



HD SAILS

PHANTOM TUNING GUIDE

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TUNING STEPS

- Introduction
- Spreader Length
- Spreader deflection
- Rake & Heel Position
- Going Sailing



Welcome to the HD Sails Phantom 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.

Please note that this tuning guide has been designed for Selden S2 + S3 Masts and HD Sail.



SPREADER LENGTH

THE SPREADER LENGTH CONTROLS THE
AMOUNT OF SIDEWAYS BEND.
THE LENGTH IS DETERMINED FROM THE SIDE
OF THE MAST T TO THE SHROUD.

SELDEN MAST 410MM LONG





SPREADER DEFLECTION

MEASURE BETWEEN SPREADERS FROM SHROUD
TO SHROUD, THE NUMBER SHOULD BE 818MM





RAKE & HEEL POSITION

HEEL POSITION - 3300MM FROM BACK OF MAST
TO BACK OF TRANSOM BAR.

ONCE YOU'VE SORTED THE SPREADERS, PUT THE
MAST IN THE BOAT AND SET IT UP WITH 6720MM
RAKE AND 400LBS ON THE SHROUDS. MARK THIS ON
THE FORESTAY AS SETTING 1.

THIS SHOULD GIVE YOU 20MM OF PRE-BEND WITH
THE LOWERS SLACK. PULL THE LOWERS ON UNTIL
THEY ARE JUST IN TENSION BUT NOT DEFLECTING
THE MAST. MARK THIS POSITION AS SETTING 1.

EASE THE FORESTAY UNTIL YOU HAVE 280LBS ON
THE SHROUDS. THIS SHOULD GIVE YOU A RAKE OF
AROUND 6660MM. MARK THIS ON THE FORESTAY AS
SETTING 2.

THE LOWERS WILL BE SLACK AT SETTING 1, PULL
THEM ON UNTIL THEY ARE JUST IN TENSION BUT NOT
DEFLECTING THE MAST. MARK THIS AS SETTING 2





GOING SAILING

IN VERY LIGHT AIRS - NOT ENOUGH TO SIT ON SIDE DECK UPWIND. USE SETTING 2 ON FORESTAY AND SETTING 1 ON LOWERS. IF YOU TRY TO USE SETTING 1 ON FORESTAY THE MAST IS TOO STRAIGHT AND STIFF SIDEWAYS - THE SAIL WILL BE TOO FULL AND THE LEECH TOO CLOSED.

BOARD SHOULD BE FULLY DOWN.

PULL outhaul ON UNTIL FOOT IS TOUCHING SIDE OF BOOM.

SIT WITH WEIGHT CENTRED AROUND MAINSHEET BRIDLE.

CUNNINGHAM SLACK.

KICKER ON ENOUGH TO INDUCE MAST BEND AND FLATTEN ENTRY. THIS WILL CLOSE THE LEECH, SO PUT THE BOOM OUT AOVE THE BACK CORNER TO STOP THE RIG STALLING.

KEEP ADJUSTING BOOM POSITION TO MAINTAIN A GOOD BALANCE BETWEEN SPEED AND HEIGHT - EASE BOOM OUT IN LULLS TO KEEP SPEED AND SQUEEZE THE BOOM IN IN GUSTS TO GAIN HEIGHT.

ONCE THERE'S ENOUGH WIND TO SIT ON THE SIDEDECK UPWIND YOU CAN PULL THE FORESTAY TO SETTING 1 AND LOWERS ON SETTING 1. THIS WILL STRAIGHTEN THE MAST REDUCE SIDEWAYS DEFLECTION.

BOARD FULLY DOWN

EASE OUTHaul TO GIVE 75MM OF DEPTH.

SIT WITH FRONT LEG TOUCHING BRIDLE.

CUNNINGHAM SLACK

SIMILAR KICKER TENSION AS VERY LIGHT AIRS - PULL KICKER ON TO FLATTEN ENTRY. THE SAIL WILL BE FULLER THAN VERY LIGHT AIRS AND HAVE A HARDER LEECH. THE BOOM NEEDS TO KEPT OUT OVER THE BACK CORNER TO DEVELOP POWER AND SPEED.





