



BÉNÉTEAU  
FIRST 36.7



## North Sails Beneteau 36.7 Tuning Guide

### Development

North Sails began working with 36.7 sails as soon as the first boat was launched in 2001. Since then we have continuously refined our shapes through incremental improvement. Each minor adjustment complimented the previous, and each tweak became ever more minor. Today, our sail shapes have matured to a point where it is hard to imagine a “break through”. Our class sails are very light, exceptionally smooth, extremely durable, and easy to make go fast. Of course we will continue our quest for perfection, but we feel that it is just as important to disclose our latest tuning developments. North sails will out perform all others, but to get the most out of them they need to be set properly.

Sail development does not happen in isolation. It evolves in tandem with a mast tuning strategy. By contorting mast bend and headstay sag you can enhance, or degrade, your boat’s performance. Different conditions require different optimal rig settings. Proper rig tune is an essential part of the game, every bit as important as puffs, or wind shifts. This guide will give you the information you need to begin the quest for perfect tune. The information provided here has been tested and has proven to be very fast, but the factors that effect sailboats can be very subtle and extremely complex. Mast tuning interacts with an infinite array of surface conditions and a wide variety of human skills. Therefore, it is expected that similar results may be achieved through divergent methodologies. As you gain confidence with the settings within this guide feel free to experiment. In order to recognize how your boat should feel when it is performing well you need to appreciate how it feels when it is not.

A few words need to be said in appreciation of the “unseen” people behind our Beneteau 36.7 project. It isn’t any secret that the best and the brightest people in sailmaking work for North Sails. The North Sails family is an incredibly clever and cohesive team. We bring hard work, and hard science, to the task of improving sails and sailing. The same people who create magnificent America’s Cup sails are at the hart of our Beneteau 36.7 project. They represent a vast, and often unseen resource. If you are interested in the process of sail development, and the state of our science, feel free to browse through our web site [www.northsails.com](http://www.northsails.com), or contact your nearest sales rep. They will be happy to speak about our latest innovations. In the mean time let’s get on with optimizing your boat for North Sails.





## Tuning Strategy

Many people will prefer one all purpose mast setting and leave it there all season. That is a perfectly acceptable and safe way to enjoy your Beneteau 36.7. North CDP (Class Development Program) sails have won many races using just the 8-12 Knot base setting. For the more discerning eye, or sailing in heightened competition, there are ways to tweak your mast to get a little extra performance. This guide was created for those inquisitive, and competitive people who are looking for that little “extra”. Below is an overview of our tuning goals and a description of how to achieve them.

If we imagine that there are no leeward shrouds while sailing up wind we can picture how the caps (V's) and diagonals (D's) affect the side bend of a mast. The caps travel through the spreader tips to the top of the mast. As the windward V is tightened it tends to push the spreader to leeward and pull the tip of the mast to windward. (spooning) As the Ds are tightened they do the opposite. They pull the middle of the mast up to windward. If the D's are over tightened they will pull the mid mast too far to windward and dump the tip to leeward. (tip fall off) A good guide for general shroud tension is that the leeward V should just go slack in all but the heaviest of wind conditions, and the D's should keep the mast “in column” side to side. This insures that we don't have unnecessary compression on the mast, and that the mast is not leaning to leeward.

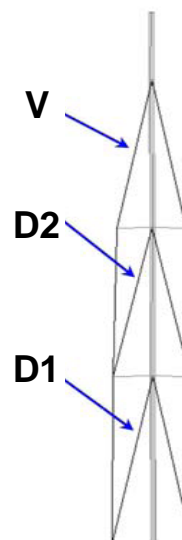
However, the addition of backstay tension will upset things. Adding backstay causes two noticeable affects on your shroud tensions. As the mid-mast bends forward the total mast height will be reduced. This will cause the V's to loosen. Also, as the mid-mast moves forward and away from the chain plates the D's will get tighter. The result is that when we apply backstay, the tighter D's pull the mid-mast too far to windward, and the looser Vs allow the mast tip to sag to leeward. Therefore, every backstay increment requires a corresponding set of shroud tensions to keep the mast in column. Of course that is not a practical solution because the backstay has infinite adjustment between all the way off and all the way on. So our goal is to cover the backstay range with 4 sets of corresponding shroud tensions. We pick a setting dependant on how much backstay we might use during the race. Since we start useful backstay tension at around 12 to 14 knots, we include a fifth set of tensions for use during very low wind speeds. At those light air settings our focus switches towards inducing headstay sag and compressing the slot by spooning the mast.



