

# **JAVELIN TUNING GUIDE**

Produced by Paul Newman

## **For boats without a raking centreboard.**

This tuning guide has been developed based on a Kelly Marine hull, CTS rig, Jason King foils and Quantum sails. This set up is at the forefront of state, national and international competition, and the latest designs will give you the opportunity to sail with speed and confidence.

Although final settings will most likely vary from boat to boat and to suit your local conditions the following guide will give you a comprehensive starting point to get you on the pace from the first launch.

## **LAND BASED SETUP**

**YOU WILL NEED**

- TAPE MEASURE
- LOOSE PRO TENSION GAUGE PT-1M
- PERMANENT MARKER
- STRINGLINE
- STRAIGHT EDGE
- RULER
- PEN, PAPER & THIS GUIDE

### **STEP 1. MAST STEP**

Measure from transom to centreline of the mast this should be 2490mm - 2500mm

### **STEP 2. SPREADERS**

|               |              |  |
|---------------|--------------|--|
| <b>LENGTH</b> | <b>415mm</b> | The length of the spreader from the side of the mast to the side stay.   |
| <b>POKE</b>   | <b>220mm</b> | The Poke or deflection of the spreaders, measured using a straight edge across the shrouds at your spreader tips to the inside of your mast track. |

*Note: These are ballpark measurements, they may need to be adjusted later to create the correct mast bend.*

### **STEP 3. PREPARING FOR CALIBRATION**

1. Attach the tape measure to the top of your mast at 7110mm above sheer line (bottom edge of the black band).
2. With **NO** Lowers on, pull the rig tension on until it reaches approximately 34 on the Loose Gauge. The Loose Gauge should be used on the side stay at 1.0 metre above the deck. Now place the straight edge across the sheer at the transom. Take the tape measure to the edge of the straight edge that is at the transom, and see if it measures 7345mm. If not, adjust your chainplates to achieve this ballpark measurement.

*Most chainplate fittings have 2 sets of holes, and the front row of holes should be referred to as even numbers eg 5 and the back as half numbers eg 5.5.*

### **STEP 4. CALIBRATING YOUR SPREADERS AND MAST BEND**

1. First stand at the side of your boat next to the chainplate. Take 8 to 10 steps back from the boat so you can line up the chainplates across the boat by eye. Sight up the side stays to the spreaders, you will most likely find the stays don't run parallel, simply adjust the port or starboard spreader until they line up and appear as one stay.
2. Now tip the boat over and run the stringline down the mast from the tip to the sheer line black band. The stringline must be touching the aft mast wall at the tip and at the gooseneck black band. Tension it as hard as you can. Then using the ruler measure from the inside of the mast track to the stringline, it should be 53mm for the 12 – 15 knot setting, if not adjust the spreaders evenly to achieve the correct bend

*The Mast bend (pre bend) measurements are more important than the spreader poke or the tensions, if the spreader poke and tension measurements a fraction either side of the guide it is fine.*

### **STEP 5. CALIBRATING YOUR RAKE & TENSION SETTINGS**

1. Once all this is done you need to finalise your rake and tension settings. Remeasure the rake (7345mm) and your side stay tension (34). If these are out change your chainplates and forestay to correct them, but keep an eye on the mast bend if it changes too much you may need to readjust the spreaders.
2. Once happy with the settings write down all the measurements used to get the mast to this stage as your 12 – 15 knot wind settings. Use a permanent marker to mark your forestay rope at the cleat. This mark will be referred to as 2 on your chart.
3. Now adjust the chainplates and forestay to achieve the other two rake and tension settings provided in the example tuning chart. Record the side stays at each setting and mark the forestay. The light wind forestay setting is referred to as 3 because you will see all 3 marks when on this setting,

and the heavy wind setting referred to as 1 because only 1 mark will be showing.

- To go from the 12 – 15 knot setting to 15 – 20 and the 20 – 25 knot setting, move the pin down in the chain plates  $\frac{1}{2}$  a number (eg 3 to 2.5) and release the forestay rope about 50mm. This should give you the rakes and the tensions in the tuning guide, if not adjust the chainplates and forestay to achieve these measurements.
- To go from the 12 – 15 knot setting to 5 – 12 and the 0 – 5 knot setting move the pin up in the chain plates  $\frac{1}{2}$  a number and pull the forestay rope about 50mm. This should give you the rakes and the tensions in the tuning guide, if not adjust the chainplates and forestay to achieve these measurements

*PLEASE NOTE – Rake controls the balance of the boat and therefore the helm. If you rake back to far the boat will want to round up all the time. The reverse will happen if the rake is too far forward. When sailing to windward with your boat flat, if you let go of the tiller the boat should very slowly round up. Therefore the above settings are guides only and you may have to adapt them to suit your boat.*

## **STEP 6. CALIBRATING LOWERS FOR MAST BEND**

Once your settings are finalised, put your rig in its medium setting. Pull the lowers on until you take out the slack, the aim is to not change the mast bend just maintain it when there is vang load. Mark the lowers rope at the cleat with the permanent marker this is number 3. Measure from the top of the bow to the black band at the gooseneck. Release the lowers so the mast moves 5mm forward, this will be the setting for 15 – 20 knots. Mark this number 2. Release another 5mm this will be your setting for 20 – 25 knots. Mark this number 3.