GOING SAILING

ONCE THE BREEZE IS UP TO FULL HIKING DON'T BE TEMPTED TO KEEP PULLING THE KICKER HARDER TO FLATTEN THE SAIL. THE LEECH WILL BECOME TOO CLOSED AND STABLE, MAKING THE BOAT UNRESPONSIVE AND NEEDING THE BOOM SHEETING WIDER TO KEEP SPEED.

EASE THE FORESTAY BACK TO SETTING 2 AND PULL THE LOWERS TO SETTING 2. THIS WILL OPEN THE MIDDLE AND UPPER LEECH MAKING THE BOAT FOOT FASTER AND EASIER TO STEER.

LEAVE THE outhaul WITH 75MM DEPTH.

KICKER SHOULD BE ON HARD TO FLATTEN ENTRY.

BOARD RAISED ABOUT 50MM

CUNNINGHAM - ENOUGH TO REMOVE WRINKLES.

AS YOU BECOME MORE OVERPOWERED PULL THE outhaul TIGHT AND PULL MORE CUNNINGHAM. YOU SHOULD BE ABLE TO STAY ON SETTING 2 ON FLAT WATER A LONG WAY UP THE WIND RANGE. USE MORE CUNNINGHAM TO OPEN THE UPPER LEECH AND MORE KICKER TO FLATTEN THE SAIL. AS YOU GET MORE OVERPOWERED THE MAIN WILL NEED TO BE TRIMMED CONSTANTLY TO KEEP THE HEEL ANGLE CONSTANT AND THE BOAT FOOTING FAST. IF IT BECOMES TOO DIFFICULT TO KEEP THE BOAT STABLE AND FOOTING FAST, EASE THE FORESTAY TO OPEN THE LEECH UNTIL THE BOAT BECOMES MORE CONTROLLABLE. IN WAVES EASE THE FORESTAY EARLIER PAST SETTING 2 TO CREATE MORE MAST BEND AND OPEN THE LEECH. THIS WILL ENABLE EASIER STEERING THROUGH THE WAVES AND MAKE THE RIG MORE RESPONSIVE.

YOU NEED VERY LITTLE TWIST IN LIGHT AIRS UPWIND. THE LEECH NEEDS TO BE PRETTY STRAIGHT. IF YOU DON'T INDUCE BEND THROUGH LEECH TENSION THE MAIN IS TOO FULL OFF THE MAST AND THE LEECH TOO OPEN – YOU END UP WITH NO POWER OR HEIGHT. THE MORE YOU LOAD THE LEECH THE FLATTER THE ENTRY. YOU CAN OPEN THE LEECH BY MOVING THE BOOM OUTBOARD FOR MORE POWER. YOU JUST NEED TO GET YOUR KICKER / FORESTAY CALIBRATED SO YOU KNOW EXACTLY WHAT LEECH TENSION YOU ARE USING.





GOING SAILING

ONLY USE SETTING 1 IN JUST HIKING BREEZE AND FLAT WATER. IT'S THE SETTING THAT GIVES THE DEEPEST SAIL AND TIGHTEST LEECH, SO ONLY WORKS WHEN THERE'S ENOUGH WIND TO KEEP THE LEECH OPEN, BUT NOT TOO MUCH THAT YOU NEED TO DE-POWER.

