissors
- Splicing fid (tubular or other type)
- Knife
- Marking pen
- Adhesive tape (plastic or paper)
- Nylon whipping twine

Note: Cut-resistant gloves should be used if available.

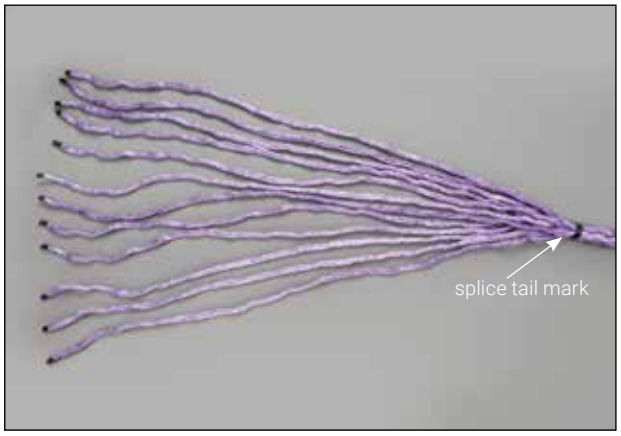
All splicing should be performed on a clean, flat surface, with enough area to lay out sufficient rope and spread out the individual strands.

Step 1 Rope set-up



1.1 Lay out the rope on the work surface. As shown in the photo, a 12-strand rope is made up of six left ("S") and six right-hand ("Z") strands.

1.2 Starting at the bitter end, count 35 strands (either left or right) in a line down from the end of the rope and securely tape the rope at this point. This taped mark is the Splice Tail Mark. Next, unbraid 2-3 inches (50 – 75 mm) of rope at the bitter end and tape the end of each individual strand.



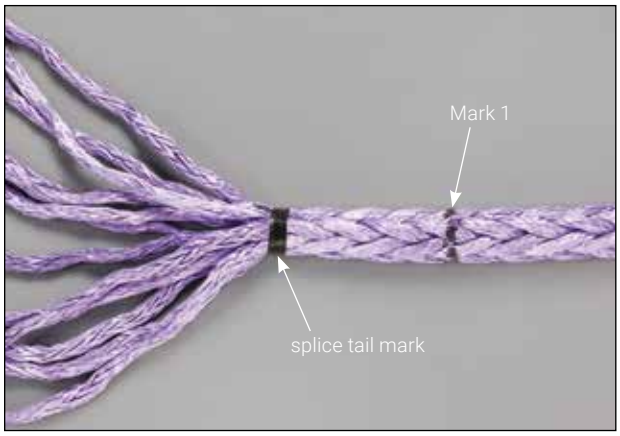
1.3 After all strand ends are taped, continue to unbraid the rope down to the tape at the Splice Tail Mark.

1.4 One “S” and one “Z” strand will be paired together to form a Strand Pair. The paired “S” and “Z” strands should be adjacent to each other around the circumference of the rope.

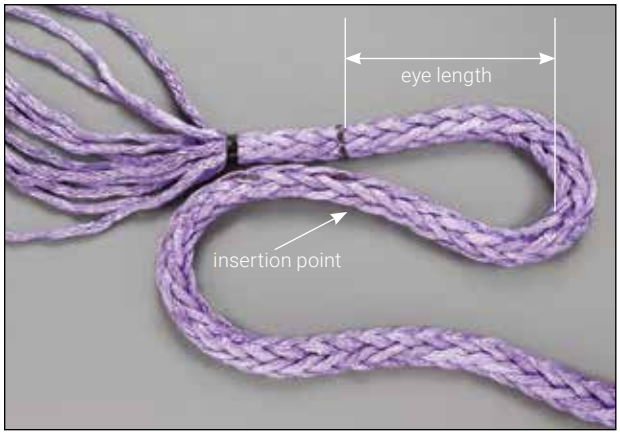
For 12x12 ropes, the strands will be braided and not twisted and won’t be as easily identifiable. It will be important to double check that the paired strands consist of one strand leading to the left, or “S” direction, and one strand leading to the right, or “Z” direction within the rope.

After an adjacent “S” and “Z” strand are paired up, tape the ends of the two strands together ensuring the twist is maintained in the individual strands. A total of six Strand Pairs will be formed in this manner.

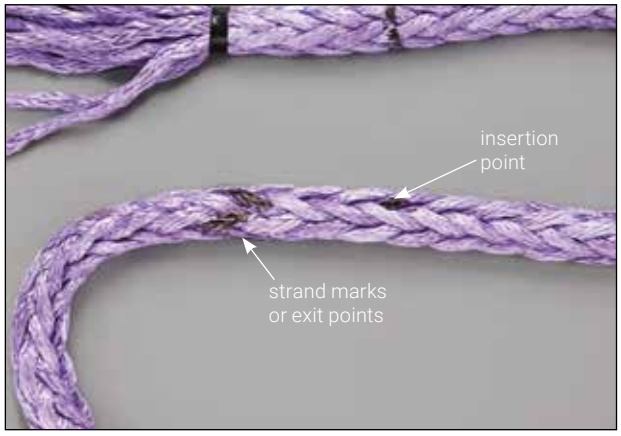
Step 2 Measurements and Markings



2.1 Starting at the tape at the Splice Tail Mark, count down four strands toward the standing end of the rope and make a heavy mark around the circumference of the rope. This is the 1st Mark.



