



HD SAILS

SCORPION TUNING GUIDE

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TUNING STEPS

- Introduction
- Setting up your rig
- Spreader settings
- Rig upright & rig tension
- Pre-Bend
- Adjust as required
- Repeat
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Welcome to the HD Sails Scorpion Tuning Guide. Please ensure you take time using the guide in setting up your boat. Make sure that all your control lines work well and have the right amount of adjustment for their job. Once this is achieved it will make the boat much faster through the varying conditions and help you achieve the best performance out of your Sails

It has been written to encompass most of the common boat layouts so please bear in mind that there may be some variation in the exact numbers that work best from boat to boat but this should enable you to get close and then they can be tweaked to suit each individual.

On a general note, regardless of how old your sails are these measurements are worth checking every season to make sure nothing has changed. It is also important to ensure your settings are clearly marked so you can change between the settings quickly and easily and maintain performance as conditions vary.



SETTING UP YOUR RIG

WHERE TO START?

SETTING UP YOUR RIG CAN BE A DAUNTING PROSPECT IF IT IS NOT SOMETHING YOU ARE FAMILIAR WITH SO BELOW IS A QUICK LIST OF THE STEPS INVOLVED AND THEN I WILL GO INTO A BIT MORE DETAIL ON EACH FURTHER DOWN.

1. SET THE SPREADERS IN APPROXIMATELY THE RIGHT POSITION.
2. PUT YOUR RIG ON FULLY UPRIGHT AND PULL THE RIG TENSION ON.
3. CHECK THE PRE-BEND
4. ADJUST THE SPREADERS IF NECESSARY
5. REPEAT UNTIL YOUR MAST IS UPRIGHT, YOUR RIG TENSION IS ON AND YOU HAVE THE DESIRED PRE-BEND IN THE RIG
6. ADD ADDITIONAL RAKE SETTINGS AS REQUIRED

