



S2 7.9 Tuning Guide

Welcome to the Doyle Boston S2 7.9 tuning guide. As the name suggest this is only a guide and it has been developed over the last twenty-four years to help our customers relate information back and fourth and to allow us to compare apples to apples when we talk before, during and after regatta's.

We as 7.9 sailors are in the unique position of having two different mast, contrary to what Offshore says. If you are sailing with a boat in the 500 series or if you have replaced your mast since 1992, you will have what we refer to as a "new" mast. The difference between the two masts is that the new ones are stiffer and they tend to easily invert without proper tune.

Is one mast faster than the other? Not necessarily, you just tune it differently. I have had the honor of winning the International Regatta six times. I've sailed with older boats with old masts, old boats with new mast and new boat new mast. We have won with each so the point is that as long as your boat, rig and sails are all tuned to compliment each other you'll be faster. SAIL SMART and you'll be in the hunt.

The reason I bring up the two-mast theory is that you need to tune your rig and set up your boat differently for the two different masts. If you have an old mast you will want to refer to the first section of the rig-tuning guide. This lays out the way that we sail with the old mast and what seems to be very fast. The second section of the rig-tuning guide is for those of you with the new mast. These numbers have been developed over the past eight years and have won numerous regattas.

PLEASE REMEMBER THAT THIS IS ONLY A GUIDE AND NOT THE LAW!

If you have any questions or comments please feel free to contact me here at the loft, or via email at sailindb@ebtech.net

Spike Boston
Doyle Boston Sailmakers Canada

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Mast Tuning for "OLD" Mast

As mentioned previously the old mast is much softer and therefore bends much easier and much more. Because of that we have developed a basic setup for the bendy rig. Things that you need to do before you start tuning the rig are:

- Make sure that you have a Loos Tension Gauge. (not the Professional Model)
- Carpet your spreaders (a little windage sure saves you money on Genoa repairs)!
- Make sure that your spreaders are kicked up slightly and that they are both at the same angle.
- Set your forestay length to the class maximum of 31'8" pin to pin
- You may need to buy a new toggle to get it that long, if you are not already be sailing with one.

Now that you are ready to put the mast up and begin to tune it, you need to follow these steps.

- Once you have the mast standing, hand tighten your lowers so the mast stays in the Boat, now tighten the uppers. Just make the shrouds tight enough to hold the rig In, place.
- You need to make sure that the mast is in the boat, square (from side to side). To do this, use your main halyard. Take the shackle end down to the chain plate. Cleat it off. Now take it to the other side. If it is not equal on both sides, your mast isn't square. To make it square tighten up the side that is too long, or loosen the side that is shorter. Another way to do this is to hoist a tape measure to the top of the mast and measure to the center of the chainplate pin. Repeat as necessary.
- Start to tension your uppers until you reach 26 on the Loos Tension Gauge that you have ready and waiting to go. Make sure that you have done this by taking up equal turns on each of the uppers.
- Once again, you need to make sure that the mast is in the boat, square. Do step B over.
- Look up the back of your mast to check for any "S" curves that you may need to tune out. If there is a curve then you will need to start tightening the opposite lower. You should also notice that there will be only a small amount of pre-bend.
- Assuming that your mast is straight, (no "S" curves), bring your lowers up to 22 on the Loos Gauge. This should again be done with equal turns to each lower. You should find that your mast pre-bend is about 1" to 1 1/2".
- Now you have set your rig up for your average, middle of the road settings. These numbers are good from about 8-16 knots of AWS. These are also the numbers that we use for club racing when race to race changing is not a necessity. Now just slacken or tension as the wind dictates.

