CATAMARANS - Special instructions

Catamarans are usually fitted with self-standing systems, which keep the mast in place with a forestay and two top stays fastened to chain plates on the hull.
These self-standing masts can be divided into two groups:
- pivoting masts called teardrop masts or wing masts (wing masts as found on Formula 28 and F 40);
- fixed masts.

These fixed masts are rigged in different ways:
- masts on tripods: the spreaders are connected to the front by a martingale and a jumper enabling the mast to be made rigid lengthways;
- intermediate shapes: the mast is simply supported sideways by the spreaders and a bigger set of shrouds (not self-standing lengthways, so no jumpers);
- chimney masts: with no front jumper nor spreaders, but the shrouds include lower shrouds and occasionally a staysail stay.

Catamaran rig (diamond rig)

CATAMARANS - Pre-adjustment before fitting

The special characteristics of the self-standing rigs on multihulls mean that the lateral diamond shapes and jumpers are under tension and pre-adjusted before stepping the mast in order to obtain a rigid structure.
See also the special instructions.

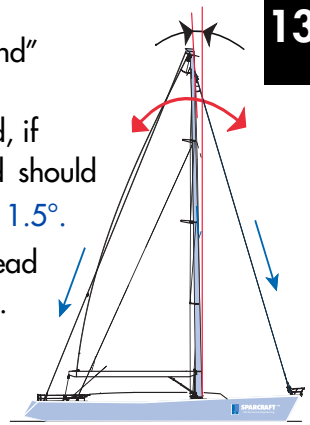
Marks

13.1

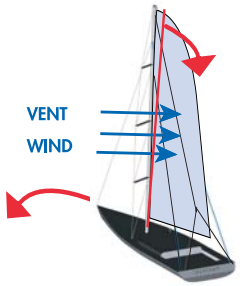
- the mast must be placed lengthways in the boat;
- to carry out the adjustments, use the mainsail halyard in order to measure the distance to an equidistant point on either side.

Rake

φ = 1 to 1,5°



- finely adjust in order to find the best "Rake/Prebend" (see below);
- the tension of the forestay and the backstay should, if possible, be the same as that of the shrouds and should induce a rake φ (angled backwards) by about 1 to 1.5°.



- e.g.: 10-metre mast: masthead pushed back by about 20 cm. This mast rake will determine whether the boat has a lee helm or a weather helm. The greater the rake, the more car take out weather helm and vice versa.

Adjust only for a very small amount of pre-bend on furling masts (see instructions)

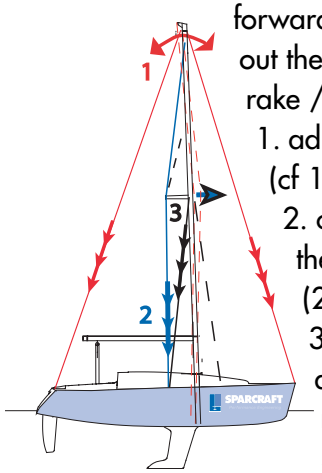
Tension of the rigging at the masthead and on the spreaders:

13.2

1.adjust the rake with the forestay, then tighten the backstay (see section 13.1);
2. centre the mast sideways using the cap shrouds and tighten them symmetrically in order to obtain an upright mast;
3.apply tension to the rear and front lower shrouds allowing a slight pre-bend then adjust the intermediate shrouds checking the cross-section is upright (looking along the sail track);
4. apply the final tension maintaining the same order and then carry out checks under sail. The tension on the cap shrouds and the lower rear shrouds should be high.

