

Depowering the Star



By Mark Reynolds

The wind was blowing at least 35 knots, we were getting launched off of huge Bay of Biscay waves rolling in from the Atlantic and we were on our way to winning the '95 Star World Championships. You could say at this time that depowering the sails was a priority. That and not sinking.

When the wind is up and you are fully hiked, if the boat is heeling too much you must depower. You don't want the windward chine to lift off the water more than a few inches if you can help it. You will not have to wait for 35 knots to start depowering. In the Star, you will have to start depowering in 10 knots of wind. You can certainly feel when the boat is getting overpowered, it heels, the helm isn't balanced (starting with increased windward helm and it may even develop into lee helm in very strong wind) and the most obvious sign, you go slow! You need to adjust the tune of the boat and steer properly to reduce the heel and balance the helm.

Once you are fully hiked to reduce heel you have to reduce the power in the sails to keep the helm balanced. There are many ways to depower and normally you will often use more than one way to flatten your boat. Steering technique is also very important to keep the boat flat.

Feathering or "pinching" slightly into the wind is the basic depowering technique. You will end up bleeding off some of the power from the sails and point higher at the same time. In different water conditions this depowering technique will be slightly different. You can feather the boat more in flat water conditions. Too much feathering, particularly in choppy water, will slow the boat too much. You need to combine feathering with flattening the sails.

There are a lot of ways to flatten and depower the sails. On the Star you have great control over the rig and as you sail upwind you can transform the sails from their powerful light air mode to flat and well balanced sails for 30 knots. You can even make some changes before leaving the dock, such as sail selection, shroud adjustment or sail battens. You may consider choosing a flatter sail or tightening your intermediates and lower shrouds a bit particularly if you sail with a light all up crew weight. You also need to make sure that your controls work properly. They should run cleanly and have the proper purchase. I've stepped in plenty of boats that when it came time to pull on the outhaul in strong wind, it took both hands and it still was difficult to adjust. It's very important that all depowering adjustments can be made without taking away from steering the boat and keeping your eyes on the tell tails and the race course or having crew come off the rail.

Outhaul - An obvious way to depower is to pull the outhaul all the way out making the lower part of the main board flat. This may seem pretty obvious but in the 1992 Worlds in San Francisco (after we had won the gold medal in Spain) we learned that we weren't pulling our outhaul tight enough. Part way through the regatta Joe Londrigan (who was winning the regatta at the time) complained to me that his foot was slightly too long and he needed to shorten it because he was getting right out to the boom band. Our mains were exactly the same and I knew that we still had some room to go before our sail was at the boom band. I thought we were getting our sail plenty flat down low. We took about a ½" off of his sail to make sure he didn't go past the band. The next day out on the race course about half way up the 2nd beat in about 18 knots of wind I went from our normal "flat" foot setting and pulled the outhaul on even more really stretching the foot. We started going clearly faster. The first place to start when you need to depower is to flatten the foot all the way.

Cunningham - The cunningham adjustment will slightly flatten the main and will help pull the draft back forward, important as the mast bends and the draft moves aft in the sail. This will help balance the boat in stronger wind. When overpowered pull the cunningham on enough to get rid of all horizontal wrinkles.

Backstays - Adjusting the mast bend and headstay sag have a large effect on the fullness in the sails and, after the mainsheet, the backstays will be the adjustment you will mainly use when overpowered. More mast bend takes out the fullness built into the main and less headstay sag flattens the jib. The sails are built with a certain amount of "luff curve" . As the mast bends the main gets progressively flatter and eventually if the mast bends more than the luff curve built into the main you will get inversion wrinkles. In strong winds sailing with small inversion wrinkles can be fast. The inversion wrinkles insure you are as flat as possible. As you set up to bend the mast you have to keep in mind what's going on with the headstay sag. Just allowing the mast to bend by releasing the lower backstay may flatten the main just fine but will let the headstay sag off and make the jib too full. You don't have balance. A better set up is to increase the upper backstay tension which will reduce headstay sag and bend the mast. This is why I set up my boats with a very effective upper backstay adjuster with 8-1 purchase. With enough upper backstay tension, the lower backstay can be applied even more preventing over bend in the mast and exerting even more tension on the headstay.

Bending the mast to flatten the sails can be done both sideways and fore and aft. Bending the mast sideways where the tip falls off, flattens and adds twist to the sail. I have found that it's normally best to keep the mast fairly straight sideways and do most of the bending fore and aft. We have found in the Star that as you initially get overpowered it can help to put a little bit of side bend in the mast by tightening the lower shrouds. When the wind gets very strong and the main really starts to distort from over bend wrinkles, and becomes too flat, the lower shrouds need to be eased back to the original position reducing the sidebend somewhat. If you flatten the main too much and end up just sailing on the jib the boat will develop lee helm. You must keep a balance.

Fortunately in the Star the proper side bend is pretty automatic if you start out with the shrouds set correctly. We start off with some sideways leeward sag in the mast to develop power in light

wind. On the trailer the uppers are tight and the lowers are very loose. As we become overpowered, the mast goes straight and then starts to bend sideways with the tip falling off. This happens automatically as the mast gets shorter from fore and aft bend and stretch in the wires. The jib also depowers on it's own. Sailors used to put more rake in but I've never found the need to do that. Our jib is designed so that the leech twists open as the wind increases so you don't have to move the lead aft. You just sheet harder and the foot flattens and the leech opens up automatically eventually going outside the spreader trim mark, which will depower the jib and give the main some breathing room. I had my jib leads in the same place in San Francisco for the heavy air of the trials and on the Chesapeake in the light winds of the Worlds.

Puffy conditions will require constant adjusting. You must progressively shift gears up and down in the puffs. Anticipation is key, if the puff hits and the boat heels, you haven't depowered quick enough. You will mainly be using the upper backstay and the mainsheet. You can often ease the mainsheet to initially depower the boat and keep it flat. After a tack, particularly in rough conditions, ease the main to keep the boat flat and once you get hiked out and moving trim it back in to you can point higher. You can do the same thing when you hit a big wave or get hit by a puff. You can also pull the upper backstay on in the puff which will flatten and twist the main and flatten the jib as well. As the puff subsides you can ease the upper back off again.

Sailing in overpowered conditions can usually be the best conditions to get a speed advantage. You need to set up the mast properly to shape your sails, be aggressive with the main trim and hike hard. It's hard work in a breeze but It feels great to finish at the top of the fleet in a windy race and there is the other advantage, that there will still be hot water at the showers.