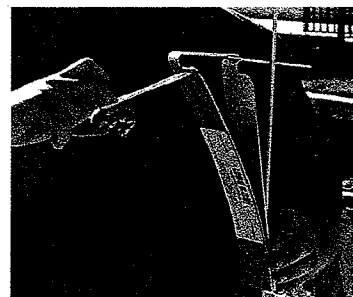


These are the shroud numbers we recommend for most wind speeds:

Wind Speed-AWS	Upper	Lower
0-7	22	17
8-16	26	22
17-26	30	26

Important note: When making any changes in shroud tension, site up the backside of the mast when sailing and check:

- The top of the mast is not falling off too much.
- The lower section of the spar is not sagging into the slot.
- The lower section of the spar is not bowing to weather.



New Mast Tuning

As mentioned above, the new mast is much stiffer and therefore bends much less. Because of that we have developed a basic setup for the stiffer rig. Things that you need to do before you start tuning the rig are:

- Make sure that you have a Loos Tension Gauge. (not the Professional Model)
- Tape your spreaders (a little windage sure saves you money on Genoa repairs)!
- Make sure that your spreaders are kicked up slightly from square and that they are both at the same angle.
- Set your forestay length to the class maximum of 31'8" pin to pin.
- You may need to buy a toggle to get it that long.

Now that you are ready to put the mast up and begin to tune it, you need to follow these steps:

- A. Once you have the mast standing, hand tighten your lowers so the mast stays in the Boat.
- B. You need to make sure that the mast is in the boat, square (from side to side). To do this, use your main halyard. Take the shackle end down to the chain plate. Cleat it off. Now take it to the other side. If it is not equal on both sides, your mast isn't square. To make it square, tighten up the side that is too long, or loosen the side that is shorter. The other way to do this is to hoist a tape measure up to the top of the mast and measure to the center of the chainplate pin. Repeat if necessary.
- C. Start to tension your uppers until you reach 30 on the Loos tension gauge that you have ready and waiting to go. Make sure that you have done this by taking up equal turns on each of the uppers.
- D. One again, you need to make sure that the mast is in the boat, square.

Repeat B.

- E. Look up the back of your mast to check for any "S" curves that you may have to tune out. If there is a curve then you will need to start tightening the opposite lower. The mast should be straight or inverted. Once you have checked for any weird bends or curves you need to start tensioning your lowers.
- F. Assuming that your mast is straight, (no "S" curves), bring your lowers up to 18 on the Loos Gauge. This should again be done with equal turns on each lower. You will find that the mast is straight or inverted.
- G. Now you have set your rig up for your average, middle of the road settings. These numbers are good from about 8-16 knots of AWS. These are also the numbers that we use for club racing when race to race changing is not a necessity. Now just slacken or tension as winds dictate.
- H. When the boat is at the dock keep the backstay on to help bend the mast (this is what we did with Maniac in 1992-93).

These are the shroud numbers we recommend for most wind speeds:

Original loos guage -C

Wind speed AWS	Upper	Lower
0-7	28	14
8-16	30	18
17-26	34	28

Pro Model- A

Wind speed AWS	Upper	Lower
0-7	23	9
8-16	25	13
17-26	29	23

Important note: When making any changes in the shroud tension, site up the back of the mast when sailing and check:

- The top of the mast is not falling off to much
- The lower section of the spar is not sagging into the slot
- The lower section of the spar is not bowing to weather

Upwind Sailing

This section will cover what we do while sailing upwind. The first thing that we do is go out for a practice sail. Arm your pit crew with a magic marker, once your sailing upwind the pit crew should start marking halyards. Once the genoa is up and the wrinkles are gone you should put a mark there. You can also mark things like genoa car positions and backstay. This gives you quick reference marks for easier sail sets, speed reference from day to day, race to race and it allows you to keep your head out of the boat more.