IF YOU ARE ON YOUR UPRIGHT SETTING - 1 AND START TO GET OVERPOWERED DO NOT PULL THE KICKER HARDER. THE MAST IS TOO WELL SUPPORTED ON IT'S UPRIGHT SETTING, SO AS YOU PULL ON MORE KICKER TO FLATTEN THE SAIL THE LEECH WILL START TO CLOSE TOO MUCH. THE BOAT WILL FEEL CHOKED AND YOU WILL HAVE TO EASE THE BOOM OUT TO KEEP IT FOOTING. IF YOU ARE OVER POWERED YOU WANT THE SAIL TO BE FLATTER WITHOUT THE LEECH CLOSING. EASE THE FORESTAY AND THE MAST WILL HAVE LESS SUPPORT AND BEND MORE UNDER THE SAME LOAD. WITHOUT DOING ANYTHING ELSE THE SAIL WILL LOOK FLATTER AND MORE OPEN LEECHED. PULL SOME KICKER ON TO CLOSE THE LEECH A LITTLE AND THE BOOM SHOULD BE ABLE TO COME INBOARD A LITTLE FROM YOUR UPRIGHT SETTING. IF IT'S FLAT WATER YOU SHOULDN'T HAVE TO EASE MUCH BEYOND 280LBS UNTIL IT'S VERY WINDY. YOU CAN START TO LOAD UP THE CUNNINGHAM TO OPEN THE UPPER LEECH AND TIGHTEN THE outhaul TO OPEN THE LOWER LEECH.

IN SUB HIKING EASE THE FORESTAY SO THAT THE LEEWARD SHROUD IS STARTING TO GO SLACK - ABOUT 280LBS / SETTING 2(IT VARIES WITH HELM WEIGHT). THAT ALLOWS THE MAST TO BEND MORE FORE AND AFT AND SIDEWAYS, WHICH WILL FLATTEN THE SAIL AND OPEN THE LEECH. THAT MEANS YOU CAN USE A BIT MORE KICKER TO CLOSE THE LEECH WITHOUT IT HOOKING AND FLATTEN THE SAIL OFF THE LUFF - THE BENIFT IS THAT YOU CAN THEN SAIL WITH THE BOOM FURTHER OUTBOARD (TO DEVELOP MORE POWER)WITHOUT LOOSING HEIGHT UPWIND. I WOULD LEAVE THE LOWERS ON SETTING 1 TO ALLOW SOME LOW DOWN BEND TO FLATTEN THE LEECH AROUND THE BOTTOM BATTEN.

IF YOU EASE TOO MUCH FORESTAY THE MAST WILL BEND TOO MUCH AND YOU WILL EITHER HAVE TO SAIL WITH THE LEECH TOO OPEN OR THE SAIL TOO FLAT OFF THE LUFF.



GOING SAILING

So, HOW TO TELL WHEN YOU'RE SET UP INCORRECTLY AND WHAT TO DO ABOUT IT.....

THIS MAY BE OVER SIMPLIFYING BUT IT'S PROBABLY EASIEST TO SORT OUT WHAT CONTROL DOES WHAT BEFORE DECIDING WHICH ONE TO ADJUST -

FORESTAY - CONTROLS RIG TENSION AND RAKE. EASING IT LETS THE HOUNDS MOVE BACK CHANGING THE SPREADER DEFLECTION MAKING THE MAST SOFTER FORE AND AFT. IT ALSO REDUCES THE SHROUD TENSION AND THEREFORE THE AMOUNT OF SIDEWAYS SUPPORT FROM THE SPREADERS IS REDUCED MAKING THE MAST SOFTER SIDEWAYS.

LOWERS - RESIST THE KICKER LOAD AND HOLD THE MAST STRAIGHT SIDEWAYS AND FORE AND AFT IN THE BOTTOM 1/4 OF THE MAST. EASING FLATTENS THE SAIL ENTRY AND OPENS THE LOWER LEECH.

OUTHHAUL - CONTROLS DEPTH AND LEECH CLOSURE UP TO THE BOTTOM BATTEN.

KICKER - CONTROLS LEECH TENSION. GET IT CALIBRATED. IT GIVES A GOOD REFERENCE FOR REPEATING LEECH TENSION RATHER THAN GUESSING!

CUNNINGHAM - CONTROLS LUFF TENSION AND FULLNESS AROUND TOP BATTEN.

MAINSHEET - CONTROLS BOOM POSITION.

