



*One Design*

For any question you may have on tuning your Buccaneer for speed, contact our Buccaneer experts listed below:

**ONE DESIGN CHESAPEAKE**

Greg Fisher 410 212 4916

F 410 268-8155

Allan Terhune 732 644-1051

F 410 626 8445

[greg@od.northsails.com](mailto:greg@od.northsails.com)

[allan@od.northsails.com](mailto:allan@od.northsails.com)

## **Buccaneer Tuning Guide**

# NORTH SAILS

Congratulations on your purchase of North Buccaneer sails. We are confident you will find superior speed over all conditions. Time has been spent to insure that not only are your sails fast, but they are also easy to handle and trim.

The following measurements are those we've found to be the fastest for your new North sails. After experimenting you may find slightly different settings which may mean even better boat speed for you and your style of sailing. We have found that neutral helm is a good goal of the tuning process. If you have any questions or problems, please don't hesitate to call. We are anxious to help you go faster and win more races!

Information provided by Greg Twombly and David Spira.

Thanks Dave and Greg!!

## Onshore Adjustments

The two key tuning adjustments, mast rake and centerboard position, differ greatly for low mast step pre 1980 Buccaneers and high mast step boats built after that date.

### MAST RAKE

The Nickels Buccaneers are set up to sail with neutral helm at 4.5 degrees of rake. To set up the mast with the proper rake the simplest method is to run a tape measure from the main halyard shackle pulled to the sheave at the top of the mast to the transom. With the "standard" mast length of 23'5" (281") the distance to the

outside edge of the transom will be 24'7" (295"). As a rule of thumb, 2" represents 1 degree of rake. This must be done with the jib on and the rig fully tensioned. You increase rake by moving the pins on the shroud adjuster down.

Some Cardinals and Gloucesters have a mast that is 2" longer (283") – use 297" to 299" to determine rake. Chrysler masts are 3" shorter so use 293" to 295" to set the rake OR add blocking to raise the mast higher). If this causes too much weather helm – rake the mast forward until the helm is neutral.

On pre-1980 Buccaneers with low mast steps, less rake is needed. With the longer mast, the same amount of rake would move the center of effort aft more than on post 1980 high mast step boats. If the rake is increased as much as suggested above, the centerboard may need to be moved aft (see below). It is best to set up the mast rake on your older Buccaneer so that with the correct amount of rig tension (less rig tension than on newer boats) the mast will be 1/4" to 3/8" away from the forward edge of the deck partner (on boats where the mast is stepped below deck level). This is important as it will allow the mast to bend adequately in heavy air with the boomvang tension on tight. As a final check the boom should be drooped slightly below parallel to the horizon at the outboard end when trimmed in and sailing upwind in a 10-15 mph breeze. In winds below that (8-10 mph) the boom should just be level with the horizon.

Two tables are attached to determine

## Buccaneer Tuning Guide



mast rake either from a plumb bob measurement (Table 1) or from the masthead to transom measurement (Table 2). The plumb bob method uses a plumb bob (or other suitable weight) attached to the main halyard. This method must be performed with NO wind and the boat carefully leveled on its waterline to be accurate. The foredeck is sloped forward at 0 to just over 1.0 degrees, but a useful quick method of leveling the boat is to level the fore deck just in front of the mast and deduct 1.0 degree from the value from Table 1. Because of the variability of the deck angle this is only an approximate level. Measure aft from the mast base to the plumb bob and read the angle from the table for the appropriate mast length. The second method uses a long measuring tape hoisted to the mast head on the main halyard. The measurement should be taken from the mast head to the transom inboard of the of the hull-deck joint. Use Table 2 to determine the mast rake for the appropriate mast length. A more complete discussion of mast rake and boat leveling is contained in Spira and Twombly's Buccaneer Tuning Guide.

### RUDDER POSITION

The rudder must be capable of being set to vertical so that the leading edge is approximately perpendicular to the waterline. Any significant rake aft will lead to a tug on the helm and cause excess drag.