Mainsail

- A. Pull your sail up to the black band. The luff should be almost smooth at this point. Regardless of which mast you are using, the Doyle mainsail is easy to read and adjust. Keep the wrinkles to a minimum and sail away.
- B. Sheet tension is a very important control on mainsails for the 7.9. If you over sheet the sail you will be dog slow and will be "stuck" into point mode. But if you are not sheeted enough you will not get the most out of your pointing ability and the speed that you need to get flow over the keel.
- C. Always use your top tell tale as a reference to sheet tension. We like to use two top tell tales, one above the batten out of spinnaker cloth and one below using wool yarn. This gives us action in the lightest wind, the spinnaker cloth flies in almost anything, but with the wool, we are not chasing the light tell tale all of the time. If the top tell tale, in all conditions, is stalling from time to time, then you are setting your mainsail properly.
- D. Once you are approaching

the upper end of the number one, we generally sail with the sheet almost as tight as we can physically get it. At this point, we also start to "vang sheet". By applying vang (hard) we keep the bottom of the boom from raising if we dump the sheet.

Traveler Position

The traveler is a very important "tool" on a S2 7.9. Again improper use can mean that you are way off the pace. If you find yourself being slow, ease your mainsheet and pull your traveler up a little. In light air you should have your traveler set about 8" from the top (which is about the intersection of the seat corner), Boom above Center Line. As the wind increases your sheet tension increases and the traveler should start to drop. The medium/heavy position is about mid way. Up until the point where the whole crew is hiking your goal is to keep the boom at centerline. After the crew is hiking, you will start to dump the traveler off to keep the boat on its feet. At this point, you should be starting your reference point 8" from the bottom traveler. This gives you 8" of release when you get hit with a puff. The pressure that you release is that 8" of traveler is usually enough to keep you on your feet. Remember that you also have your vang on tight, in case you need to dump the sheet as well. Use the traveler to balance the helm when you are sailing upwind. Try to sail with the least amount of helm as possible while still keeping your pointing ability.

The Cunningham provides you with two functions, the first is to control the position of the draft in the sail and the second is to tension the luff. Always set your main halyard tension for down wind, then use the Cunningham to tension upwind. This is easier than having to set and reset the main halyard. As the wind increases your draft will move aft and your main will start to show wrinkles, apply Cunningham until the wrinkles are gone and the draft is back where you want it. Be careful when you start applying backstay you will need to use more Cunningham as well.

Backstay

I am a firm believer that initial backstay tension creates headstay sag. I rarely use any backstay tension on a 7.9. The only time I do is in the upper wind ranges of the genoa or jib. What controls this more than anything is the rig tune.

You should try to keep the sag at about 2-3". That will help you to get through the waves. It is important to keep the lowers tight enough so the mast doesn't over bend and increase headstay sag.

When and if, you need to change down to the number three, you will need to ease your backstay slightly to power that sail up in the lower wind ranges.

Genoa Trim

The decision to change from one sail to another is always a dilemma. If you change to soon you are under powered in the lulls and the fleet sails away. Change down to late and you are out of control in the puffs and the fleet sails away. It does seem, however, in one design, that the longer you can hold on the better your results will be.

The biggest factors in Genoa selection are the wind strength, wave conditions and most importantly is your overall crew weight. If you are light you will need to change down 1-3 mph sooner. If you are a heavy crew you can hold on to a Genoa a few mph more than anyone else can. Actual wind strength is important because it is very slow to have your Genoa up in much over 22 apparent. The boat just heels too much and starts to go sideways, which we all know is not an effective way to get to the weather mark. If there are big choppy waves, you should try to sail with the number one higher than normal. This will help you to power through the chop. Transversely if the water is real flat you will be faster and point higher with the number three up, at a much earlier time than you would normally go to it.

Luff Tension

As with the mainsail you should tension your luff just enough to get rid of the wrinkles. It is better for speed to be under tensioned rather than over tensioned. In lighter wind or when you need a little extra power slacken your halyard slightly.

Lead Position

Doyle Genoas have a higher clew than most Sailmakers. For the number one Genoa a good starting point is to have the Genoa car half way between the end of the window and the aft end of the cabin top. Usually we are never farther forward than this, but as the wind increases you should be sliding your lead aft, tightening the foot and opening the upper leech up to de-power the Genoa. About the time that you start dropping your traveler on a regular basis you should start to move your leads aft.

