NORTH SAILS One-Design

Fireball Tuning Guide T-10

WIND SPEED	1 – 5 Kts		6-10 Kts		11-15 Kts		16 - 21 Kts	22 + Kts
SEA STATE	FLAT	CHOPPY	FLAT	CHOPPY	FLAT	CHOPPY	ALL SEA STATES	
MAST RAKE	22’ 7” / 22'8" (6875mm-6910mm)		22’ 8” (6910mm)		22’ 6” (6850mm)		22’ 6” / 22’ 2” (6850-6750mm)	
RIG TENSION	400 lbs (182kgs)		400lbs		400 lbs		400 lbs	360 lbs
KICKER	None		Set to maintain leech tension when the mainsheet is eased		Tension increased until 2nd tell tale stalls 25% of the time		On Hard	Full On
	(Set for the run)						(Ease again to stop the boom catching the water if conditions get too strong)	
STRUT(From Neutral) at deck level	Ease 5mm	0	0	0	0	0	Ease 5mm	Ease 5-10mm
OUTHAUL	Full On	Ease 20mm	Full On	Ease 20mm	Full On		Full On	
CUNNINGHAM	None	None	None	None	See notes on page 2		See notes on page 2	
JIB FAIRLEADS	230-250 mm	230-250 mm	230-250 mm	250 mm	250-270 mm	250-270 mm	270-280 mm	280-300 mm
(From Centreline)							See notes on page 3	
JIB FAIRLEADS	#1	#1	#1	#2-3	#2-3	#4	#5-7	
(Piston Height) See fairlead guide			#3-4 relates to the middle line drawn on the jib clew		See notes on jib sheet tension on page 3			
CENTREBOARD	Forward 1”	Vertical	Vertical-Raised 2”		Raise 3” - 5”	Raise 3”-5”	Raise 5”-6”	Raise 6”-8”

Prebend: 25-30 mm with 22’ 6” rake and 400lbs tension on the forestay
Spreader Length: 390 – 425 mm Cumulus/M7

The alternative is to set the prebend at 25-30mm with 22' 8" rake and when you rake back to 22' 6" wind the spreaders forward one full turn to maintain a prebend of 25-30mm **See notes on page 2**

The effect of cunningham on T-10 main.

You will need to use a lot of kicker with this mainsail. This pulls the draft aft and out of position. Cunningham will pull it back to the correct position. The cunningham has another effect which is to bend the mast. The radial panel layout aligns the threads in the cloth with the mainsail luff maximising the effect of the cunningham as a mast bend control. Pull it on enough to remove the wrinkles and then down another 40-50mm and see how much the top of the mast bends.

How it feels.

As the wind increases to Force 3 you should be on 22'6" with neutral chocks. You pull the kicker on more to keep the leech standing up. This bends the mast more and the wrinkles start to appear in the luff all the way up to the top batten. You've raked the board back to number 3 or 4 and pulled the cunningham just enough to remove the wrinkles but the boat still feels a bit overpowered and doesn't want to accelerate. Pull the cunningham down another 2-3cm and the boat should come alive again. You can continue with this principle as the wind increases to F4. Pull on more kicker and another 2-3cm of cunningham and raise the board to 5 or 6 and the boat is back in balance again. By progressively applying more kicker and cunningham you may be able to carry 22'6" up to F5.
Next time you are on Medium rake and you think you need 22'4" try the cunningham first.
How often do you go for the extra rake and find out you are under powered? And if the wind drops again you'll still be on the correct rake.
Exactly how much kicker you need is the tricky part and I haven't worked out the best way to quantify it. All I can say is that at the top end of F4, when I'm doing my pre start tuning runs and I haven't warmed up properly I have to wrap it round my hand and pull it about as hard as I can. If I work out a better way calibrating this I will post an update.

Rake and Prebend.