*PLEASE NOTE – Lowers control mast bend and therefore mainsail depth. The above settings are guides only and you may have to adapt how much “POWER” you get from your mainsail “DEPTH”, via the “LOWERS” to suit your weight, sea state, wind conditions etc.*

## **STEP 7. CALIBRATING THE CENTERBOARD (Jason King centreboard)**

1. Pull the centreboard up until where it begins to taper is level with the under side of the hull. Put a mark or draw a line on the centreboard, on the INSIDE of your boat to record this position, and label it “5”. Divide the distance from this mark to the top of the centreboard by 4. Mark and number 4 more lines on the centreboard, with number “1” being the top of the centreboard (max down).

*Settings will change with crew weight, sea state, gustiness of wind, and power in the rig. Trial and error will see you become familiar with your favourite “numbers”!*

## **STEP 8. STICK IT ON!**

Simply complete your tuning chart, cover it with clear ‘contact’ or have it laminated and stick it on the inside of your cockpit where it’s easy to refer to. Don’t forget to take a copy of your numbers to add to your sailing file!

## **STEP 9. SAIL WITH CONFIDENCE!**

This guide, along with practice should see you as fast as any of the other Kelly Marine boat on the water, and faster than our competitors!

## **SAIL SETTING AND TRIMMING TIPS**

### **MAINSAIL**

|            |        |   |
|------------|--------|---|
| Battens    |        | Just tight enough to remove wrinkles from the pocket, until over 15 knots, when it should be quite firm.  |
| Outhaul    | LIGHT  | -Firm   |
|            | MEDIUM | -Eased a little so the foot deepens slightly.   |
|            | HEAVY  | -Mega tight   |
| Cunningham | LIGHT  | -Just enough to remove major wrinkles   |
|            | MEDIUM | -Remove most wrinkles   |
|            | HEAVY  | -Tight to very tight.   |
|            |        | <i>NOTE - ease at the weather mark to avoid excess compression load on the mast when sailing downwind</i> |
| Main Sheet | LIGHT  | -Top ribbon to flow at least 50% of the time  |
|            | MEDIUM | -Top ribbon to flow around 70% of the time  |
|            | HEAVY  | -You will be vang sheeting now, see below   |
| Vang       | LIGHT  | -None   |
|            | MEDIUM | -Firm to control leech tension.   |
|            | HEAVY  | -Continue to pull more vang on to control leech twist, and to make playing the sheet easier.              |
|            |        | <i>NOTE - ease slightly at the weather mark to avoid excess load on the mast when sailing downwind</i>    |

### **JIB**

|              |   |
|--------------|---|
| Height       | -Relates directly to sheeting angle. The jib needs to be at the right height to allow the leech to open when in the bottom clew board hole, and to provide leech twist control when in the middle clew board hole, and to allow the jib foot to deepen when in the top clew board hole. This is best achieved by trial and error. |
| Luff Tension | -Always enough to remove any wrinkles, except for very light winds (off) and heavy wind (lots on)   |

- Sheet Tension -Just enough to control leech twist and maintain an even slot.
- Clew Board -Most clew boards have 3 holes.  
-Top hole used in large swell and 5 - 12 knots  
-Middle hole used for most conditions for 5 – 20 knots.  
-Bottom hole used in 0 – 5 and 20 – 25 knot winds

**GOOD LUCK.**

# Javelin Tuning Chart

**BOAT NAME: EXAMPLE**

| <b>WIND</b>       | <i>0 – 5</i> | <i>5 – 12</i> | <i>12 – 15</i> | <i>15 – 20</i> | <i>20 – 25</i> |
|-------------------|--------------|---------------|----------------|----------------|----------------|
| <b>CHAIN</b>      | 3            | 3             | 2.5            | 2              | 1.5            |
| <b>FORESTAY</b>   | 3            | 2             | 2              | 3              | 4              |
| <b>TENS(SIDE)</b> | 31.5         | 32            | 34             | 35             | 35.5           |
| <b>PRE BEND</b>   | 33mm         | 31mm          | 53mm           | 71mm           | 85mm           |
| <b>RAKE</b>       | 7365         | 7357          | 7345           | 7340           | 7335           |
| <b>LOWERS</b>     | none         | 3             | 3              | 2              | 1              |
| <b>CB HEIGHT</b>  | 1            | 1             | 1 -2           | 2 - 3          | 4 - 5          |

SPREADER

L = 415mm

P = 220mm

# Javelin Tuning Chart

**BOAT NAME:**

| <b>WIND</b>       | <b>0 – 5</b> | <b>5 – 12</b> | <b>12 – 15</b> | <b>15 – 20</b> | <b>20 – 25</b> |
|-------------------|--------------|---------------|----------------|----------------|----------------|
| <b>CHAIN</b>      |              |               |                |                |                |
| <b>FORESTAY</b>   |              |               |                |                |                |
| <b>TENS(SIDE)</b> |              |               |                |                |                |
| <b>PRE BEND</b>   |              |               |                |                |                |
| <b>RAKE</b>       |              |               |                |                |                |
| <b>LOWERS</b>     |              |               |                |                |                |
| <b>CB HEIGHT</b>  |              |               |                |                |                |

SPREADER

L =

P =