

The Sayce-Rees Pole System



For many years Fireballers have had to make the decision whether to have a “double ended” spinnaker pole with a sliding central up-haul down-haul or a fixed “single ended” pole with the up-haul and downhaul fixed to the outer end. The double ended pole’s main advantage is that it is easier to gybe. However, it does have some problems because:

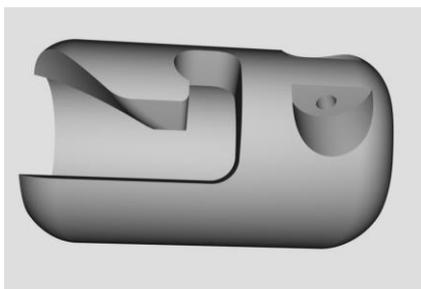
- The pole needs to be extremely stiff (which can make it expensive) or it will bend around the centre,
- The pole isn’t held rigidly by the uphaul – there is always some slack in the loop, so it can bounce up and down and
- The uphaul/downhaul sometimes slides right over the ramp, missing the locating notch.

The single ended pole doesn’t have these problems, but it is difficult to gybe. This can be simplified with a fly-away system, but that can still go wrong. Hence, there has always been a lot of discussions about poles – I know in the 1980’s many of the top UK crews used single ended poles, but today that seems to have gone out of favour and double ended poles are the norm, but they are difficult for smaller crews to handle. Our new poles, which people have dubbed the “Sayce-Rees pole” is an attempt to develop a pole which has the best of both systems.

History

When David Sayce and I returned to Fireballs in 2014 after last sailing together in 1990, David thought he could do better than the existing pole systems. He had come up with a similar concept in the early 1990s while sailing the Laser Two and he spent some time developing the system and used it successfully for a number of years and used it when he came second in the Nationals in 1995.

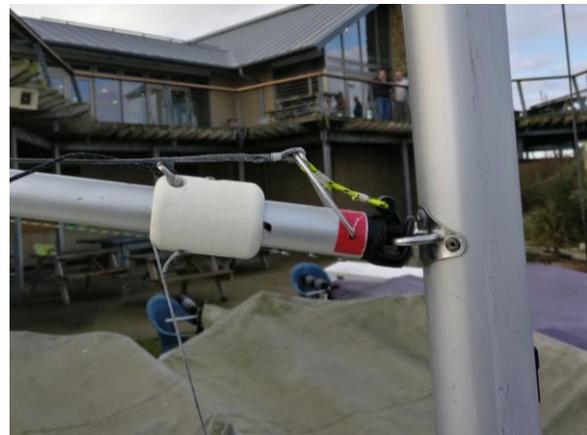
By 1995 the system had evolved into something very similar to what we started with on the Fireball in 2014 i.e. the uphauls were attached by sliding rope loops and there was a single downhaul in the centre. Early on David was convinced that it would be possible to find an engineering solution that replaced the loops, and even took it to Mark Rushall who was at



Proctors (as Selden then was) with a few suggestions but there wasn’t much interest in developing it. Soon after that David started sailing asymmetrics and dropped the idea until getting back into the Fireball in 2014.

In 2014 David and I started with a rope loop system, but the possibility of an engineering system bugged us. The current design came to me when hanging our sailing gear

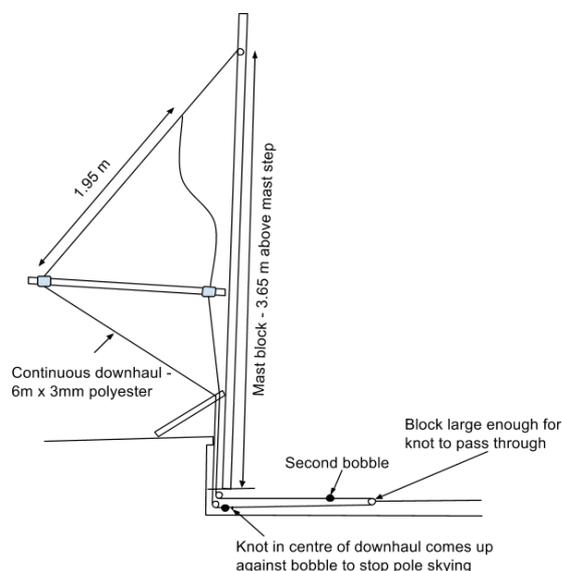
out on David's rotary hoist – it has a twist-lock system and I thought we could use that to locate some collars. The design went through a few iterations – the first prototype was a piece of drainpipe, the second machined out of solid nylon (which we used at the 2014 Nationals) and in 2015 I decided to experiment with 3-D printing and settled on the current design for the collar shown in the diagram, and illustrated in the pictures.



Setup

The pole system has a simple split uphaul – a bit like the bridle on keelboat poles. We use 2mm dyneema for it, and the split is about 1.95 m above the pole. However, the biggest problem is the downhaul, because both downhauls have to retract independently.

Our current downhaul is continuous, about 6m long in 3mm polyester. There is a knot in the



middle and two bobbles. There is one travelling block running along the bottom of the boat attached to a shock cord retriever. The bobbles come up against the turning blocks by the forward bulkhead to stop the pole skying. (See drawing)

The downhaul is the part of the system you have to work on to get right. It will twist up during a race, because the pole rotates in the same direction every gybe since we always go around the course the same way. Generally, there is half a twist per lap - unless you do a gybe-set at the top of the run, in which case the twist goes away.