2.2 Using the 1st Mark as a reference point, form the size of eye required. When forming the eye make sure that there is no twist in the rope. When the eye is formed to the desired size make a mark on the body of the rope opposite to the 1st Mark. This is the Insertion Point.

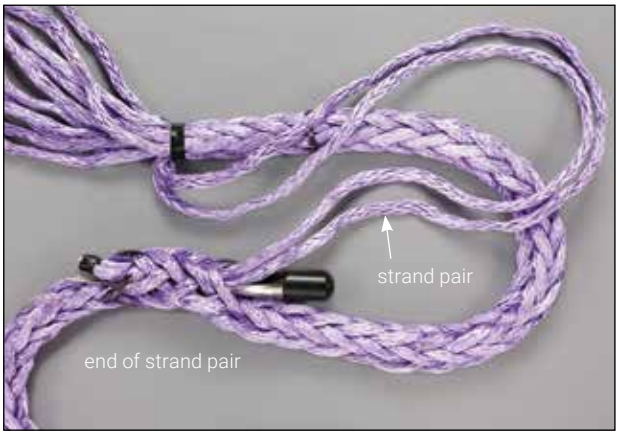


2.3 Leave the rope in position to maintain the shape of the soft eye. Count 4 strands down from the insertion point and mark one of the strands at this point. This is a Strand Mark or Exit Point.

At the location of the 1st Strand Mark, mark an additional five strands around the circumference of the rope. A total of six strands (three S" and three "Z" strands) should be marked when this step is completed. Adjacent marked strands should form a "V" pattern around the circumference of the rope. The six marked strands identify the Exit Points.

Step 3 Starting the Splice

3.1 While keeping the shape of the soft eye, form an opening between two adjacent strands at the Insertion Point to allow a Strand Pair to be inserted. A Swedish Fid or similar tool may be used during this process.



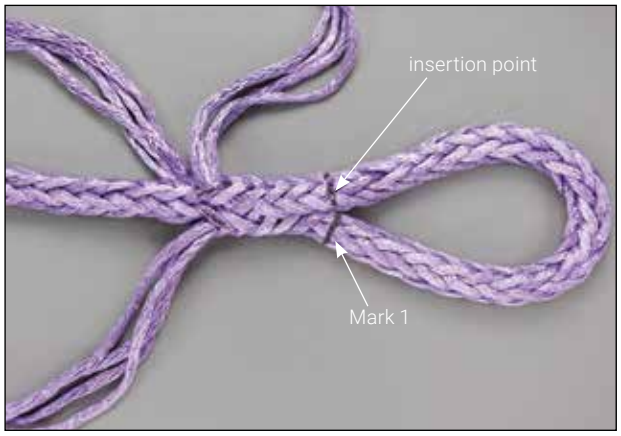
3.2 Insert one Strand Pair into the opening at the Insertion Point and bring it out under a Strand Mark at the Exit Point. During this procedure check to make sure that the eye has not become twisted.

3.3 Pull the Strand Pair partially through leaving some space between the Insertion Point and the Splice Tail Mark.

3.4 Repeat the previous step by inserting another Strand Pair in at the Insertion Point and out at an Exit Point. This Strand Pair should be brought out under the Strand Mark that is adjacent to the one used in the previous step.

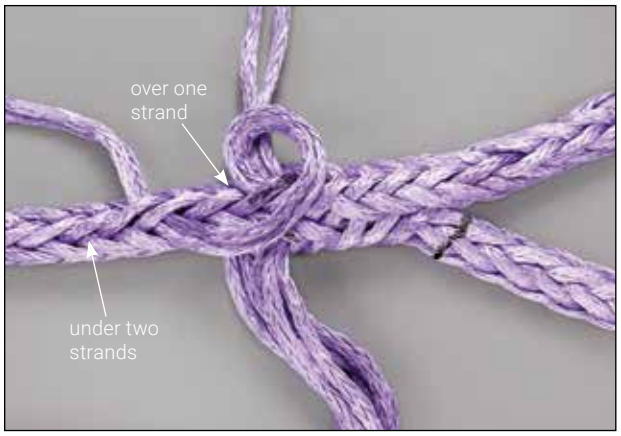
3.5 Continue this procedure until all six Strand Pairs have been inserted and pulled through to their respective Exit Points. Completion of this step will result in one common Insertion Point and six Exit Points at the individual Strand Marks as shown to the left.

3.6 Working from the Exit Points, slowly pull each Strand Pair until the Splice Tail Mark is at the Insertion Point.



3.7 Remove the tape from the Splice Tail Mark and continue to pull on the Paired Strands until the 1st Mark has reached the Insertion Point.