Note: We have added holes so that we have 1 inch adjustments.

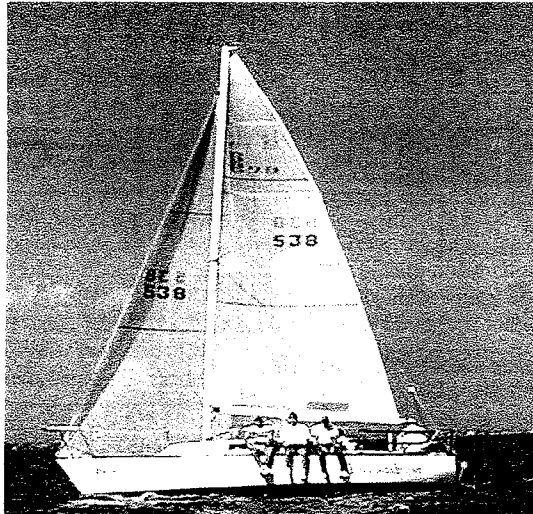


AWS	0-10	10-15	15-20	20+
Lead from window	5"	8"	10"	13"
Sheet off Spreader	1"	0"	0"	3"
Luff Tension	Slight wrinkles	Smooth	Smooth	Smooth

Use enough leech cord to remove the flutter in the leech. Do not worry about a few inches of leech hook. If it gets to be more than 2-3" you should bring it in and get it tuned up.

Weight Concentration

Keep the weight out of the ends, is the best advise that we can give you. As far as where to sit, your crew should start "lining" up at the Stanton behind the chain plates. Your Bowman starts there and the rest of the crew follow in line as close as they can sit together. This keeps the weight right over the center of the boat to reduce pitching while going upwind. The order of rail positioning should be as follows: bowman, pit crew, trimmer, and breaker. This way your two Genoa trimmers are in the best position to easily tack the boat. The Bowman should go in front of the mast while tacking, the pit crew goes "over the big top" and the Genoa trimmers are the only two in the middle of the cockpit. The helmsman deals with the main and traveler by himself.



NOTE: A helpful hint to the Genoa trimmers. The better of the two should be the fine tune person. Call him or her breaker. Breaker should break the sheet during the tack, keep the winch handle as he moves over to grind. Trimmer is trimming as fast as possible and hands over to Breaker to take over, fine tuning. Trimmer should get back hiking on the rail as quick as possible. Breaker finishes, fine tuning, takes the winch handle with him, up to the rail and loads that winch, preparing for the next tack. By bringing the handle with him, he is ready for any maneuvers you will need to make. The trimmer's job during the tack is to be the last person off the old rail and the first person on

the new rail. All while tacking the new Genoa sheet. Having your weight to weather quickly helps to roll the boat and to offset the weight of the fine tune person. Practice this method and your tacks will be much better and you will end up being faster. Also get the Bowman and the pit crew, to practice roll tacking the boat in all conditions, this will also help to speed you up through the tacks.

Conclusion

If we have learned anything it is that time in the boat is the key to success. Use this guide as it is meant to be used, as a guide not the bible. Go sailing, play around, test new ideas and you will be faster than before. You can never sail too much and the more you sail the better your results will be. If you find a break through idea, let us know and we will include it in our next tuning guide. I hope that this information helps and that you become faster. We look forward to sailing against you in the near future. If you have any questions please feel free to contact us at one of the lofts.

Doyle Boston Canada
Spike & Brad Boston
120 Michigan Ave
Point Edward, Ontario N7V 1E6
519-344-5236
sailindb@ebtech.net

Doyle Boston West
Tac Boston
87 Aniline Suite F
Holland, Michigan 49424
616-396-3030
tac@doyleboston.com