

A person with short blonde hair, wearing a white long-sleeved shirt and white shorts, is leaning over a boat deck. They are surrounded by various ropes and equipment. In the background, other boats are docked at a marina. The scene is brightly lit, suggesting a sunny day.

**SPLICE**

**UP YOUR LIFE**

Gone are the days when a splice meant a simple three-ply rope either being fed back through a bite in itself to form an eye or fray-proof end. Modern rope technology requires modern splicing techniques. **Harry James** explains...

**M**aking how to splice really isn't as tricky as it looks – it's a simple job that anybody can pick up with a little practice. But before getting down to the gritty gitty of what goes where, let's first look into the basic construction of rope. The modern ropes used in the industry today for dinghies, cruising or racing yachts are made up from a core and a cover – the inner construction of the rope is the core, while the outer construction is the cover. Taking the core first, without going into too much depth about the actual manufacturing process that makes the initial yarn form into a strand using different types of twist, there are fundamentally three different types used in constructing the core for yacht ropes.

First there's braided, which gives a rounder rope, is easy to splice and provides better handling; second there's three strand, which is better than a braided core for flex fatigue, allows equal load and strength on the strands around bends and is also easy to splice; and finally there's parallel. Parallel is the strongest of the core constructions, but has poor flex fatigue and is harder to splice.

So that's your core. There are then four different types of cover which are mainly used in yachting ropes to go over these cores. These are constructed from a number of yarns which form a plait, and you can get 8, 16, 24 and 32 plait covers. The higher the number, the smoother the surface finish, making for easier handling.

Depending on the application, when choosing the sort of rope to use the following needs to be considered:

durability, abrasion resistance, shock loads, rope fatigue, stretch, creep, strength and weight. The below should give you a reasonable idea of the properties you'll find with different rope constructions.

- **Polypropylene (PPS):** High elasticity, low weights, floats, melting 170 degrees C, relative density 0.91. (Note that relative density of water is 1.)
- **Polyester (PEE):** Low stretch, High tensile strength even when wet, good abrasion, fatigue resistance, melting 255 degrees C, relative density 1.38.
- **Nylon (PA6):** Three strand or multipial 8 or 12 strand, high stretch, good abrasion, fatigue resistance, high tensile strength except when wet, melting 210 degrees C, relative density 1.14.
- **Spectra/Spectra (HMPE & High Modulus Polyethylene):** Very low stretch, very high tensile strength, floats, good around bends, UV stable but creeps initially, melting 150 degrees C, relative density 0.97.
- **Aramid (Kevlar):** Very low stretch, very high tensile strength, no creep, heat or burn but not good around bends, relative density 1.44.
- **Vectran (LCP - Liquid Crystal Polymer):** Very low stretch, very high tensile strength, low creep, poor UV and abrasion, not good around bends, melting 300 degrees C, relative density 1.38.
- **Zylon (PBO):** Very low stretch, very high tensile strength, no creep, heat or burn, good around bends, resistant to all types of light, relative density 1.58.



# PRO-EYE SPLICE

**W**e will first take a look at the Pro Eye splice, which I originally developed about 18 years ago to cope with the new high tech ropes of the time. This splice is now used by riggers worldwide as an industry standard. It works particularly well with modern ropes. You will need the following tools to produce a spliced eye:

- Tape measure
- sharp knife
- spike
- splicing needle
- Sellotape
- marker pen,
- reshaping twine and needle



Start by tying a knot in the rope between 0.5 metres away from the splice end and secure this.

Mark the rope from the end using the formula:  
 Diameter of Rope (30 mm) x length of mark in inches (30"). This is position A.



At this point extend the rope using a spike. Once set it is useful to make the same measurement marks on the inner eye.

Add a further mark using the formula:  $1/2$  above (mm) - inches beyond the mark B in feet x 5" from mark B to mark C.



Then make pointed ends using Sellotape. This will secure the ends being fed into the eye of the splicing needle.

Insert needle at position B.



# SPLICING



Then measure the size of eye you want and mark this. Position B.



Taper the ends of the rope using a sharp knife.



and tail 10" further towards the end at position B. Take care not to tangle with the inner core.



Feed the end of the core into the splice.

# Performance tied up

Marlow has developed Excel D12 (Dyneema SK75) and Excel V12 (Vectran) to offer new levels of performance for racing boats.

The high strength to diameter ratio and weight of these ropes make them ideal for many applications including wire replacements on dinghies and sports boats.



Excel D12

## Special Features

- Low stretch
- No water absorption
- High strength
- Easily spliced
- Colour coded markers



Excel V12

Sizes available are 2.5mm to 6mm



Official Supplier

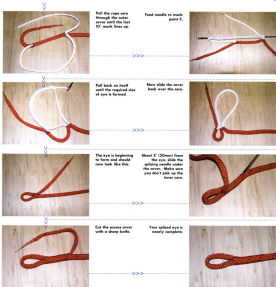


## Make sure it's

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# SPLICING SPLICING



Put end of rope through needle eye.



Work the cover back along the core.

Slide the core disappears inside the core.



Exit the needle at the base of the eye.

Feed the end of the cover into the needle and pull it through.



Finish with a simple whipping to stabilize the splice. It is best to use mixed polyesters for whipping.

The finished Free Eye Splice.



# EYE SPLICE WITHOUT COVER



Start by tying a knot in the rope between 2-3 metres away from the splice end and secure this.

Mark the rope from the end using the forewale diameter of the shackle - length of mark is twice (2x). This is position A.



Then measure the size of eye you want and mark this position B.

Peen the ends of the rope over using a sharp knife. Then make pointed ends using ballpen. This will assist the ends being fed into the eye of the splicing needle.



Feed the end into the needle and pull the end through the inner part of the eye.

Adjust length until the slope of the eye is formed.



Feed the eye over the fitting.

Pull tight to form a Cow Hitch. This spreads the load on the rope.





# SPLICING SPLICING



6m  
Dyneema 21cm each  
end.



Select a point about 15" further down the rope core.

Insert the splicing needle and exit it at point B.



If you want just an eye it can be whipped at this point.

Feed the eye through the hole of the snap hook or similar fitting.



Finish with a whipping to stabilize the eye.

## HARRY JAMES

Harry James has been rigging all types of yachts for more than 20 years. Running The RIG SHOP in Ocean Village, Southampton, Harry's depth of knowledge in rigging racing yachts up to J Class size has led him to develop all types of new rigging systems. Harry would like to thank John Scofield and Paul Horrocks of Marlow Ropes for their help with this feature.

6m - 429