THE BOOM POSITION CAN ONLY BE SET AS A RESPONSE TO THE LEECH PROFILE OF THE SAIL. WHAT'S RELEVANT IS THE ANGLE OF THE BACK OF THE SAIL AT ABOUT HALF HEIGHT TO THE CENTRELINE OF THE BOAT. IF YOU HAVE A CLOSED LEECH YOU NEED TO PUT THE BOOM FURTHER OUTBOARD.

SO, ASSUMING YOU'VE GOT THE RIG WORKING YOU NEED TO WORK HARD AT KEEPING THE MAST ANGLE CONSTANT AND ANTICIPATING GUSTS AND LULLS AND STEERING TO THEM. A GOOD GUIDE IS NOT TO ALLOW THE HEAD OF THE MAST TO GET OUTSIDE THE SHROUD BASE. YOU'RE BETTER OFF SITTING IN A BIT AND KEEPING THE BOAT FLATTER THAN ALLOWING YOURSELF TO SAG AND THEN LETTING THE BOAT HEEL TO KEEP YOUR ARSE DRY!

IF YOU NEED TO SHEET THE BOOM CLOSER TO KEEP POWER AND HEIGHT THEN YOU HAVE THE RIG TOO BENT AND THE SAIL TO OPEN LEECHED - PULL FORESTAY ON.

IF THE BOAT IS BITING HARD IN GUSTS AND THE BOOM IS OUTBOARD - EASE FORESTAY.

YOU NEED TO GET YOUR BOAT CALIBRATED SO THAT YOU CAN HIT YOUR THREE PRIMARY SETTINGS WITHOUT HAVING TO WORK THEM OUT EVERY TIME - FULL POWER UPRIGHT SETTING 1.

UNDER POWERED, OVER POWERED - BOTH START AT SETTING 2

OUTHHAUL - MOST PEOPLE EASE IT TO MUCH. IN LIGHT AIRS IT SHUTS THE LOWER LEECH IF YOU EASE IT TOO EARLY. EASE IT A BIT IN MEDIUM STUFF TO GET A BIT MORE POWER AND HEIGHT AND PULL IT BACK ON ONCE YOU ARE FULLY HIKEED AND POWERED UP - LEAVING IT EASED JUST CREATES MORE DRAG IF YOU HAVE ENOUGH POWER ALREADY. HAVE ONE MARK ON THE BACK OF THE MAST WHERE THE PULLEY IS WHEN IT'S ON AN AVERAGE SETTING - IT'S GOOD TO USE AS A REFERENCE AT THE LEEWARD MARK, SO THAT YOU DON'T HAVE TO SET IT UP AGAIN UP AFTER THE ROUNDING.

BOARD - FULLY DOWN UNTIL YOU GET OVER POWERED. IT SHOULDN'T NEED TO BE RAISED MORE THAN 50MM IN ANY CONDITION. IF IT DOES IT'S AN INDICATION THAT YOU EITHER HAVE TOO MUCH KICKER ON OR ARE OVERSHEETED.



GOING SAILING

DOWNWIND -

PHANTOMS ARE VERY DIFFICULT TO GET DOWNWIND QUICKLY IN VERY LIGHT AIRS, USE A WINDEX, JUST TO SPOT SHIFTS AND MAINTAIN BEST ANGLE.

IT'S EASY TO LET THE SAIL STALL AND CHOKE. MAKE SURE THE KICKER IS JUST SLACK SO THAT THE TOP BATTEN HAS SOME MOVEMENT, BUT DOESN'T OPEN TOO FAR IN GUSTS. EASE FORESTAY, SO THAT THE LEEWARD SHROUD IS SLACK AND ALLOWS BOOM FURTHER OUTBOARD. STEER UP IN LULLS TO KEEP TOP BATTEN TELL-TALE FLOWING AND DEAD DOWNWIND IN GUSTS IF THERE IS ENOUGH WIND TO OPEN THE LEECH AT THE TOP BATTEN. YOU NEED TO FIND A WAY TO LET THE TACK DRIFT UP WHEN YOU'RE SAILING DOWNWIND SO THAT THE ENTRY STRAIGHTENS AND YOU LOOSE THE DISTORTION TO THE END OF THE TOP BATTEN. IF YOU TIE THE TACK ABOVE THE LOWERS BRACKET IT IS TOO HIGH WHEN YOU GO UPWIND. I USED AN INHAUL TO SOLVE THE PROBLEM, BUT IT WAS A BIT OF AN EXPENSIVE TOOL TO FIX A SIMPLE PROBLEM AND JUST ADDED TO THE JOBS TO SORT AT THE LEEWARD MARK.

