# **The boat that tacked.**

Tacking is simply turning the boat through the wind. Sailing 101. Tacking and not losing any speed is tricky – actually impossible – but tacking and gaining ground is possible, and surprisingly, it can be legal. So, what goes into a good tack? We’ll start by splitting the tack itself up into different parts. We have the entry, the heel, and the pull up.

So, what do I mean by the entry? This is the initiation of the tack. This is where the first errors are often made – and if you make them here, then that affects everything from there in. In my experience, a fast tack is a slow boat - it needs preparation. Obviously, if you’re caught out by a starboard boat then you are going to have to go quick and take the losses, but a good race tack is prepared for. To that end, we start with everyone in the boat knowing that you’re going to tack. At this point several of my crews have just spat tea over their phones reading this, but yes, make sure everyone knows that you’re tacking. I hardly ever tell a crew that I’m going to tack, that’s my loss really, but that said, after they’d sailed with me for a little while, they knew the signs – and that’s good because when they started to helm, they knew when to tack themselves.

So, what are the signs? If we ignore all the tactical considerations, and the wind patterns, the most obvious sign is a wind shift. The luff of the jib aptly starts luffing – the front curves in on itself. So straightaway here, we’ve made a gain – the wind has shifted, and has actually done some of the tack for us without us actually changing anything. And we all know we are tacking because the wind has shifted.

Now push the tiller gently. Now I mean gently. I’d say it takes me about 2 to 3 seconds to move the tiller from centred to about halfway (not full lock – full lock = slow. What happens if you drive down the motorway at 90 and you slam full lock on the car?). Push the tiller with an acceleration too – start pushing slowly, and then speed it up gradually as the boat takes to the turn. Think of it a bit like starting in a car as you reach the bite on the clutch. You get the bite and you have to move your feet slowly, but then as the car accelerates, you can lift your foot a bit quicker, and a bit quicker, until you’re fully off the clutch. It’s the same with tacking. You start the turn, and let the boat get some angular momentum, then you can speed up the turn a bit more putting more rudder on, and more and so forth.

The key of all this is that the boat loses as little speed as possible. And no one has moved. Notice I’ve not mentioned anyone moving across the boat – and I said that it’d take 2 or 3 seconds to push the tiller? It’s not really about speed of the crew moving across the boat, but the precision and the delicacy of the tiller.

By this point, the jib has really started to back, and we use that to our advantage to bring in the second step, the heel. Have you ever tried to capsize a boat without sails up? Usually one ends up hanging off the shroud stood on the deck, and it’s still an effort. The point is that the boat doesn’t really want to roll over so throwing all your weight over one side isn’t going to do much apart from unbalance it and lose momentum. What really rolls the boat in a tack is the wind. The wind backing at first the jib, and then the mainsail. So, when the jib has started to back, that’s when the crew moves across the boat and helps the roll, but the boat would roll a bit without that movement anyway (unless it’s really light). The crew of course should move as smoothly as possible, speed isn’t that important, but smoothly is.

Where is the crew going to sit? Well further back than normal – because the kicker is in the way to go straight back into their normal position, so the helm must move back in the boat to give them space to come across. That’s ok though because we’ve got other things going on at the same time.

1. The boat is leaning, so the rudder is no longer only steering the boat through the wind, it is steering the nose of the boat downwards into the water, so moving back keeps the nose up
2. The boat is moving at pretty much it’s previous speed, but now directly into the wind so we’re actually making 1.4 times the speed we were a moment ago up wind, so when the helm (and crew) move further aft, along comes Sir Isaac and says “ok, the boat has got to scoot a bit forward to satisfy the ol’ momentum thingamibob” – so it accelerates and we’re now going even faster, and directly into the wind.

And now we wait – not for long, for the boat to go through the wind. As the boat starts to get pressure filling the main on the new side, the jib can go across, and the helm stands up and straightens the tiller. Yes, stands up. Because now, conveniently, the boom has already gone over head, and “up” is in the direction of the deck you want to sit on next (as the boat is heeled over). Here, the key is for the helm to stand in a position, that hasn’t really moved their centre of gravity – hence “standing up”, which doesn’t say walk forward or backwards. When I stand up, I end up pretty much in the same place I was before, but stood up. You can sail in this position for quite a long time. It’s not quick, but this is the time to check everything is as planned – most predominantly that you are far enough through the wind that the next bit works. I glossed over the straightening of the tiller here. I kind of pull on it a bit to help me up! But it goes straight at this bit, and there’s not much left in the water, so it doesn’t really matter, but actually, pulling it straight is a little bit of a “scull” forwards, so there’s no real reason not to yank it, or however you do it, as long as it goes central.

Lastly, the pull up. If everything has gone to plan so far, this bit is easy. The boat is still going relatively quickly so you don’t really need to generate much speed, and the forward momentum means that the foils are creating lift and hence have “bite” in the water meaning that the boat should right smoothly as you have plenty of force to pull against. There is a lot going on here though, and it’s probably the bit that requires the most practise. The key points are

1. When flattening the boat, the rudder must be either straight, or pushed away from you. If it’s pulled towards you it effectively paddles water the wrong way as the boat is flattened.
2. Timing is everything. If the boat is pulled flat before the turn through the wind is completed, the sails won’t fill, there will be no pressure to pull against, and the boat will flatten too quickly and then wobble around uselessly like a blancmange. You must have turned completely through the wind before flattening it. A little too far is better than a little too short. As mentioned before, you can stand with the boat on an angle for quite a while before flattening it.
3. The amount the main sail needs to be adjusted. In an ideal world, when the boat is flattened, the crew as well as the helm will be needed to pull the boat flat – but that’s difficult, and actually unnecessary because it’ll create an illegal amount of speed. The mainsail needs to be eased during that stood up period so you have just enough power that you can flatten, no more, no less. That sounds difficult – but really, it’s about 6 – 12 inches further out than it was on the previous tack. Why? Well you’d set the sail up so you had maximum power and you were holding it flat. Now you need to pull it flat, so you just need a little bit less. If when you’re flattening it you find that you don’t have enough power, or you can use more, you can heave it in. This is quite common as this is pretty much any wind where you’re not fully hiked to keep the boat flat.

To flatten the boat, your feet need to know where they’re going to be. In an Enterprise, I use the centreboard case as a “step”. It is convenient and solid. My front foot goes across first and sits on that corner where the case meets the floor, and my back foot goes over the toe strap, twists and then back under it, ready to take my weight when I hike out. To flatten the boat, I put a little spring in my centreboard foot and twist and throw myself on to the deck – but *forwards* as I do so. Remember that we moved backward in the boat before to allow the crew to come across? Well now is the perfect time to go back to the optimum trim position as the momentum that we would lose (we gained from before), we can pick back up from the power generated from flattening it. The crew also moves back forward at this point, and as the boat is flattened, heaves the last few inches of the jib tight. As I hit the deck (generally on my side because I have not quite turned round fully yet – I roll upright straight afterwards), my centreboard foot can move under the toe straps too. From when you are stood up, to on the deck with the boat flat, needs to be one smooth action. It takes practise, but it is not too difficult. I think it’s easier than the RYA beginners’ tack to perform as you’re not crawling under a boom and stepping over the case and two toe straps – these have become integral parts of the tack rather than obstacles to avoid.