13.3 Tension of the head rigging with sweptback spreaders

Special instructions: swept-back spreaders support the mast from the sides and lengthways. By increasing the tension, the mast is pushed forward at the level of the spreaders creating a curve. Carry out the following step by step procedure to obtain the correct rake / pre-bend / tension:

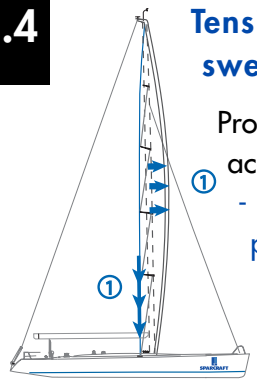


1. adjust the rake with the forestay, then tighten the backstay (cf 13.1);
2. centre the mast sideways using the shrouds and tighten them symmetrically to obtain a regular bend of the mast (20 cm for a 35');
3. apply tension to the lower shrouds, then the intermediate shrouds checking the mast is upright and with the right bend;
4. Complete the adjustment to the tension in the same order and then after sailing trials. The tension on the cap shrouds (V1) and lower shrouds (D1) must be high.

Regularly check the vertical alignment along the sail track.

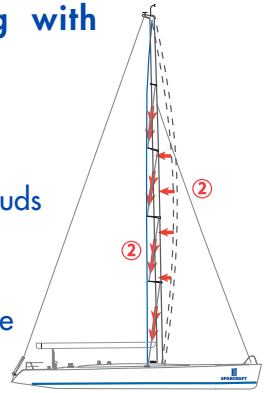
Please note for discontinuous rigging: the turnbuckles on the intermediates (D2) must be completely open during the adjustment of the V1D1, and can be closed once the tension of V1D1 is complete. The tension on D2 must be low: close the turnbuckles by hand and two spanner turns.

13.4 Tension on the fractional rigging with swept-back spreaders



Proceed as in section 13.3, but take into account the following characteristics:

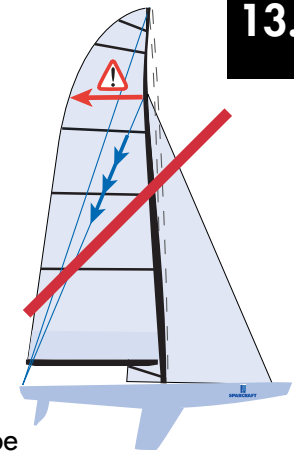
- increasing the tension on the cap shrouds pushes the mast forward creating a pre-bend;
- tightening the lower and intermediate shrouds will reduce the bend;



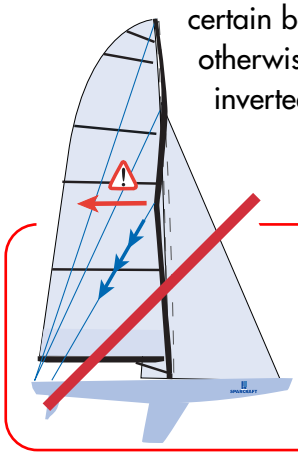
- a slight permanent bend is desirable;
- leave a pre-bend of 6 to 7 cm. The cap, intermediate and lower shrouds must then be taut;
- adjust the running backstays to finish, as they work in opposition to the rest of the rig;
- when the back angle of the spreaders is below 15°, the tension required on the running backstay is high, in order to support the mast backwards;
- If the rear angle of the spreaders is above 15°, the spreaders will also support the mast lengthways and the tension on the backstay does not need to be so high. However, be careful not to exceed the limit to avoid a mast inversion.

13.5 Tension of fractional rigging with in-line spreaders

- proceed as in section 13.3. Note:
- The rigging with in-line spreaders is adjusted as with top rigging, the only difference being the addition of backstays for the tension of the forestay;
- The mast should always be adjusted with a certain bend forwards/backwards, otherwise the curve of the mast may be inverted particularly in strong winds.



Avoid a negative bend ("curved backwards")

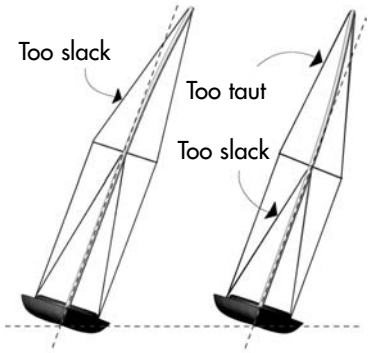


the babystays adjust the bend of the mid-section of the mast. If they are too tight in relation to the backstays, they can cause the inversion of the mast bend.