### CENTERBOARD LOCATION

Newer Buccaneers are equipped with pivot hangers mounted on the centerboard cap. The ideal location is 7.5" from the

# NORTH SAILS

center of the hangers (pivot point) to the bulkhead. This is the placement on the Nickels boats. Many older Buccaneers have come from the factory with the centerboard over 1" forward of where it is located on the newer boats. To take advantage of the full 4.5 degrees of rake you may consider relocating the centerboard further aft or the additional rake will simply cause excessive weather helm. The stopper can also be removed from the tip of the centerboard so it can be used in its full down position while going upwind effectively moving the board forward, while the pivot has been moved aft.

## RIG TENSION

We have found that the Buccaneer performs better with the rig set up very tight. Measured using a Loos gauge, a minimum of 250 lbs will barely keep the lee shroud from sagging in light air. We recommend 350 lbs for most conditions. This will keep the jib stay tension so that the leeward shroud does not go slack when sailing upwind until it is blowing 10-12 mph. This rig tension can be tuned in with the jib halyard through the use of a 16:1 cascade, magic box, a lever, or a series of balls on your halyard hooked to a plate assembly. Up to 400 lbs can be used, if necessary in higher winds. More tension than that can damage the boat so be careful.

To set up this amount of rig tension without a magic box or lever, ease off your spinnaker halyard enough so that a person can stand at least 10' in front of the boat and hold onto the spinnaker halyard. Then,

releat the halyard and pull on it hard enough so that the correct amount of rig tension can be "tuned in" with your jib halyard.

## JIB LEAD POSITION

Your jib lead angle should be 8 - 10 degrees off the centerline. This corresponds to locating the jib track near the inside edge of the seat – about 1.5". Unfortunately there are several different jib lead positions on the different model Buccaneer boats built. We suggest measuring out 10 degrees and try to set your lead accordingly side to side to meet the adjustment.

As for fore and aft trim, set your jib leads so that the jib luff breaks evenly from top to bottom in light to medium winds. In winds above 10-12 mph it is best to move the leads back 2". In winds above 20-25 mph it is best to move the lead back another 2".

With the rake at 4.5 degrees we have found that the median jib lead position is 34" aft of the bulkhead, measured along the front edge of the seat. This position moves further aft with less mast rake.

## Sailing Adjustments

### MAIN AND JIB CUNNINGHAM

For both the main and the jib, never pull tighter than to just remove the wrinkles. It is best to leave just a hint of horizontal wrinkles from the luff of your main and jib to be sure that you don't have it pulled too tight.

## Buccaneer Tuning Guide



Your North Buccaneer jib is fitted with a small plastic clam cleat so you can easily adjust the cloth tension on your luff wire. As on the main, it is a good idea to set the cloth tension so there is just a hint of wrinkles coming off the luff of the jib. It is better to err toward the loose side than the tight side of luff tension on your North Buccaneer sails.

## OUTHHAUL

Your North Buccaneer main is fitted with a shelf foot which, when eased, will give the main incredible power. We suggest pulling the outhaul tight enough to close the shelf (so that the top seam is parallel with the boom) when sailing upwind in all conditions except very light winds with extreme chop. In these conditions it is advantageous to ease the outhaul 1 1/2" to open the shelf up approximately 1 1/2-2" at the center of the boom. When sailing downwind or on a reach it is a good idea to ease the outhaul off so that the shelf is open and the sail is close to 4" open in the middle of the boom. However, never ease the outhaul to the point where vertical wrinkles appear.

## JIB SHEET TRIM

An easy guide for jib sheet trim on the Buccaneer is to trim until the foot skirt of the jib is even with the line where the spinnaker sheets, pulled tight, lay on the deck. Basically, we are looking for a parallel slot between the exit of the jib and the entry of the main. The guide that has been used with success is that of imagining a batten in the jib at mid-leech. This imaginary "batten" is usually set parallel to the centerline of the boat which

# NORTH SAILS

makes the upper leech of the jib twist outboard slightly and the lower leech of the jib twist inboard slightly. It seems that 90% of the boat speed problems on the Buccaneer are due to faulty jib sheet trim.

