

# TUNING GUIDE FOR MASTHEAD RIG DOUBLE SPREADER

## GENERAL OVERVIEW

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### **WARNING**

**Before un-hooking the mast from the crane, for safety, make sure that the minimum amount of thread of the turnbuckle is engaged. Ensure that at least 1-1/2 times the thread diameter is engaged or that the holes for the split pins are visible through the turnbuckle body- this is referred to as the minimum safety position of a turnbuckle.**

When making any adjustments to the mast, always make sure that the mast is straight and that there is no lateral or sideways bend. With a classic mast, fore and aft pre-bend is acceptable but must never exceed half the fore and aft dimension of the mast section. A roller furling mast should have minimal pre-bend.

If, at any step, you are having difficulty keeping the mast straight you have probably over tensioned the stays and shrouds causing excess compression loads on the unsupported mast panels between the stays and shrouds. Reverse the steps and re-tension the stays and shrouds using fewer turns on the turnbuckles.

Always make sure that all the turnbuckles are clean, that the threads are undamaged and properly lubricated with a non-graphite grease before tensioning them.

When adjusting a turnbuckle, it is best to make less than three turns of the turnbuckle before adjusting the opposing turnbuckle (for example; forestay and backstay turnbuckles, V1 port and V1 starboard turnbuckles, D1 port and D1 starboard turnbuckles etc....).

### **BEFORE STEPPING THE MAST**

**: With reference to the mast drawing, note the following:**

- The distance from the base of the mast to the lower spreader.
- The distance from the base of the mast to the upper spreader.
- The overall length of the mast tube.
- The distance from the base of the mast to shroud attachment points if separate from spreader brackets.
- The length of the port and starboard lower spreaders.
- The length of the port and starboard upper spreaders.

**: With reference to the standing rigging specification sheet or drawing (if available), note the forestay length. If forestay is adjustable, set the forestay to the pre-determined length according to the standing rigging specification sheet. This is important, as it will give you the designed rake for your mast.**

**TIP: Set the forestay to the correct measurement before installing it on the mast and note the distance between the threaded stud and the turnbuckle body. After stepping the mast, you will be able to know the forestay length by comparing this measurement.**

## **AFTER STEPPING THE MAST**

: Make sure the intermediates (D2) are released to their minimum safety position.

: Center the mast athwartships, using the capshroud (V1) turnbuckles.

TIP: Using two pieces of masking tape, mark the port and starboard toe rails (opposite the mast) at an equal distance from the forestay. Use a tape measure hoisted on the jib halyard (it does not need to be hoisted all the way) to check the port and starboard measurements at the toe rail masking tape. They must be the same. When taking these measurements, ensure that you are taking a straight-line measurement from the jib halyard sheave to the toe rail mark and that no equipment is fouling the measuring tape.

: Tension backstays equally. This will introduce pre-bend in the mast and make it easier to tension the cap shrouds if spreaders are raked aft.

: Tension the cap shrouds (V1) an equal number of turns on both sides. Do not allow the intermediates (D2) to become tight. At this stage, you will have more pre-bend than is required.

: Release the backstays equally until they are slack or to their minimum safety position (with spreaders that have no aft angle the backstay need only be released slightly)

: Tension the aft lower shroud (D1 aft) to remove the excess pre-bend. Make sure that the forward lower shroud (D1 fwd) or babystay remain slack and the mast remains straight athwartships (make sure there is no lateral/sideways bend).

: Tension the forward lower shroud (D1 fwd) or babystay. These must not go slack when sailing- over-tensioning these shrouds will induce pre-bend.

: Tension backstays equally.

TIP: if double backstay compare the distance between the threaded studs of each turnbuckle.

: Tension the intermediates (D2) and ensure a straight mast athwartships. Very little tension is required on the intermediates.

: The mast should now be perfectly straight athwartships.

: Lock all turnbuckles with split pins.

Test sail the boat in 15 knots of wind with the boat heeling on the wind and the mast must remain straight on both tacks. Adjust the rigging as necessary so that the mast will be straight on both tacks in these conditions.

**THIS GUIDE IS MENT AS AN AID TO TUNING AND IT IS  
RECOMMENDED THAT YOUR MAST IS CHECKED REGULARLY  
BY A QUALIFIED RIGGER TO ENSURE SAFE OPERATION.**

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U.S.spars holds no responsibility for spars that are not tuned correctly and are not regularly inspected.