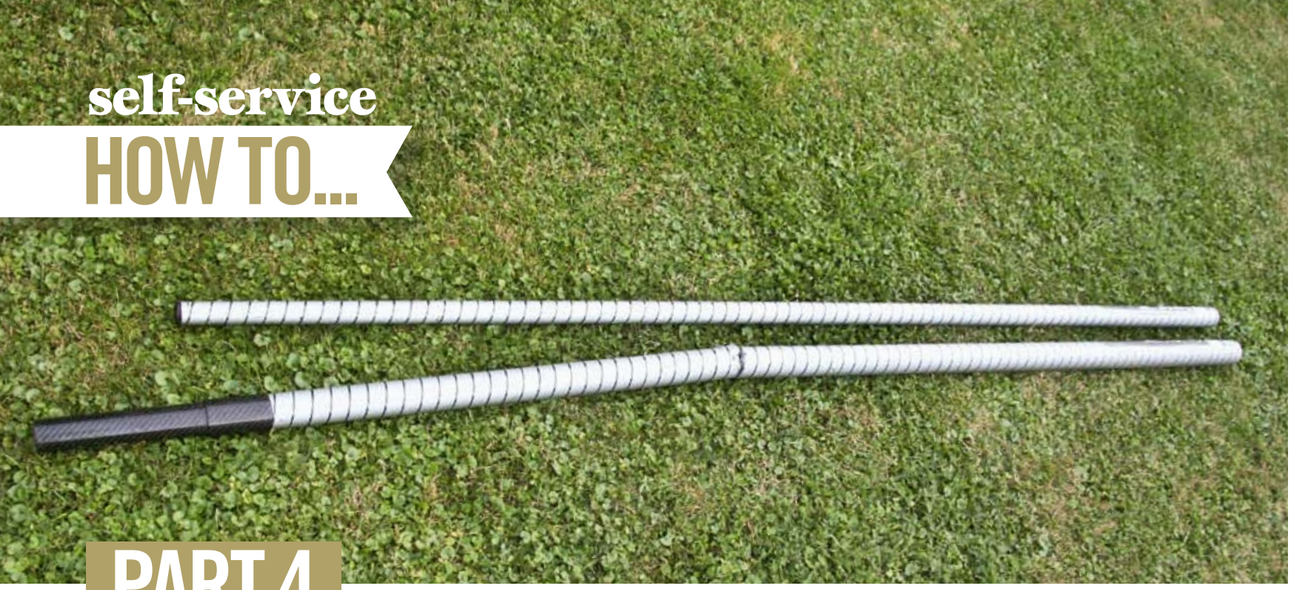


self-service

HOW TO...

PART 4

HOW TO FIX A BROKEN CARBON MAST

Sooner or later it happens to all of us. One minute you're happily blasting along, the next there's a sickening crack announcing the catastrophic failure of your expensive mast's atomic structure. But don't throw that broken mast away, as our very own doyen of DIY, Marjan Tkavc, has a cost effective solution that will see your beloved pole stand proud once more…

Modern kit is pretty durable, but as the saying goes, nothing lasts forever… And it wasn't until I took a windsurfing holiday in Greece that I realised just how fragile windsurfing equipment can be – especially when given a good thrashing.

Back in 2003 my wife and I went to Prasonisi for three weeks. We didn't have kids at the time so there were no little terrors tearing around to distract us, which meant that we were both on the water from 9.00 to 8.00pm pretty much non-stop. And because we had just one day without wind, our equipment was under real pressure.

I learnt that the hard way right after the first week, when things began to break: boom, mast, mastfoot, harness lines, harness hook… In fact almost everything but the board and sail disintegrated. The boom and mast broke with an almighty crack while I was blasting along, and as the wind was offshore on both occasions, the failures could have had dire consequences. Fortunately I was picked up by a local centre's rescue boat, so a big thanks to all windsurfing centres around the globe for providing help to non-customers as well! (*n.b.* the complete quiver that we were using was two seasons old at the time.)

Unfortunately, we've never since managed to put our equipment under quite the same pressure again, while on the other hand we have both been put under pressure by the arrival of our little terrors!

Anyway, my next mast mishap was a couple of seasons ago, only this time it didn't break while I was sailing along. I'd like to say it was destroyed by a huge wave, but in truth I was trashed in the shorebreak.

I felt guilty about that, so I was determined to fix it. There must be a way, and there must be something about it online somewhere, I told myself. But after much searching I couldn't find anything, so in the end I figured it out myself.

