



Tuning Guide



Taipan Tuning Guide

Boat setup

The Taipan4.9 is a very fast high performance boat with impeccable handling qualities. When you first sail one you are aware that everything happens very quickly. This can also include getting into trouble. As a result it is important that the set up of your boat is kept clean, simple and efficient. Things that tangle or are difficult to adjust should be eliminated. Almost any system can be made to work in light winds but if it doesn't work in strong winds then you would be better not having it on the boat. Have a look at the boats of the top sailors and copy the best of the ideas that you see.

Platform

It is important to have your boat as stiff as possible. Make sure that the beam bolts are tight. The beam pads should also be accurately molded to your beams. If necessary reseating the beam pads will improve the boats stiffness, see next. Keeping the striker strap and tramp tight will ensure the best platform stiffness.

Reseating Beam Pads

After years of use the contact between the beam and the beam pad can deteriorate, resulting in reduced platform stiffness. To reseat your pads you will need the following: White Gelcoat, masking tape, mould release wax and sandpaper.

Follow these steps (do one beam at a time so that you have enough time before the Gelcoat jells):

1. Remove the beam by undoing the beam bolts and pulling the beam out.
2. Briefly sand the beam pad to rough the surface and thoroughly clean beam and beam pad with solvent.
3. Mask up the edge and area around the beam pad and wax the beam where it touches the beam pad (follow the waxing instructions on the packaging)
4. Mix Gelcoat and brush a thin layer onto the beampad leaving a 10mm gap around the bolt holes
5. Bolt the beam back into place before Gelcoat cures.
6. Repeat on other beam

By waxing the beams you should be able to remove them if you need to, however they will be quite stiff to do so.

Rudder alignment

The simplest method is to support the boat so that the rudders can be put fully down. Use a tape measure to measure the distance between the leading edge of the blades at the bottom of the transom. Adjust the rudder alignment so that the leading edges are 1-3 mm closer together than the trailing edge (1-3mm toe in).



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Mast Rake

On our boat we set up the mast with about 5 deg. of aft rake for all conditions. We have found that it doesn't seem to make any significant difference if we change it for different wind conditions. Although we do increase the mast rake for rough water, i.e. +1 m waves.

On our boats we set the mast rake by using the trapeze wire. Measure the height of the trap ring off the centerline of the deck at the front chain plate and then take the trap ring towards the stern. With normal mast rake the trap ring is the same height off the deck about 100mm behind the rear beam.

Rig Tension

Rig tension on a Taipan4.9 needs to be relatively tight. The tension is about 50 -80 Kg. depending on the wind strength. Tighter in strong winds to reduce forestay sag. In light winds the rig tension can be light to allow a little more forestay sag down wind. This allows the jib to be take up more shape and also allows the mast to be over rotated easily.

Mast setup

Spreader Rake

The spreaders should be set close to the maximum length allowed in the class rules. For the Taipan4.9 this is 700mm. measured between the diamond wires at the spreader arms.

Spreader rake is the method of tuning the fore aft stiffness of the mast below the hounds. The ideal amount of spreader rake is dependent on the fore-aft stiffness of the mast and to a lesser extent, the amount of luff curve cut into the sail. Stiff masts require more rake to make the mast bend sufficiently, soft masts require less rake.

Crew weight effects the required amount of spreader rake as it has a significant effect on the amount power developed by the rig.

The spreader rake is measured by placing a straight edge or string-line between the diamond wires at the spreaders and measure the distance to the back of the mast. We are currently using 40 - 65mm of spreader rake.

To answer how much is sufficient rake can only be determined by sailing the boat and knowing what to look for.

If you have excellent height, but lack boat speed up wind and the boat does not want to accelerate in the wind gusts, then you need more rake. This helps the mast bend fore and aft which allows the sail to flatten and the leech to open in the wind gusts. (Also see notes on diamond tension.)

If you are lacking height and "grunt" in light to medium weather, then you have too much spreader rake.



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Diamond Tension

This primarily controls the side bends of your mast. Loose diamonds allow the middle of the mast to bend to leeward and the top of the mast to hook to windward. When beating this makes the boat feel bound up and it does not want to accelerate. This also tends to cause the boat to heel very easily in wind gusts.

Very tight diamonds do the opposite. Downwind, tight diamonds keep the mast bent reducing camber and power. On the Taipan the diamond tension is generally set at 32 - 38 on the Loose gauge, increased as the wind increases and decreased as the wind decreases.

Pre-Bend

Pre-bend in a mast is the result of diamond arm rake, diamond tension and mast stiffness. These days we do not really measure pre bend; as the same pre bend can be achieved with varying degrees of spreader rake and diamond tension on any given mast. This is even further confused when the mast stiffness varies.

Battens

Battens should be shaped to match the general curvature of the sail. The battens that we recommend and use are the Fibre foam battens. These are a fiberglass foam sandwich construction that is light, strong and have excellent bend characteristics. All battens need to be looked after and stored so that they do not become permanently bent or twisted.