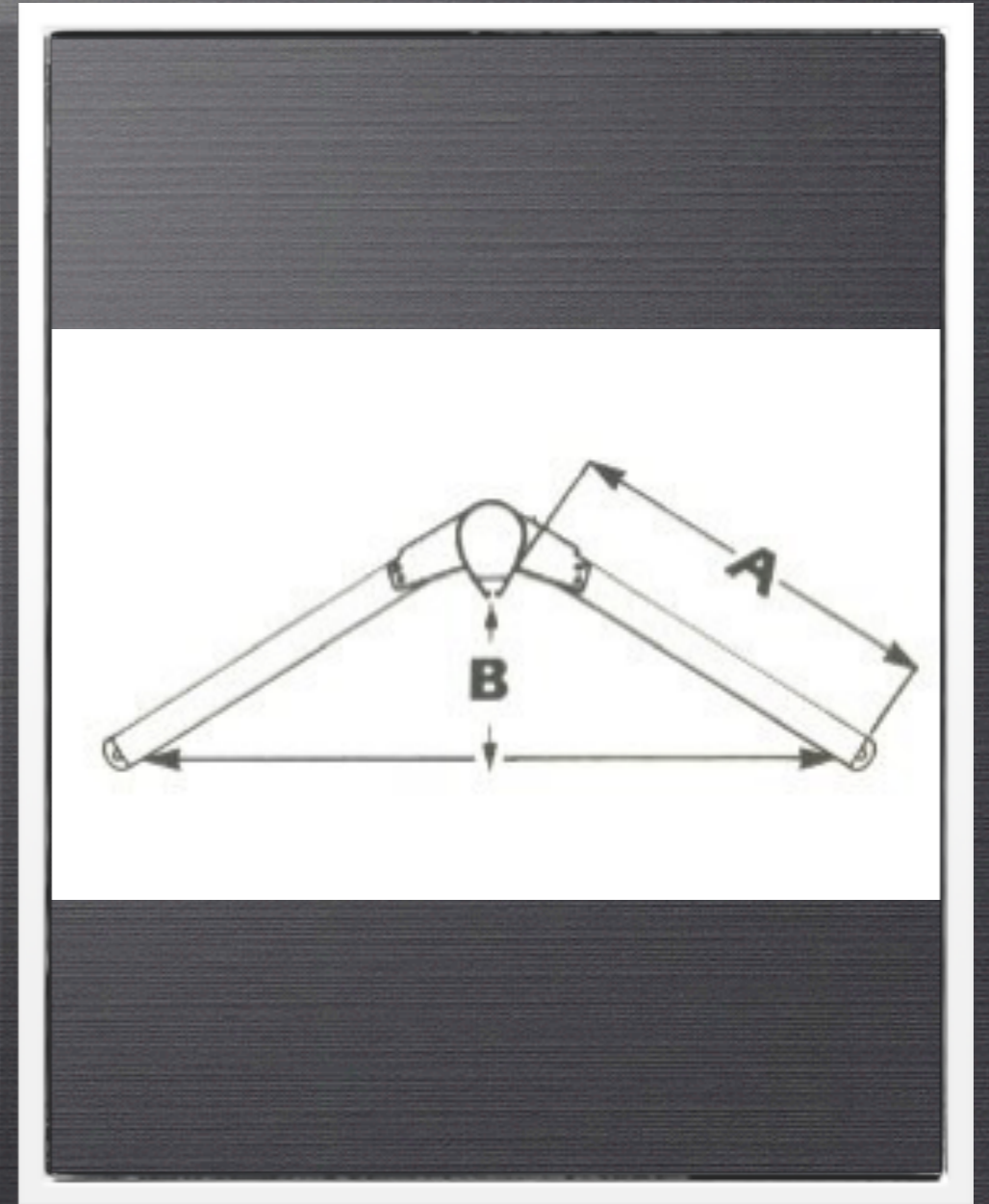




1. SPREADER SETTINGS

THE TWO MEASUREMENTS SHOWN ARE REFERRED TO AS THE SPREADER LENGTH (A) AND DEFLECTION (B). SPREADER LENGTH CONTROLS THE SIDEWAYS STIFFNESS OF THE MAST AND IS MEASURED FROM THE MAST SIDEWALL TO THE CENTRE OF THE SHROUD. IN GENERAL HEAVIER CREWS CAN GET AWAY WITH LONGER SPREADERS BUT FOR MOST CREWS 360MM IS ABOUT RIGHT. DEFLECTION IS MEASURED BETWEEN THE BACK OF THE MAST AND A STRAIGHT LINE BETWEEN THE SHROUDS – TYING A BIT OF STRING BETWEEN THE SHROUDS CAN HELP MEASURE THIS. SET THE SPREADERS SO THAT THE DEFLECTION IS 147MM.

THESE MEASUREMENTS, ESPECIALLY THE DEFLECTION ARE JUST A STARTING POINT, ONCE THEY HAVE BEEN USED FOR THE INITIAL SETUP THE PRE-BEND IS MORE IMPORTANT FOR FINE TUNING THE SPREADER POSITIONS THAN ADHERENCE TO THESE NUMBERS.





2.RIG UPRIGHT & RIG TENSION

ONCE THE SPREADERS ARE IN ROUGHLY THIS POSITION PUT THE MAST IN THE FULLY UPRIGHT POSITION AND PULL ON SOME RIG TENSION. TO ENSURE YOUR MAST IS UPRIGHT HOIST A LONG TAPE MEASURE UP THE MAST UNTIL THE DISTANCE TO TO THE TOP OF THE BLACKBAND AT THE GOOSENECK IS 18'0". CLEAT IT IN THIS POSITION AND THEN MEASURE TO THE INSIDE OF THE TRANSOM WHERE IT MEETS THE FLOOR. THIS SHOULD READ 22'8".

MEASURE THE RIG TENSION ON THE SHROUDS, ON UPRIGHT THIS SHOULD BE ABOUT 400LBS/182KG. IF YOU NEED TO CHANGE THE RIG TENSION TO ACHIEVE THIS THEN THE RAKE WILL ALSO NEED CHECKING TO ENSURE IT IS STILL AT 22'8".





3. PRE-BEND

LEAVE THE RIG UPRIGHT AND THE TENSION ON AND PULL THE MAIN HALYARD SO THAT IT IS TIGHT AGAINST THE BACK OF THE MAST AT THE GOOSENECK. THE PRE-BEND IS THE DISTANCE BETWEEN THE BACK OF THE MAST AND THE MIDDLE OF THE HALYARD AT SPREADER HEIGHT. THIS DISTANCE SHOULD BE BETWEEN 18MM.