Step 4 Performing the Tucks



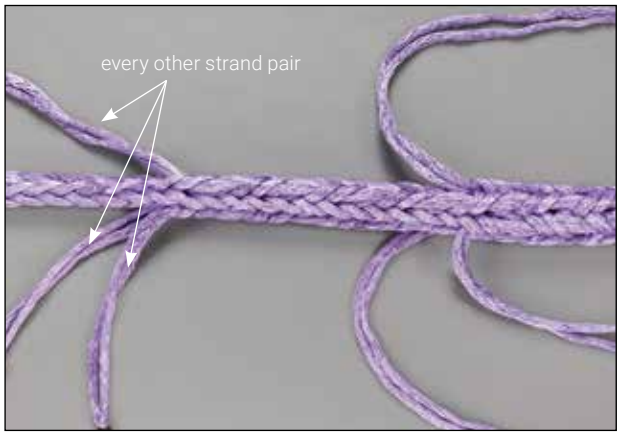
4.1 Begin the first set of tucks by selecting one Strand Pair and passing it over the first strand in the body of the rope below the Strand Mark and under the next two strands.

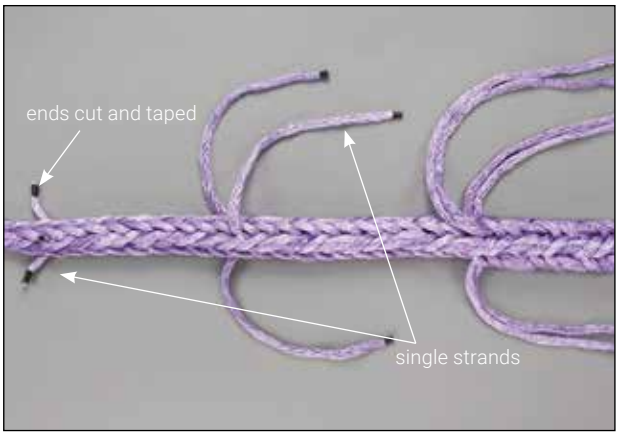
The strands that the Paired Strand pass over or under progress in a straight line down the rope and run in the same direction as the strand that has the mark on it. Going over one strand and under two is defined as one "tuck".

Quality Check Do not pull the strand tails too tightly when installing the tucks. The tucks should lay at an angle relative to the axis of the rope.

4.2 Repeat this procedure until a complete tuck has been made with all six Paired Strands.

4.3 Continue to tuck each Strand Pair down the length of the rope until a total of five complete tucks have been made with each Strand Pair. The photo at left shows the 2nd complete set of tucks with all six Strand Pairs.



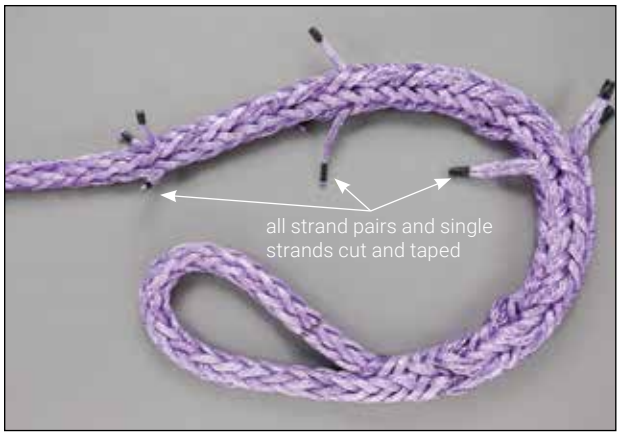


4.4 The next set of four tucks will be performed with every other Strand Pair. Select any one Strand Pair and continue to perform tucks down the length of the rope (over one strand and under two) for four additional tucks. Working around the circumference of the rope, skip the next Strand Pair and then use the following Strand Pair to perform four more tucks. Do the same thing for the third Strand Pair that will be tucked down the rope.

4.5 When all of the tucks have been completed, divide each of the Strand Pairs used to make the four tucks into two individual strands and tape each end separately.

4.6 The final set of three tucks is performed in the same manner as the previous four tucks by using every other individual strand. As before, select any one individual strand and perform three tucks (over one strand and under two strands) down the length of the rope. Then skip every other stand and do three tucks with the remaining two strands. After the tucks have been completed cut off the ends of the strands at a point about one rope circumference in length away from the point where they exit from the last tuck. The ends of the strands should be tightly taped after cutting.

4.7 The Strand Pairs used for the 1st set of tucks should be cut off at a point about one rope circumference in length away from the point where they exit from the last tuck. After cutting, the ends of each Strand Pair should be tightly taped together again. The strands for the 2nd set of tucks should also be cut and taped in a similar manner.



4.8 Completed Moran 5-4-3 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.

Notes

Notes

Notes

Cortland International operates one of the world's largest synthetic rope and net manufacturing organizations, with the capacity to produce 50,000–70,000 metric tons annually. Partnering closely with customers, our team leverages deep expertise in engineering, manufacturing, and operational excellence to turn ideas into proven, reliable products.

For more than 40 years, our custom-built solutions have been engineered to perform in the toughest environments and tackle some of the world's most demanding challenges. Trusted across aquaculture, marine and shipping, offshore energy, aerospace, defense and industrial sectors, they consistently empower our customers to meet and exceed mission-critical demands.

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