The big problem with this system is that the block with the shock cord rotates and the two ends of the downhaul twist up in the boat. For 2017, we are going to try two separate downhauls (one on each side of the boat), joined together with a single piece of shockcord that goes all around the cockpit.

We usually start by over twisting half a turn before the start and that is normally sufficient - in a three-lap race there is one twist the other way at the end - which is not enough for it to snag. You have to untwist the pole between races and every now and again check that the rope itself doesn't get any twists in it - if it does, the rope twists up along the bottom of the boat.

Making a pole

I use the following parts for my making my poles:

- 2 x 3-d printed nylon twist collars
- 1 drill template
- 1.944m Superspar 1.25" 16swg aluminium tube (Superspar part AT16125)
 - See <https://www.superspars.com/SSlatest/mainpages/Productcodes.php>
- 2 x Superspar 1.25" spinnaker pole piston ends (Superspar part PEL)
 - See <https://www.superspars.com/SSlatest/mainpages/Productcodes.php>
- 2 x Sea Sure Wire Trip Triggers (Sea Sure SKU 16.33)
 - See <https://www.sea-sure.co.uk/configproduct/trigger-grip-poles-15>
- 2 x 8mm OD, 4 mm ID, 10 mm long nylon collars (for twist collar locating pin).
 - See <https://uk.rs-online.com/web/p/round-spacers/1026249>
- 4 x 12mm Screws for fastening pole ends
- 3m x 3mm 12 plait line (for trigger line)
- 300mm 3mm shockcord (for tensioning the trigger line)
- 2 x M4 x 30mm machine screws (for twist collar locating pin)
- 2 x M4 Nyloc nuts (for twist collar locating pin)
- 2 x M4 washers (for twist collar locating pin)
- 2 x 4 mm shackles (for pole up-haul attachment to twist collar)
- 2m x 2mm line (for twist collar guide and spring). This is attached to one of the screws fastening the pole in in at each end.

Drilling

The drill jig looks like this and you cut it out and wrap it around the tube to make it easier to locate the hole positions:

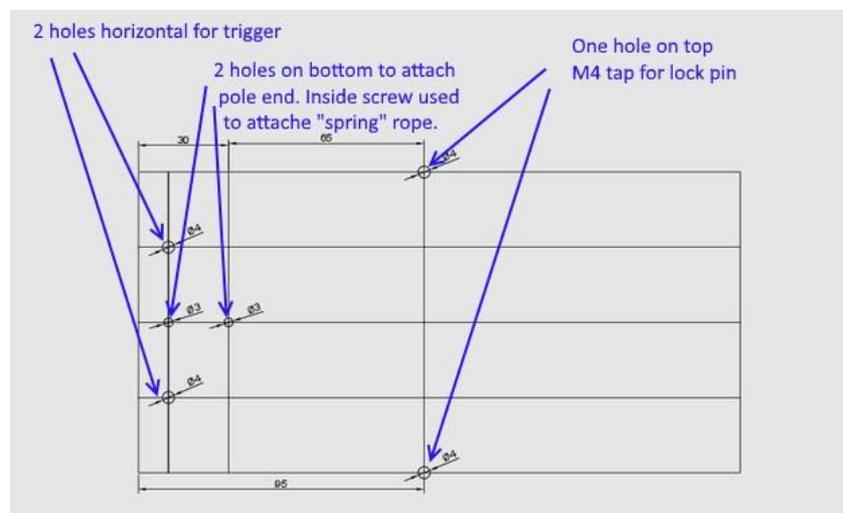


Figure 1: Drill Jig. The end of the pole is on the left.

I wrap the jig around the pole and fasten it with sellotape, then use a drill punch to create starters for drilling.

Pole piston ends

The Superspar pole piston ends always come with lots of extra plastic that needs to be cleaned up. This is fairly easy to do with a Stanley knife. I always remove the longitudinal ridges on the bit of the piston end that goes inside the pole as well.

Also, if you are using the Sea Sure triggers, these are close enough to the end of the pole that holes need to be drilled in the piston end. I drill 1 cm deep with a 4mm drill with the piston end in the pole, and then remove the piston end and enlarge to hole to 5 mm. Care should be taken not to drill into the piston as well.

Assembling

The locking pin is a fair way down the pole, so getting the nut on the end is tricky, but you can just get to it with a bit of care and a 7mm spanner.

The 2mm spring string is attached to the inner of the two piston end screws. It needs to be reasonably light – attach one end and then put a two turns around the other end and pull it as tight as you can by hand before putting a few hitches in. The spring should go through the 3 mm hole in the collar so that the collar is positively held on the pin. The other 3 mm hole is for the downhaul.

The rest of the stringing is fairly standard – I tend to probably spend more time on it than the average boat shop, but you can take short cuts very easily.

In Use

We have found the pole very easy to use. It is important to have the parrot beak's on the pole facing upwards, because otherwise the new spinnaker sheet won't float out of the end after the gybe (and even if they are upwards you have to give the trigger line a good yank to ensure it happens. However, the best way to get the idea is by watching a video, and Claude Mermod and Ruedi Moser and made some of their system (note that their parrot beaks face down):

- <https://www.youtube.com/watch?v=-ay0z4nETGs>
- <https://www.youtube.com/watch?v=uQjb9EJHVIU&feature=youtu.be>

More information

I have made a number of these poles and have also given the 3-D CAD drawing to a couple of people from other countries who wanted to try it themselves. If you want more information, please don't hesitate to contact me – nick@rees-schotte.net.



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