## MAINSHEET TRIM

The mainsheet should be pulled tight enough so that the last 18" of the upper compression batten on the main is set parallel with the boom. This is sighted from underneath the boom and lining the batten and the boom parallel on a horizontal plane. In light winds it is sometimes impossible to keep the upper batten from hooking slightly to weather because of the weight of the boom hanging on the leech of the sail. In these conditions and in choppy water we suggest easing the sheet out approximately 6" so that the upper batten will then become more or less aligned with the centerline of the boat. In choppy conditions ease the mainsheet approximately 6" to open the upper batten slightly to or past parallel to the boom. This is a "power" gear which will allow the mast to straighten slightly and the main become fuller. Picture the mainsheet as your accelerator. As your boat picks up speed, pull the main tighter and tighter until the upper batten is parallel to the boom. In light winds or when the boat is hit with a wave and is slow downwind, ease the mainsheet so that the upper batten is angled outboard slightly inducing "twist" into the sail.

Use the Cunningham as the wind increases to keep the draft from moving to far aft. In light air put on only enough

Cunningham so that there are wrinkles along the luff in at least the bottom half of the sail. In heavy air pull it tight so the wrinkles are nearly removed and the sail is smooth ( no tighter!). Make certain that the main halyard is up as far as possible and mark this position on the halyard so this setting can be repeated easily. The halyard should be made from wire or no-stretch line such as Spectra.

## UPPER COMPRESSION BATTEN

Your North Buccaneer main is fitted with a full-length upper batten that fits into plastic protectors along the luff of the sail. The Velcro adjustment allows you to change the tension on this batten as the conditions change. However, 90% of the time we set the upper batten in the pocket just tight enough to barely remove the vertical wrinkles along the pocket. To overcompress the batten will induce more fullness into the sail than it is designed for and will tend to hook the leech to windward in all but the heaviest conditions. It is best to slide the batten into the pocket, putting very little tension on the batten and pocket before setting it in the Velcro.

## BOOMVANG

Downwind the vang should be trimmed tight enough to keep the boom down and the leech set on the mainsail so that the upper batten is parallel to the boom. Basically we are looking for the main to set as it does when sailing upwind in a medium breeze. Upwind in medium to heavy winds the vang is set just tight enough to keep the tail end of the upper batten parallel to the boom. In heavy

## Buccaneer Tuning Guide



breezes this may require a great deal of boomvang tension as this will also help bend the mast and flatten the sail. In light winds (below 8 mph) never use any boomvang tension upwind.

## SPINNAKER TRIM

Sail your North spinnaker with a 6-12" curl in the luff. Careful concentration is needed. Use short, smooth ins and outs on the sheet to keep the spinnaker trimmed correctly. Try to keep from jerking the sheet when the spinnaker begins to collapse. Keep the clews even at all time through the adjustments on your topping (pole) lift. In some conditions it is difficult to see the leeward clew behind the mainsheet so you can use another guide of adjusting the pole height so that the center vertical seam in the spinnaker is parallel to the mast. The pole position to the wind should be set so that the pole is nearly perpendicular to the wind.



**TABLE 1.** Mast Rake from Plumb Bob Measurement, for different mast heights.

Note	1	2	3	4
<b>MAST HEIGHT</b>	<b>278</b>	<b>281</b>	<b>283</b>	<b>288</b>
<b>Rake</b>	<b>Offset In</b>	<b>Offset In</b>	<b>Offset In</b>	<b>Offset In</b>
0	0.0	0.0	0.0	0.0
1	4.9	4.9	4.9	5.0
1.25	6.1	6.1	6.2	6.3
1.5	7.3	7.4	7.4	7.5
1.75	8.5	8.6	8.6	8.8
2	9.7	9.8	9.9	10.1
2.25	10.9	11.0	11.1	11.3
2.5	12.1	12.3	12.3	12.6
2.75	13.3	13.5	13.6	13.8
3	14.5	14.7	14.8	15.1
3.25	15.8	15.9	16.0	16.3
3.5	17.0	17.2	17.3	17.6
3.75	18.2	18.4	18.5	18.8
4	19.4	19.6	19.7	20.1
4.25	20.6	20.8	21.0	21.3
4.5	21.8	22.0	22.2	22.6
4.75	23.0	23.3	23.4	23.8
5	24.2	24.5	24.7	25.1
5.25	25.4	25.7	25.9	26.4
5.5	26.6	26.9	27.1	27.6
5.75	27.9	28.2	28.4	28.9
6	29.1	29.4	29.6	30.1
7	33.9	34.2	34.5	35.1
8	38.7	39.1	39.4	40.1
9	43.5	44.0	44.3	45.1
10	48.3	48.8	49.1	50.0
<i>Measure aft from the mast base.</i>				

