DIEBALL
SAILING
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Welcome to the Dieball Sailing tuning guide for the Lightning class!

Part 1: The Rig Set-Up in the parking lot and before the race is the most important.

Mast Butt Placement
In most modern boats the mast butt should be in the maximum forward position in the mast step. You can double check this placement by measuring from the front of the centerboard pin to the aft edge of the mast at the bottom. This measurement should be 21 7/16". Mast butt position for some other Lightning builders will vary slightly from this.

Headstay Length
This measurement should be 44 1/2" for a Nickels and 44-3/4”” for an Allen.
To measure headstay length with the mast up, we measure a short segment of the headstay at the bow. Simply unhook the headstay from the stem plate and run it down the front edge of the mast. Mark the point where the top of mast band intersects with the headstay with a piece of tape or magic marker. Be sure to align the top of the tape with the top of the mast band. Reattach the headstay. Now, measure from the top of the headstay mark to the forward most edge of the deck at the bow.

Mast Blocks
Mark the neutral position of your mast in the partners along the forward edge of the mast with a Sharpie Marker. Then mark your “heavy-air” setting at 7/8" forward of neutral, your “moderate-air” setting at 1” and your light setting to 1-1/4"forward of neutral. These marks will be used to measure pre-bend in your mast.

Shroud Tension
Uppers should be tensioned to 250 lbs, prior to attaching the lowers. Lowers should be tensioned to 120 lbs. This should be done with the backstay disconnected and with the mast blocks removed. Using a Loos model A tension gauge, the uppers should measure 29 and the lowers should measure 13. There is a conversion to Model PT-1 on the last page.

Lower Shroud Settings
You don’t want to bring a Loos gauge with you on the water, so we suggest that you conduct a dry run of the following pre-bend settings. This will allow you to get to a desired lower tension by only counting the number turns that have been taken off from the neutral setting. This should be done with the backstay disconnected.

First, block the mast to 7/8" and measure the lower shroud tensions. They should have increased to about 250 lbs. Adjust if needed to get to this setting. This is your “heavy-air” setting.

Next, block the mast to 1". This is usually just a skinny block that needs to be added. Count the number of turns that it takes to get the tension of the lowers back down to 250 lbs. Record this number so that you can duplicate it out on the water. This is your “moderate-air” setting.

Next, block the mast to 1-1/4". Again, usually another skinny block needs to be added. Count the number of turns that it takes to get the tension of the lowers back down to 250 lbs. Record this number so that you can duplicate it out on the water. This is your “light-air” setting.

For very light to drifting conditions, keep the blocking to 1-1/4”, count the number of turns it takes to get the tension of the lowers back down to 200 lbs and record this number. This is usually just 1 turn and will be your “drifter” setting.

Backstay
Some marks on your backstay on the gross tune of the back stay will assist you in keeping track of “neutral” and relative tension. Ideally, your first mark should be at light air with just enough backstay to keep the rig form “bouncing”, and the last mark would be the hardest you ever pull. Three marks in this range is sufficient.

Jib Cars
Measuring from the stem fitting to the jib car track the range of motion should be marked from 96” to 100”. Some boat may not be able to go all the way forward to 96”. That’s Ok, it’s an extreme setting.

Jib Wire
Indicators are required to duplicate jib wire tension along it’s entire range on your jib halyard car track. This is both useful for tracking jib wire tension upwind but also for getting it back to the “right place” at leeward mark roundings.

Main and Jib Sheets
While going upwind, use guides to trim your Main and jib. Feel free to put some marks on the sheets to help. These serve as relative indicators of sail trim which are easier to refer to (although much less accurate) than your top batten indicators.

Bridle Height
There are three approximate ranges your bridle height should be that correspond to your three mast block settings. “moderate-air” 8-9” from the deck. “heavy-air” 7-8” from the deck, and “drifting” 10-11” from the deck.

Spreader tips
Your jib is equipped with a top batten leech telltale, which helps you project where the jib leech intersects the spreader. Some marks here on the spreader will help you determine how far inside the spreader tip you are trimmed. 1, 2, and 3 inch indicators are the benchmarks, but you really only need two relative indicators.

NOTES

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Wind	***uppers***	***lowers***	***blocks***	***Lower Turns***
0-5	29	20	1-1/4”	Minus 1
5-8	29	20	1-1/4”	Minus 1
8-10	29	29	1-1/4”	BASE
10-13	29	29	1”	Plus 2
13-15	29	29	1”	Plus 2
15-20	29	29	7/8”	Plus 4
20+	29	29(Max)	7/8”	Plus 4

Conversion Chart – Loos Model A to Model PT-1

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