4. ADJUST AS REQUIRED



IF YOUR PRE-BEND IS GREATER THAN 18MM THEN YOUR MAST IS TOO BENT AND YOU WILL END UP FLATTENING OFF THE SAIL EARLY REDUCING THE MAXIMUM POWER AVAILABLE. THIS CAN BE SOLVED BY MOVING THE SPREADERS FORWARD OR SHORTENING THEM. IF YOUR PRE-BEND IS SHORTER THEN THE MAST WILL BE TOO STRAIGHT, YOU WILL HAVE PLENTY OF POWER BUT RISK STALLING OUT THE FLOW BETWEEN THE JIB AND MAINSAIL. THIS CAN BE CURED BY MOVING THE SPREADERS BACK OR OUT. WHEREVER POSSIBLE THE PRE-BEND SHOULD BE CHANGED BY MOVING THE SPREADERS BACKWARDS OR FORWARDS RATHER THAN IN OR OUT SO AS NOT TO AFFECT THE SIDEWAYS STIFFNESS TOO MUCH.



5. REPEAT

EVERY TIME THE SPREADERS ARE ADJUSTED STEPS 2 AND 3 NEED REPEATING. KEEP WORKING THROUGH STEPS 2, 3 AND 4 UNTIL YOU HAVE 22'8" MAST RAKE, 400LBS/182KG AND 18MM PRE-BEND.





6.ADD INTERMEDIATE SETTINGS AS REQUIRED



ANY ADDITIONAL SETTINGS ARE ARBITRARY AND WILL DEPEND ON THE SET UP OF YOUR BOAT. BOATS WITH ONE STRING RAKING SHOULD ONLY NEED TO DEVISE A CALIBRATION SYSTEM SO THAT THEY KNOW HOW MUCH RAKE THEY HAVE ON AT ANY POINT (WE USE MARKS SPACED EVERY INCH ON THE LUFF OF THE JIB). BOATS WITH 2 STRING OR NON RAKING RIG WILL TAKE SLIGHTLY LONGER BUT NOT MUCH. FROM HERE ON THE SPREADERS REMAIN FIXED SO IT IS A CASE OF PICKING YOUR RAKE AND RIG TENSION. RAKE THE RIG BACK AS FAR AS IT WILL GO AND PULL THE RIG TENSION ON TO 400LBS. THIS IS YOUR MAX RAKE. PICK AS MANY SETTINGS BETWEEN THESE 2 EXTREMES AND GRADE YOUR RIG TENSION APPROPRIATELY. MOST PEOPLE HAVE 4 SETTINGS SO ASSUMING THEY ARE EVENLY SPACED ON RAKE YOUR RIG TENSIONS WOULD BE APPROXIMATELY 400LBS/182KG. MAKE SURE ALL YOUR SETTINGS ARE CLEARLY MARKED.

ONE NOTE ON ONE STRING RIGS, DEPENDING ON THE RATIOS BUILT INTO THE SYSTEM YOU MAY NEED TO ADD MORE RIG TENSION IN WINDY CONDITIONS SO A WINDY RIG TENSION MARK IS OFTEN USEFUL. TO CHECK THIS RAKE RIGHT BACK AND MAKE SURE YOUR RIG TENSION IS CLOSE TO 400LBS.



ON THE WATER

WHEN TO RAKE

ADAM BOWERS DOES A VERY GOOD TALK ABOUT 20 UNITS WHICH EXPLAIN THIS WELL. FOR THOSE WHO HAVEN'T HEARD IT, IT BASICALLY DESCRIBES HOW EACH CREW HAS THE MAXIMUM POWER THEY CAN CONTROL AND ONCE THE WIND IS ABOVE THIS THE OBJECT IS TO MAKE YOUR RIG AS MANAGEABLE AND EFFICIENT AT CUTTING THROUGH THE WIND AS POSSIBLE. THIS EFFECTIVELY MEANS THAT AS SOON AS YOU ARE CONSISTENTLY OVERPOWERED AND THE BOOM IS OVER THE BACK QUARTER MORE THAN THE CENTRELINE YOU SHOULD BE LOOKING TO RAKE BACK JUST ENOUGH TO KEEP IT INSIDE THE BACK QUARTER.