**Notes:**

1. High step Chryslers-after 1980, Starwinds, and early Gloucesters
2. Standard Height-Nickels and adjusted earlier models
3. Later Gloucesters and Cardinals
4. Low mast step Chryslers

**TABLE 2**

Mast Rake from measurement from Mast head to stern for different mast heights

Notes (table 2):

1. High step Chryslers-after 1980, Starwinds, and early Gloucesters
2. Standard Height-Nickels and adjusted earlier models
3. Later Gloucesters and Cardinals
4. Table not useful for Low Step Chryslers-different geometry

Note	1	2	3
<b>MAST</b>	<b>278</b>	<b>281</b>	<b>283</b>
<b>MB TO T</b>	<b>123</b>	<b>123</b>	<b>123</b>
<b>Rake</b>	<b>MH to T</b>	<b>MH to T</b>	<b>MH to T</b>
0.00	301.3	304.1	305.9
0.25	300.8	303.6	305.4
0.50	300.3	303.1	304.9
0.75	299.8	302.6	304.4
1.00	299.3	302.1	303.9
1.25	298.8	301.6	303.4
1.50	298.3	301.1	302.9
1.75	297.9	300.6	302.4
2.00	297.3	300.1	301.9
2.25	296.8	299.6	301.4
2.50	296.3	299.1	300.9
2.75	295.8	298.6	300.4
3.00	295.3	298.1	299.9
3.25	294.8	297.6	299.4
3.50	294.3	297.1	298.9
3.75	293.8	296.6	298.4
4.00	293.3	296.0	297.9
4.25	292.8	295.5	297.4
4.50	292.3	295.0	296.9
4.75	291.8	294.5	296.3
5.00	291.3	294.0	295.8
5.25	290.8	293.5	295.3
5.50	290.3	293.0	294.8
5.75	289.8	292.5	294.3
6.00	289.2	292.0	293.8
6.25	288.7	291.5	293.3
6.50	288.2	290.9	292.8
6.75	287.7	290.4	292.2
7.00	287.2	289.9	291.7
7.25	286.7	289.4	291.2
7.50	286.2	288.9	290.7
7.75	285.7	288.4	290.2
8.00	285.1	287.9	289.7
8.25	284.6	287.3	289.2
8.50	284.1	286.8	288.6
8.75	283.6	286.3	288.1
9.00	283.1	285.8	287.6
9.25	282.5	285.3	287.1
9.50	282.0	284.7	286.6
9.75	281.5	284.2	286.0
10.00	281.0	283.7	285.5

### TENSION GAUGE CONVERSION CHART

Over the past few years Loos Co. has introduced its new style PT-1, 2 and 3 professional tension gauges to the market. Since many of us are replacing our older model A and B gauges with these new models we are posting the following conversion chart for your convenience.

MODEL A	MODEL PT-1		
	3/32	1/8	5/32
5	6		
10	9		
15	12	14	
20	16	16	
25	20	19	
28	23	21	
30		22	
35		27	25
38		30	28
40		33	30
42			33
44			36
45			38
46			39
47			40

Model B	Model PT-2			PT-3
	3/16	7/32	1/4	9/32
10	11			
15	13			
18	15			
20	16	18		
22	18	20		
24	19	22		
26	21	24		
28	23	25		
30	25	27	25	
32	27	29	27	
34	29	31	29	
		33	31	
		36	33	6
		37	36	7
			37	9
				10
				11
				12
				14
				16
				18
				20
				25



**NORTH SAILS ONE DESIGN  
QUALITY CONTROL CHECK**

### Buccaneer

MAINSAIL		JIB		SPINNAKER	
Corners		Corners		Corners	
Clew Slug Cunningham		Leech Telltales		Numbers (both sides)	
Two tack Grommets		Telltales		Royalty	
Numbers		Wire		North Logo	
Royalty		Cleat on port side		Bag	
Battens		Royalty			
Leech Telltale		North Logo			
Insignia		Bag			
Telltales					
North Logo					
Bag					

Checked by: \_\_\_\_\_

Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_