

Rope Splicing

By
Ian Turnbull



Types of Material

Polyester

- This is the most common fibre found in standard ropes. It has very good UV properties and flex resistance. It has quite high stretch properties which means that it is often used for the core in low tech ropes. It is very commonly used in over braided covers.

UHMPE (Ultra High Modulus Polyethylene)

- Also know as Dyneema (DSM) or Spectra (Dupont)
- Dyneema is usually only used in the core of the rope, usually with a polyester cover. This helps with wear, cleat holding, handling.
- Covering the Dyneema core with a polyester cover makes the rope thicker for less money than if it was all Dyneema.



Dyneema

- **SK75** - the first grade of Dyneema that was used when 12 strand non-covered ropes came out. It had good elongation and strength characteristics and much improved UV resistance compared to the previous options.
- **SK78** - has become the standard grade used by Marlow and other main manufacturers over the last few years. SK78 has the same strength as SK75 but offers significantly improved elongation and creep characteristics than its predecessor.
- **SK99** - the latest product DSM. It has 20% strength advantage over SK78 and retains the same elongation and creep characteristics as SK78. It has the best strength to weight ratio and has become the top end rope for main and jib halyards when minimal stretch is required, but this comes at an extra cost!



Why Splice

Splicing is permanently terminating or joining a rope without using a knot. Knots are bulky and can come undone not to mention a knot will greatly reduce the strength of the rope.

Below is a chart made by Marlow ropes for yachting monthly, about what is the best knot. As you can see, tying a knot in the rope massively decreases the strength of the rope compared to a splice that only reduces the strength a little.



Splicing

- **Uncovered Eye Splice (locking)**
- **Taper Splice**
- **Continuous Splice**



Uncovered Eye Splice

From the end of the rope measure 50 times the diameter of the rope.

Example:

4mm rope

$4 \times 50 = 200$

Therefore put a mark 200mm from the end of the rope – this is POINT 1.

Make your loop from POINT 1 and mark the other end of the loop with 2 marks – POINT 2.



Push the round fid through the rope at POINT 2.

Now push the short end of the rope through the fid until POINT 1 just appears.

Pull the fid through the the rope will follow. You now have a loop.



Use the fid again to push through POINT 1.

This time push the long end of the rope through the hole.

Pull the fid out and then all of the rope through and hold the loop. You should now have a locking splice!



Taper the tail by taking 4 strands out of the tail every 10mm using the fid. Start at 10mm away from the splice.

To bury the end (finish off) you can either use the pulling fid or the pushing fid.



PULLING FID:

Measure 250mm (this is for 4mm rope) away from the splice and insert the fid into the rope in the direction of the splice. Poke the fid out at the joint.

Insert the short end into the fid and pull it down inside the rope until it comes out at the end.



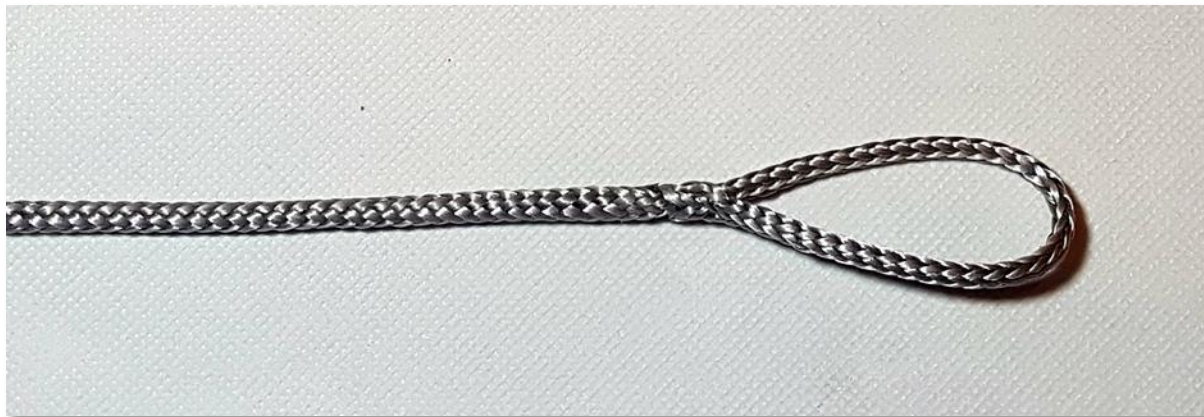
PUSHING FID:

Insert the fid just above the splice and insert the tail into the fid (make sure to push the rope down onto the retaining hook at the back).

Push the fid and rope up inside the rope exiting about 250mm up the rope.



Taper out 4 more strands and milk the line over the remaining line. You should end up with none of the tail showing and a nice even taper in the rope.