The solution, as with so many things, is pretty straightforward. Modern composite (carbon) masts come in two and even three pieces now anyway, so all you need to do is make another mast joint.

If you take a closer look at the mast joint you'll see that there's a narrower tube fixed inside the lower part which slots into the top part when setting up the mast. So, all you need to do is find a suitable tube and a glue to join the broken mast together. The best tube is an old mast of course – it's roughly the same material and it's conical (as opposed to most aluminium tubing that you can buy). As for the glue, I used a strong, flexible universal marine adhesive just to keep the parts together, because when rigged the mast is kept together by the downhaul anyway. The flexible adhesive means the glue won't break when the mast is bent.

I must admit that I was quite sceptical about the outcome, and just to be on the safe side I bought new mast before fixing the old one. But you know what it's like when you've got a bee in your bonnet – I had to try it out.

One rainy November afternoon I put my theory into practice. Luckily I still had the top part of the old mast lying around, and it fitted nicely inside the bottom part of the mast I was fixing (*n.b.* the mast in Prasonisi broke at the bottom as well, but it was more shredded so I left it in the bin).

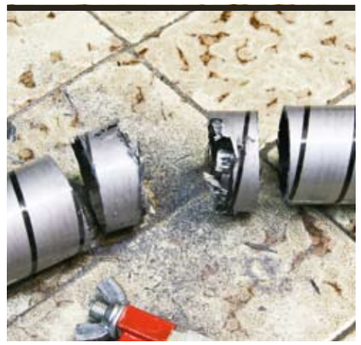
In the end it all turned out surprisingly well. The first time I tested the fixed mast on the water I chose a flat, safe spot. But the last time it was used my wife sailed it in 3.7 weather in Greece. (She was a willing guinea pig – honest!) Despite the gap at the joint that shows up when rigged, the mast works fine, and as a recreational windsurfer I can't detect any differences in performance. We've now used it as a spare mast for a couple of seasons.

The downsides are that the top can't be put away into the bottom, there's a slight increase in weight, and you lose a few centimetres in length. The upside? With the price of new masts these days, do you really need to ask?

Coming soon: How to painlessly fix a quiverbag onto a car, and how to extend a mast…

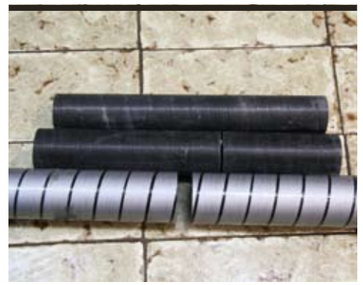
TOOLS REQUIRED

An old mast, a metal cutting saw, a metal file and the Sikaflex marine adhesive with Sika cleaner. (You could use some other appropriate tube instead of a mast and some other adhesive and cleaning benzene.)

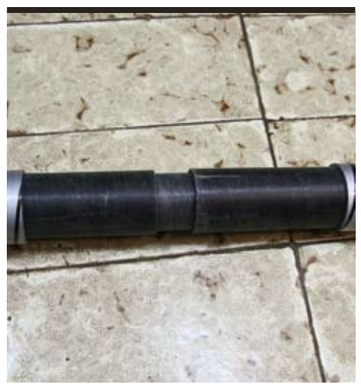


1 Cut off the damaged ends of the mast. Make sure that you cut off the complete damage, but no more. You don't want to lose too much of the mast's length.

2a Before cutting the old mast you need to determine the length and (more importantly) which part to cut. This is very easy to do. Just slide the old mast into the mast you're fixing, narrow end first. Because masts are conical the old mast will get stuck at some point. Mark this point on the old mast and cut it 12.5cm up and 12.5cm down. Doing it this way you get 25cm of tube to fit perfectly inside the broken mast, which is essential to ensure a durable repair.



2b At first I didn't realise how to determine the best fit, so I measured the masts and ended up with not so good a fit. Because I didn't have another old mast I corrected the mistake by putting in an additional tube, which was still available from my old mast. So, my fixed mast has got two inner tubes.



3 It's crucial that you set it all up and try out to see how it fits before applying the glue. Then use the cleaner to prepare the surface for bonding, which is another crucial step before finally applying the sticky stuff.

4 The Sikaflex is adhesive and sealant at the same time. You can apply generous amounts of it so that all gaps are filled. Let it cure for 24 hours before using the mast. Cut off the excess glue with a paper knife.

5 Because the adhesive used is flexible a small gap appears when the mast is rigged. Experience shows that the gap does not effect the mast's integrity.