

## Web-site extracts by Bob Carter and Paul Smith on use of mainsheet and traveller together.

The **Sprint 15** needs particular use of the combination of the mainsheet and the traveller because the boat has no boom or kicking strap (boom vang). This means that the only way to control mainsail twist is via use of the mainsheet and traveller. Main sail twist is undesirable because it means that the sail is not working equally efficiently at different heights. In particular, the wind gets spilled in the top area of the sail and driving force is lost. Hence the technique can be summarised as follows :-

**1) Upwind** - Try and avoid twist. In light winds, have the traveller near the middle of the boat (100mm from the centreline of the boat) and have the mainsheet moderately tight to reduce twist and to get the sail into a nice shape (but not so tight to cause the sail to "hook"). As the wind increases, sit out further and apply more tension to the mainsail to keep a nice shape - the increased wind strength (pressure) will prevent the hooking tendency. When the wind is a little stronger and you cannot hold the boat upright by sitting out, you need to make sail adjustments. The boat needs to be sailed reasonably flat, as when it heels, the leeway increases dramatically. So you find a new position for the traveller which is further from the centreline of the boat, thus enabling you to keep the boat upright with the mainsheet tight to avoid twist. If you want to be competitive, this is NOT an ALTERNATIVE to sitting out. You do it AFTER you cannot sit out further. In the occasional gusts when you are overpowered, let the mainsheet out briefly but ensure that you quickly return it back to the tight position which has a nice sail shape and no twist. If you cannot hold the boat upright for most of the time with the mainsheet tight then you need to let the traveller out to a position where you can. Some hot sailors sail upwind leaving the mainsheet tight and playing the traveller in the gusts, which is theoretically a better technique. I cannot get on with this as the traveller does not run as freely as the mainsheet - especially with the mainsheet tight - so it is a recipe for a quick swim if you cannot spill the main quickly enough with the traveller. As the wind gets stronger, you will find that the traveller needs to be further out to keep the boat flat. This is fine but make sure that the mainsheet is tight for most of the time. In a force 6+ wind, it is quite normal to have the traveller almost all the way out, unless you are a heavyweight and can hold it upright with "more power on".

**2) Reaching** - This is pretty much an extension of the above technique. On a fine reach or fetch, set the course and then adjust the mainsail to avoid twist if possible. Get all the woollies (or tell-tales) to stream along the sail if possible. To do this you will find that the traveller needs to be underneath the clew of the sail and the mainsheet reasonably tight. On broader reaches, this will not be possible as the traveller will be at the end of the track, and all that you can do is to get the mainsheet in the best position.

**3) Downwind** - the traveller must be fully out and the mainsheet well out as well. Twist is not much of an issue downwind for unrig boats (if you sail with a jib you must sail downwind as a series of broad reaches).

All the above assumes that the mast is set to the correct angle. An easy check is on a light wind day, to set up the boat on shore, pointing into wind with the mainsail hoisted. Pull in the mainsheet really tight and check that the mainsheet blocks do not (quite) go block to block. If they do go block to block, you need to rake the mast further forward.

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Bob has very competently explained the relationship between the main and traveller, further to which there is not much I can add, but I will nevertheless add my three penneth to give a few more 'fundamental pointers', if only to help you grasp WHY these adjustments are made, rather than just tell you WHAT to do.

Under normal sailing conditions, a sail works best when it is vertical, so if you keep the boat reasonably upright, then at least the front of the sail will be correctly orientated with the wind, being totally supported by the mast. However, as you move progressively towards the back of the sail, that support diminishes because the sail cloth is not rigid, and so tends to blow away from the wind as much as it can. The only things that prevent it from doing that are the **sail battens** to a certain extent which help to produce the right curvature and generate lift (as an aircraft wing), and translates as a pulling force on the sail as it tries to move into the low pressure area on the leeward side, and the **mainsheet attached to the clew**, but mounted on the traveller car. This arrangement means that when you pull the mainsheet in tight for BEATING, the sail will be almost vertical, pulling the back of the sail down (the leach), which in turn increases mast bend, thus flattening the sail and improving the entry angle behind the mast to aid pointing ability.

As you bear away onto a REACH, the sail needs to be set about half way out, but still needs keeping as vertical as possible to maintain maximum drive, so by un-cleating the traveller and allowing it to slide as far out as required, the mainsheet still pulls vertically on the sail to prevent it from twisting off at the top.

Bearing away still further onto a BROAD REACH, obviously there is nothing more you can do but let the main out some more, until it almost touches the shrouds, but if the winds are light, you will also have to push the sail out with the palm of your hand on the back of the bottom batten pocket, to minimise twist.

To sum up in one sentence then, the traveller (in the absence of a boom) is simply there to allow the mainsheet to pull down vertically as much as possible on the leach and roach area of the sail so as to simultaneously keep this area vertical to the wind also, thus enabling the maximum power to be generated for as long as possible. ( i.e. keep the traveller directly under the sail)

A good idea for you to appreciate just what happens is to rig your boat on dry land, line it up as if beating so that the wind only blows on one side of the sail, then stand behind the boat whilst SOMEONE ELSE pulls the main in tight, then you will see how the leach progressively closes (becomes more vertical) from bottom to top - a view you can't appreciate from your normal sailing position. The traveller is simply set directly below the sail as far as possible, until going beyond the reach position, when of course it should then be fully out to the stop.

One final tip - Bob referred to 'hooking' the sail. This simply means you have pulled the sail in TOO MUCH, i.e. the top of the leach begins to point to windward which then starts to cause a braking effect, so you slow down. To prevent this, keep your traveller at least 4 inches off the centre line of the back beam when beating, then ideally get someone to follow you when sailing on a beat to see how far you can pull in your mainsheet before 'hooking' occurs. You can't just say don't pull in 'block-to-block' because this depends on how much mast rake your boat has got - but that's a whole new can of worms, so I'll leave it there for now, and hope this will now enable you to answer some of your own questions.

Paul Smith (1961 Beaver S.C.)

P.S. This should have been just a short 'rider' to Bob's comments, but I guess sailing is more complex than we think !