V

*Shroud Terminology*

D1





## Base Rig Set-Up

- 1) **Mast Butt** – Proper mast butt location is the first critical step . We have found that a good starting point is to place the mast butt so that the forward edge of the mast is 26cm from the bulkhead. This should be one hole aft of max forward on the step, but you should check the bulkhead measurement to be sure. You may need to slightly modify the floorboards that sit around the mast.
- 2) **Headstay Length** – The headstay length controls both the tilt of the mast (mast rake) and the bend of the mast around the partners (pre-bend). Use the arc method described in the tuning matrix to set your head stay length.
- 3) **Center the Mast** -
  - a. Put a mark on the rail of the boat on one side even with the chain plates. Measure from this mark to the center of the headstay attachment on the bow.
  - b. Put a corresponding mark on the other side, the same distance from the headstay.
  - c. Set the Upper Shroud (Caps, or Vs) tension to a few turns tighter than hand tight. The Intermediates (D2s) and the Lower (D1s) should be totally loose, with lots of sag.
  - d. Hoist the tape measure to the top on the centerline jib halyard. Measure to the marks on either side and adjust the Caps until they are equal. Put your eye close to the mast track on the aft side of your mast. Look up the mast track. There might be a slight fore and aft bend, but the mast should be straight, side to side. If it is not perfectly straight side to side then repeat step 3. If it is still not straight then it may be that the mast butt, the partners, and, or, the hounds (upper termination of the upper shrouds) may not be on the same plane. If one of them is slightly out of line a slight mast bow to one side will be the symptom.
  - e. Adjust one of the three nodes until the mast is perfectly straight side to side.
- 4) If there is any backstay tension **release the backstay** all the way until the backstay sags. It may mean that you have to unshackle the backstay purchase to lengthen the backstay.
- 5) **Tension the upper shrouds** This is not your base setting! This is just to give the shrouds enough tension so that the loose guage will work properly. Tension the V's until they reach 42 units on the Loos RT-11 gauge.
- 6) **Tension the lower (D1's)** until they reach 10 units on the Loos RT-11 gauge.
- 6) **Tighten the D2s** (intermediate shrouds) to hand tight so that all the slack is removed. Then add three additional full turns. The D2's are on top of the spreaders and are difficult to adjust. **DO NOT ROTATE THE ROD RIGGING.** It only takes a few rotations of the rod to crack the D2's. Hold the barrel of the turnbuckle and turn the threaded stud below the barrel. Use appropriate tools.
- 7) **Check** to see if the V's and D1's are still at 42 and 10 respectively. Adjust symmetrically if needed. Also check to see if the mast is still straight side to side, or "in column. If it is badly out of column start over from step 3. Someone probably turned one of the turnbuckles the wrong way. If it is only slightly out of column then maybe a half turn on the appropriate D1 or a few turns on the D2's will pull it back to straight side to side. Again, This is not your base setting! Use the tuning matrix to set for the appropriate wind range.
- 9) **Go sailing**, preferably in wind strong enough to pressurize the rig, but



not so much that you need to apply a lot of backstay tension. (ideally 12-14 knots) While sailing upwind in “race mode” with the crew hiking etc. sight up the mast. The D2s may need to be adjusted either way to maintain the mast in column. New rigging will stretch a surprising amount, so recheck and adjust often as needed. Eventually the rod rigging will settle down and the D2’s will not have to be adjusted further.

**10)** With a small metric ruler or caliper **record the gap distance** between the threaded studs inside the various turnbuckles. (Vs, D1s, and Headstay) Right them down in the space provided in North Tuning Matrix (shaded boxes) under the pre-tune starting point . Adjust the turnbuckles up and down the matrix to the various settings and record the gap distances in the colored boxes provided.



Sighting the side to side bend of the mast while sailing upwind in “race mode”  
Note that you can use the windward surface of the boom as a straight edge.





# North Sails Beneteau 36.7 Tuning Matrix



## Base (all purpose setting)

## pre-tune starting point

Wind Speed in knots true	4-8		# of turns	8-12		# of turns	12-16		# of turns	16-22		# of turns	22+	
	Starboard	Port		Starboard	Port		Starboard	Port		Starboard	Port		Starboard	Port
<b>Uppers "V"</b> (turnbuckle gap, mm)			1.5			1.5			2			2		
<b>Lower "D1"</b> (turnbuckle gap mm)			1.5			1.5			2			2		
<b>Uppers</b> (Loos RT - 11 Rod Gauge)	31	31	1.5	34	34	1.5	37	37	2	42	42	2	46	46
<b>Lower</b> (Loos RT - 11 Rod Gauge)	loose	loose	1.5	loose	loose	1.5	1	1	2	10	10	2	20	20
* * <b>Headstay arc</b> , meters	2.13		0	2.13		3	2.12		6	2.1		7	2.084	
headstay turnbuckle gap, mm			0			3			6			7		

**Intermediates "D2"** With "pre-tune starting point" tension on Vs and D1s, tighten D2s hand tight plus 3 turns. Then fine tune under sail to achieve desired side bend. (See **side bend** below) Once D2's are set they should not need to be adjusted again.

### Mast Butt

J

26 cm from bulkhead to front of mast = 1 hole aft of max fwd.

3.98 m. this is a fixed dimension with the collar, but should be checked.

\*\*\***Pre Bend** at dock with no backstay

25mm

15mm

5mm

\*\*\*\***Side Bend** mid mast relative to top 40mm sag to leeward

20mm sag to leeward

straight

straight

5 mm windward.

**Head Sails** Genoa & 2S

Genoa & 2S

Genoa & 2S

transitioning to jib and 4S

jib & 4S

**Vang** upwind setting loose

loose

remove slack

tight

very tight



\* Colored data boxes are specific to your boat. Begin with the "pre-tune starting " Loose gauge tensions. Then turn the turnbuckle the number of turns suggested to arrive at each wind speed setting. In the spaces provided record the gaps with a metric ruler or calipers between the threaded studs inside the turnbuckles at each wind speed setting. Recorded gap distances will help you to quickly recalibrate if you loose track or if someone accidentally turns a turnbuckle the wrong way.

\*\* Arc measurement - pull Genoa halyard to the top of the black band @ the gooseneck. Swing the halyard out to the headstay and make a mark. Measure down from the mark to the deck at the headstay intersection.

\*\*\* Pre-bend is the fore and aft bend without the backstay tensioned. Main halyard can be pulled tight to gooseneck to visually estimate bend offsets.

\*\*\*\* Mast Side Bend should be a smooth consistent curve, or dead straight. D2's can be adjusted to achieve consistency. Side bend can only be calibrated with both main and headsail up, while sailing upwind with crew in appropriate position, and with all other sail controls set optimally, including backstay. Side bend is best viewed from below the boom near the gooseneck. Use the flat windward surface of the boom as a straight edge to help judge mast side bend.