Taper Splice

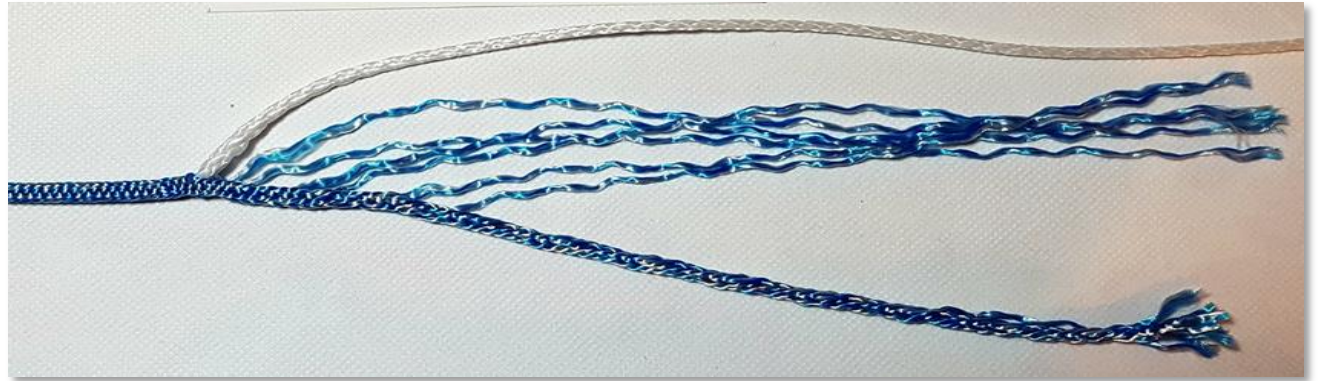
Tie a knot in the rope behind the point you want to taper. Use the fid to open up the cover and hook out the core.



Cut the cover at 50x the diameter of the rope and taper out 6 threads. Using a pushing fid insert the fid at the point the core and cover split. Then bury it up through the core away from the cover.



Bury to 60 x the diameter of the rope then bring the fid back out of the core. Taper another 6 strands of rope out and milk the core over the cover until the cover disappears inside the core.



Stitch across the joint of the splice.
To stop the splice moving.



Continuous Splice

This is used when you want to make a continuous loop in your control lines.

Pull the core out of the end of the rope 75 x the diameter of the rope at both ends and cut the core off.



Milk the covers back over the core and mark the centre point between the end of the core and the end of the cover on both ends of the rope. Taper out 4 strands of the cover 10mm closer to the end of the rope than the centre point.

Use the pulling fid and insert it at the point the core ends and come out at the centre point. Pull the cover of the other end of the rope up and out.



Repeat with the other part of the rope. Pull tightly the two tails until the rope comes together in the centre.

Milk the covers back over the tails and cut off any remaining tails and stitch across the joint.



Rope Shackles

- A perfect replacement for metal shackles
- Easy to undo
- Don't damage the boat
- Much lighter than their metal equivalent
- Self-aligning to load direction



- Set the length you want the shackle
- Begin by making an eye splice
- Bring the core out of the rope at the length you want the shackle to be



- Mark the core with the white tape (we will refer to this as the taped end)
- Pull the eye end of the splice shut, then milk the cover back over the taped end
- Pass the cover through the taped end as it exits the cover and pull tight
- Make a loop in the cover with the tail under the loop



- Make a loop in the taped end and pass it up through the loop on the “cover” end
- Pass the tail of the taped end pass it under the tail of the cover and back through its own loop
- Work this all tight



- Hold the rope in front of you so the cover is pointing to the right



- Pass the cover round the knot anti clockwise, under the taped end and up through the middle of the knot



- Do the same with the taped end



- Pull the knot tight



- Trim the tails and melt the ends

- To finish open up the eye of the shackle and stitch in a loop of whipping twine - this helps opening the shackle



Whipping

- Start the whipping with 3 stitches
- Tightly wrap the twine around the rope so the whipping is the same length as the diameter of the rope
- Pass the twine back through the rope at the end of the whipping then take the twine up the length of the whip and go through the rope again
-
- Do this twice then cut and melt the tail



Calibration Marks

- Calibration marks help repeat your settings
- They are easy to see in the rope

- With one piece of twine make a number of loops by stitching through the rope and other bits of twine - this stops the twine pulling out



- Cut all the loops and trim the twine to a uniform length

- Finally fluff the twine in your fingers to get the wax off - the twine will fluff up



Contact Us:

Rope4Boats
Stainton house
Kendal
Cumbria
La8 0lq

T: 0044 7739 430661

W: www.rope4boats.co.uk

