

How to convert a 420 1:1 main halyard to a tapered 2:1

Most of the boats at the top of the 420 fleet have a 2:1 main halyard as these reduce the force on the halyard which means that your main is less susceptible to halyard creep which can be quite noticeable on a 1:1 main halyard.

You will need to buy 18,000mm of rope to allow for splicing at the top. 17,000mm will just about do if you have this much. A rope such as *4mm Marlow Excel Racing* is ideal, as you need something with a good Dyneema core.

Marking the taper point

The first job is to measure the point your taper will begin. There are two ways to do this:

Method 1 – if you have a 1:1 halyard in your mast

Firstly, pull the old 1:1 main halyard up to the very top of the mast. Note that this is further than it would be if tied to the top of the main.



Mark the other end of the halyard with a marker pen at the main halyard cleat position.



Carefully pull the halyard from the top of the mast until the marked section has come out of the top. Ensure you have a knot on the bottom end(!) as we are not taking the old halyard out at this stage.



Measure the distance from the top end of the halyard to the mark you have made and write this down. This is the taper measurement point that you will need to make your new tapered 2:1 main halyard.



Method 2

An alternative way to do this is to measure from the top of your mast to the main cleat if you don't have a halyard in the mast and you're making a new one.

If you have the type of main halyard that comes out of mast foot blocks and cleats upwards, remember to take this extra distance into account.



<< unrelated to 2:1 halyards, but what's wrong with this photo?

The lime green kite halyard is the wrong side of the rig tension wire which will make launching the kite very stiff!!

This taper point is important as you need to ensure that when the main is up, you are cleating on a thick bit of rope and not the tapered thin section. If in doubt, go safe and have a shorter taper.

Making the tapered halyard

Lay your new 2:1 halyard out and measure the distance you have noted down from one end. This will be the start of the taper point. If in doubt, go a little shorter.

Using a Fid such as the one in the pictures below, carefully separate the outer of the rope and prise out a loop of the inner core. This can be a little fiddly so a little patience may be needed.



Expert Tip - Before you go much further than the picture above, it can be useful to put a needle or similar (not pictured) through the rope, and inner core, just below the loop on the side that will be towards the bottom of the mast when in situ. This little trick means that when you pull the rest of the core out from the end that will be the top of the mast, you don't disturb the core below the taper point.

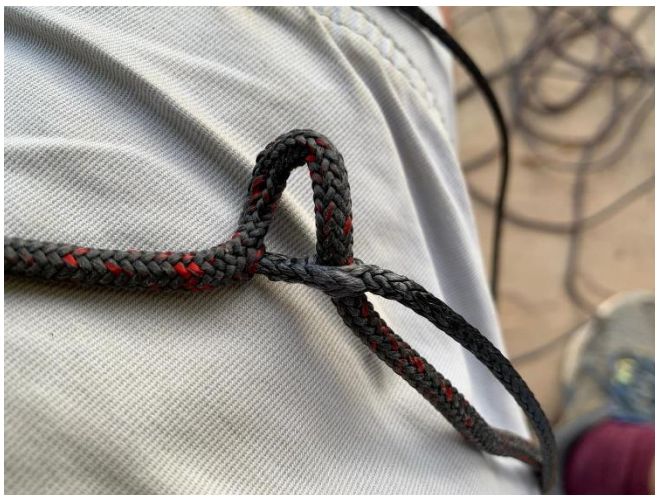
Now carefully pull the core out of the outer from the end that will be at the head. A tip here is to ensure that the end has not been sealed, if the rope end has been sealed with a lighter or rope cutter, trim this off as it will make it easier for the core to be pulled through.



Once you have pulled the core out, you can shorten the outer sleeve to the taper length you want. You will be discarding most of the outer sleeve but leave about 30cm from the taper point. It's worth pausing for a second here to check that you're cutting the right bit off as rope is expensive!

The discarded outer sleeve can use used for other purposes but is not suitable for your race boat as it will have lost quite a bit of its strength.

Now you need to lock the taper by firstly passing the outer through the core using your fid.



Tighten the loop flush with the core and then pass the core through the outer sleeve again with your fid.



Once you have tightened this 2nd loop you have now locked your taper. Using your fid you now need to insert the tail of the outer sleeve into and up the core towards the mast top end of the rope.

Your finished tapered splice should look a bit like this, with the 30cm of outer, now inside the core.



This is a good video showing you how to insert the outer into the core. You can even thin the outer if you wish as per the video to make a super slick taper.

<https://www.youtube.com/watch?v=zclrixWdX4o>

Now you need to make a spliced loop at the tapered end using a Brummel lock splice.

<https://www.youtube.com/watch?v=d0B6tYTVHVM>



This is your tapered main halyard completed, you now need to get this in your mast and finish the top.

Threading your new 2:1 halyard

Working from the bottom of the mast, attach the new brummel locked tapered loop you have just made to the end of your old 1:1 main halyard ensuring that there are no knots, or bobbles on the old halyard. To do this, you *could* create another spliced loop at the end of your old halyard or a lot of people tie a length of thin whipping twine to the end of each rope.

Ideally with two people, one person pulling and one feeding, carefully pull the old halyard out of the top of the mast, pulling in the new one as it goes.



Finishing off the top

There are a few ways to finish off the top of the mast. In this example we have gone for the shackle method which replaces the pin and split ring which holds in the top pulley wheel in the mast with a shackle, slipping on the spliced you have made.



Other methods include:

The P clip method. Pictured is a non-tapered 2:1 halyard with a bowline. This would be neater with the spliced loop you have created above attached to the P clip.



The bolt and penny washer method:



Complete you 2:1 with another large shackle that's large enough to fit on the head of your main sail.