On Open Water and for crews of 86kg+. I like to set the prebend at 25-30 mm at 22'6" and then when I go upright (22'7/8") I leave the spreaders alone to reduce the prebend to 15mm. This is to because I think a Fireball goes best if you keep it moving fast. Meaning if you point too high the foils stop working and you slide sideways too much, so try not to pinch and you will generate height through speed. If you do pinch for any length of time with this little prebend you will go slowly.
When you need to generate the most power, to start trapezing, the mast is set correctly to help you get your crew on the wire early.
On Inland Water you might prefer a bit more prebend in up to 10kts, in which case use the alternative spreader settings at the bottom of page 1.
The extra prebend stops the main stalling when you are trying to point and you won't need as much power on very flat water. You may also find its better to hike through the small gusts rather than get your crew on the wire early, especially if he's big.

Chocks/Strut

If in doubt set in neutral.

A guide to when to change rake.

Up to 10kts use your upright rake (22'7/8"). In the 11-15kt range rake back to 22'6", when you can no longer keep the boom in the centreline to halfway to the gunwhale sector. I try to hold 22'6" as long as possible using kicker and cunningham as described previously, but once the boom is permanently in the sector from halfway out to all the way out to gunwhale, the wind is probably over 20kts and its time to consider 22'4".
As long as the boom remains mostly in the sector between halfway out and all the way out to the gunwhale and never makes it in to the centreline you have the correct rake.
If you have a light crew and/or feel you can get under the boom you can use 22'2" to stop the boom going out beyond the gunwhale in extreme conditions.

Spreader Length and Crew Weight.

Based on a helm weight of 60-70kgs. If your crew weighs more than 82kgs your spreaders should be 425mm long. For every 10kgs less crew weight shorten the spreaders by 10mm. I know some lightweight crews who sail with them at 390mm long. In winds gusting over 30kts heavier crews can also benefit from shortening their spreaders.

Fairlead Height.

When the wind is below 8 kts it can affect pointing if the fairleads are too low. I set the jib tack at 75mm above the deck (level with the top of the swage eye on the luff wire) then I start with the fairleads at max height (#1)and lower to maximum down(#4), once the crew is on the trapeze and can straighten their legs. I leave them in the max down position until the fairleads have been moved out to 270mm from the centreline. Then I move then up in 20mm increments.

There are 4 increments and I use:

20-40mm up in 15kts, (#5 on fairlead setup guide)
40-60mm up in 20kts, (#5 or #6)
60-80mm up in 25kts, (#6)
80-100mm up in extreme conditions. (#6 or #7)

(**for more info on #1-#7 see Fairlead setup guide)**

Fairlead In/Out

When the boom is on the centreline I set the fairleads at 230mm from the centreline. When its between the centreline and halfway to the gunwhale I set them at 250mm. Once the boom is working from halfway out to the gunwhale I set them at 270-280mm. When the boom is working either side of the gunwhale and I'm using max rake/bend/kicker to keep it from going out further I set the fairleads at 300mm from the centreline.

Jib Sheet Tension

Once your crew is trapezing it is easy to under sheet the jib. The upper part of the slot should be kept as narrow as possible to maximise the power from the rig. The way I find the correct tension is to keep sheeting in until either the foot of the jib goes tight or the back winding of the main just below the spreaders becomes excessive. One reason for excessive back winding is that the main is setting too full, but if you follow the matrix and the notes on 'How it Feels' you should be OK. Once the wind is in the 12-15kt range it is better to have the fairleads nearer to #5 with more sheet tension than #4 with less. One other thing to look for once the wind is above 12-15kts and the boom is permanently off the centreline is the sensation of weather helm. If you think you have the mainsail set correctly and the centreboard at the correct height but there's still a bit of weather helm and the boat isn't really accelerating in the gusts, then sheet the jib in a bit harder and you may find the weather helm goes away and the wants to drive forward rather than luff up.

When not to use lots of kicker

If its a strong gusty day and the water is flat(ish), the sort normally found with an offshore breeze. Use less kicker so that the boom can be kept between the centreline and the gunwhale, even in the big gusts. This will enable you to point higher in the lulls and the boat will be much easier to control in the gusts without a loss of speed.

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Good luck on the water