IN A BREEZE YOU CAN SAIL EITHER SIDE OF DEAD DOWNWIND TO MAINTAIN FLOW DEPENDING ON WAVE ANGLE AND POSITIONING. YOU NEED TO SORT OUT BEING ABLE PERCH ON THE INBOARD EDGE OF THE SIDE DECK DOWN THE RUN IN A BREEZE. IT'S COMMON TO SAIL THE RUN WITH THE BOOM TOO EASED AND SITTING TOO FAR INBOARD. THAT MEANS YOU CAN'T SAIL THE BOAT AGGRESIVELY DOWNWIND AND ARE VULNERABLE TO GUSTS. IF YOU SET THE BOAT UP JUST AS YOU NORMALLY DO WITH THE BOOM CLOSE TO THE SHROUDS AND SAILING DEAD DOWNWIND THERE IS VERY LITTLE HEELING FORCE COMING FROM THE RIG, SO YOU HAVE TO SIT CLOSE TO THE CENTRELINE. IF YOU PULL THE BOOM IN A BIT THE BOAT WILL HEEL TO LEEWARD UNLESS YOU SIT ON THE SIDEDeck TO COUNTERACT IT. IF YOU SAIL BY THE LEE, THE NET FORCE FROM THE RIG IS STILL ENOUGH TO KEEP YOU ON THE SIDEDeck IF YOU HAVE THE BOOM TRIMMED ON A BIT. ONCE YOU GET USED TO BALANCING THE LOAD FROM THE SAIL RATHER THAN JUST FULLY EASING IT, YOU CAN SAIL MORE AGRESSIVLEY AND GO FASTER. HAVING THE BOOM TRIMMED ON A BIT ENCOURAGES REVERSE FLOW ON THE MAINSAIL AND IN A BREEZE THAT IS QUICKER THAN EASING IT OUT AND NOT HAVING ESTABLISHED FLOW ACCROSS THE SAIL. THERE'S A GOOD ARTICLE ON STEERING WITH BALANCE AND TRIM BY SOME CANADIAN GENTLEMAN THAT I FOUND HELPFUL -

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REACHING IN LIGHT AIRS - KEEP WEIGHT OVER BRIDLE POSITION. USE BODY WEIGHT TO STEER, NOT THE RUDDER. DON'T EASE THE outhaul. TAKE THE MAINSHEET STRAIGHT FROM THE BOOM. EASE KICKER SO THAT THE TOP BATTEN HAS SOME MOVEMENT. PUT TILLER EXTENSION DOWN ON SIDEDeck BEHIND YOU TO STOP OVER STEERING. CONCENTRATE ON BEING SMOOTH AND CONSERVING SPEED. IF IT'S VERY LIGHT MOVE FORWARD AND ALLOW THE BOAT TO HEEL TO LEEWARD.

REACHING IN MARGINAL PLANING BREEZE. PULL RIG TO SETTING 1. EASE outhaul SO THAT THERE IS AROUND 150MM OF DEPTH IN THE FOOT. EASE KICKER SO THAT THE MAST STRAIGHTENS BUT NOT SO MUCH THAT THE LEECH BECOMES TO OPEN AND UNRESPONSIVE. MARK THIS POSITION ON THE KICKER SO THAT IT CAN BE PRE-SET BEFORE YOU BEAR OFF. KEEP THE BOAT FLAT AND ONLY ALLOW HEEL TO CHANGE DIRECTION.