KICKER

THE KICKER IS REALLY IMPORTANT FOR GETTING THE MOST BOAT SPEED FROM YOUR RIG. LESS KICKER CAN GIVE YOU GOOD STRAIGHT LINE SPEED BUT MAKES POINTING VERY DIFFICULT. TOO MUCH AND YOU CAN POINT HIGH BUT YOU RISK STALLING THE RIG AND GOING VERY SLOWLY. UPWIND THE IDEA IS FOR THE TOP TELLTALE TO BE FLYING 75% OF THE TIME AS THE BEST COMPROMISE BETWEEN THE 2 BUT THIS CAN BE AFFECTED BY WIND SPEED, TYPE OF WATER AND RACE TACTICS SO BE PREPARED TO ADJUST THIS DEPENDING ON WHETHER YOUR PRIORITY IS SPEED THROUGH THE WATER OR BEING ABLE TO POINT.

JIB SHEETING

THE POSITION OF THE JIB FAIRLEADS ACTS LIKE A KICKER. MOVING THE FAIRLEADS BACK IS LIKE EASING THE KICKER AND MOVING THEM FORWARD IS LIKE PULLING IT ON. GENERALLY THE WINDIER IT IS THE FURTHER FORWARD THE FAIRLEADS NEED TO GO. HOW FAR IS SOMETHING YOU CAN GAUGE FROM THE TELL TALES, IF THE TOP TELL TALE LIFTS FIRST IN A HEADER THEN THE FAIRLEAD IS TOO FAR BACK AND NEEDS MOVING FORWARD. IF THE BOTTOM LIFTS FIRST THEN THE FAIRLEADS NEED MOVING BACK. IDEALLY ALL YOUR TELL TALES WILL LIFT AT THE SAME TIME.





ON THE WATER

OUTHAUL

WHEN SAILING UPWIND THIS SHOULD JUST BE KEPT ON TIGHT IN ALL CONDITIONS WITH THE EXCEPTION OF LIGHT AND CHOPPY CONDITIONS WHERE IT CAN BE EASED APPROXIMATELY 1 INCH TO GIVE A BIT MORE POWER THROUGH THE CHOP. DOWNWIND ON BROAD REACHING LEGS YOU MAY EASE IT OUT 2-3 INCHES TO GIVE MORE POWER TO THE BASE OF THE SAIL.

CUNNINGHAM

THIS SHOULD BE USED IN VERY WINDY WEATHER TO DE-POWER THE MAIN. IT SHOULD ALSO BE THE FIRST THING THAT IS LET OFF WHEN THE WIND DROPS.

FLATTENER

THIS SHOULD ONLY BE USED WHEN YOU ARE ON MAXIMUM RAKE AND IT IS VERY WINDY SO YOU ARE STRUGGLING TO GET UNDER THE BOOM. IT SHOULD MAKE LIFE EASIER!

JIB CUNNINGHAM

THIS SHOULD BE SET TO JUST REMOVE THE CREASES FROM THE FRONT OF THE JIB. IT WILL REQUIRE MORE TENSION AS THE BREEZE INCREASES.





ON THE WATER

CENTREBOARD

IN VERY LIGHT WIND YOU SHOULD HAVE THE CENTREBOARD ANGLED FORWARDS SLIGHTLY. AS YOU BEGIN TO GET TO THE STAGE WHERE YOU ARE BOTH SITTING ON THE SIDE, THE CENTREBOARD CAN BE MOVED TO THE VERTICAL. WHEN YOU START TO RAKE BACK YOU ARE MOVING THE CENTRE OF EFFORT IN THE RIG BACK. LIFTING THE CENTREBOARD WILL MOVE THE BOATS CENTRE OF RESISTANCE BACK, KEEPING IT UNDERNEATH THE CENTRE OF EFFORT AND KEEPING THE HELM FEELING WELL BALANCED.

SPINNAKER

THE SPINNAKER POLE SHOULD BE SET SO THAT AS YOU ARE REACHING ALONG THE CLEWS ARE AT THE SAME LEVEL. IN A VERY LIGHT BREEZE WHEN IT IS DIFFICULT TO GET THE KITE TO FILL, DROPPING THE POLE HEIGHT WILL ENCOURAGE THE SAIL TO FLY AGAIN.