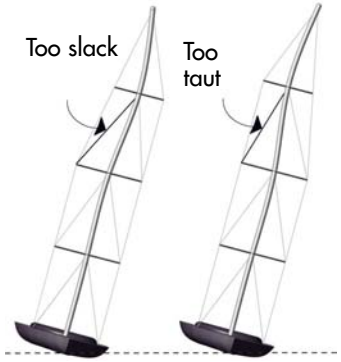
Checking adjustments under sail

- check the adjustments in moderate or light winds on calm seas. It is preferable if you can avoid having to deal with manoeuvres by taking aboard some experienced crewmen;
- check the alignment of the mast upwind looking along the sail track (lateral alignment) which should be straight on both tacks;
- the leeward cap shrouds should not be completely slack. If this is the case on both sides, take in (once moored ashore) the same number of turns on each side of the mast. Redo the adjustment as many times as necessary until fine-tuned.

N.B.: a new rig requires an additional adjustment after its first sailing trips.



Side adjustment



Diagonal adjustment (intermediate shrouds)

Remarks concerning discontinuous rigging:

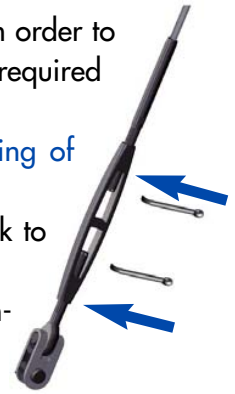
- before applying tension to V1D1, it is imperative that you ease the diagonals first.

N.B.: some classes of yacht have their own specific information concerning the tension of the rigging. Please consult these documents.

Once back in harbour

- make a mark to identify the adjustment position once back in port;
- note down all these adjustments in order to be able to re-use them whenever required after wintering;

N.B.: take into account the stretching of cables over time.



- if the turnbuckles have been adjusted at sea, please check to ensure that the pin is in place and that they are open;
- You can protect the sails by using a protector on the turnbuckles and sticky tape on the pins.

Maintenance

- Regularly check the condition of the standing rigging. Use the services of an expert to carry out a complete service check, as required;
- when preparing the yacht for winter, rinse off the aluminium parts: mast, foot of the mast, boom, boom vang, pole,...;
- also rinse off the running rigging;
- check the halyards and their sheaves;
- check the condition and movement of the reefing pennants.

For operations to be carried out at the top of the mast: make sure you have the right comfortable safety gear.

Trimming the sails

The techniques used to obtain the perfect trimming also depend on the shape of the sails and the characteristics of the boat. It is therefore important to obtain advice and consult your sailmaker.

15 ADJUSTMENT INDICATIONS

	Masthead rig		Fractional rig	
	In-line spreaders	Swept-back spreaders	Swept-back spreaders	In-line spreaders
1. Rake	adjust the forestay, then apply tension to the running backstay			
2. Side + pre-bend	adjust the cap shrouds symmetrically to obtain:			
	a straight mast	a regular pre-bend	a regular pre-bend	a straight mast
3. Tension	Tighten the lower shrouds fore and aft, then adjust the intermediate shrouds	Tighten the lower shrouds, then adjust the intermediate shrouds	More tension on the cap shrouds pushes the mast forward creating a bend; More tension on the lower and intermediate shrouds reduces the bend;	Is adjusted like a masthead rig apart from the tension on the running backstays
4. Final adjustment	Apply the final tension respecting the same order Check under sail making sure the mast is straight			
Comments		Adjustment of the intermediates at each diagonal turnbuckle	Adjust the running backstay at the end (works in opposition to the rest of the rigging)	Adjust to obtain a certain bend forwards or backwards to avoid an inversion of the curve of the mast in strong winds

⚠ Adjust only for a very small amount of pre-bend on furling masts

COMMENTAIRES