Battens should be tied firmly into the sail to remove creases along the batten pocket when sailing. Counting from the top, battens 2 & 3 need a lot of tension.

Batten stiffness can affect the camber and twist characteristics of a sail. They are an important aid for tuning your sail and rig. Stiff battens hold the sail flat and help the sail to twist more easily. A soft batten allows the sail to develop more camber and reduces leech twist.

General Sailing Philosophy of Catamarans

A number of years ago I heard the following quote applied to catamaran sailing.

"It doesn't matter where you are going as long as you are going there fast."

The element of truth in this statement is that boat speed is ultimately important. Go fast. Look for pressure then angles; opposite priority compared to dinghies.



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Sailing Settings

Upwind sail and rig settings.

Light Winds: 1 -5 knots

Luff Tension - Just remove the major wrinkles down the luff.

Mast Rotation - 45 deg.

Mainsheet - Light, all telltales should be flowing.

Foot - Ease foot to give 50mm camber in foot.

Traveler - Centered.

Jib Leads - Forward and inboard.

Jibsheet - Light and constantly adjusted to keep the jib leech 10 - 50mm from the spreader arm.

Light / Medium Winds: 5 - 10 knots

Luff Tension - Just remove the wrinkles down the luff. Pull on luff tension rather than easing mainsheet if you start to get over powered.

Mast Rotation - 40 to 30 deg.

Mainsheet - Firm / hard, to stand up the leech for maximum power. All telltales should be flowing.

Foot - gradually flatten foot as the wind increases to 10knots.

Traveler - Centered.

Jib Leads - Forward and inboard.

Jibsheet - Firm and constantly adjusted to keep the jib leech 10 - 50mm from the spreader arm.

Medium Winds: 10 - 15 knots

Luff Tension - Pull down the luff to flatten the sail and to induce twist in the top of the sail. Max luff is usually required by 15knots.

Mast Rotation - 30 to 20deg.

Mainsheet - Firm / hard, ease the mainsheet in the gusts to control the power in the sail. The top windward telltales will be stalled; all other telltales should be flowing.

Foot - Pull foot out flat and tight.

Traveler - Centered.

Jib leads - Middle setting on trampoline loops.

Jibsheet - Hard and constantly adjusted to keep the jib leech 10 - 50mm from the spreader arm.

Strong Winds : 15- 20 knots.

Luff Tension - Pull down the luff hard to flatten the sail as much as possible and to induce twist in the top of the sail.

Mast Rotation - 15 deg.



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Mainsheet - Firm / hard, ease the mainsheet in the gusts to control the power in the sail. The top 2 or 3 windward telltales will be stalled; all other telltales should be flowing.

Foot - Pull foot out flat and tight.

Traveler - centered.

Jib leads - aft and outboard.

Jibsheet - hard as possible and constantly adjusted to keep the jib leech 20 - 60mm from the spreader arm.

Downwind sail and rig settings.

Light Winds: 1 - 5 knots.

Boat is sailed flat. Keep your weight forward to make sure the transom is not dragging.

Luff Tension - Just remove the major wrinkles down the luff.

Mast Rotation - 90 to 100 deg.

Mainsheet - Light, allow sail to twist keep leeward telltales flowing.

Foot - Ease foot to give 150mm camber in foot.

Traveler - Out as far as it will go.

Jib Barber Haul - Fully pulled on.

Jibsheet - Light and constantly adjusted to keep telltales flowing.

Light / Medium Winds: 5 - 10 knots.

Boat is sailed flat. Keep your weight forward to make sure the transom is not dragging.

Luff Tension - just remove the wrinkles down the luff.

Mast Rotation - 90 deg.

Mainsheet - light to firm, to control leech twist for maximum power. All telltales should be flowing.

Foot - 150mm camber in foot.

Traveler - out as far as it will go.

Jib Barber Haul - fully pulled on.

Jibsheet - firm and constantly adjusted to keep telltales flowing.

When possible change into the "Wild Thing" mode. Move your weight to leeward to help lift the windward hull. Crew should be sitting on the leeward hull.

Luff Tension - Just remove the wrinkles down the luff.

Mast Rotation - 80 deg.

Mainsheet - Firm, to stand up the leech for maximum power.

Foot - 100 -150mm camber in foot.

Traveler - Pull traveler up to 300mm. up from inner gunwale.

Jib Barber Haul - 400mm from fully pulled on.

Jibsheet - Firm and constantly adjusted to keep telltales flowing.



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Medium Winds: 10 - 15 knots. Ideal "Wild Thing" wind range.

Steer down in the gusts and up in the lulls. Move your weight back and to leeward to help lift the windward hull. The crew should be sitting on the leeward hull and the skipper on the windward hull. This also keeps the bow up and makes the boat easier to steer.

Luff Tension - Just remove the wrinkles down the luff.

Mast Rotation - 80deg.

Mainsheet - Firm to hard, ease the mainsheet in the gusts to control the power in the sail.

Foot - 100 - 150mm camber in foot

Traveler - Set traveler 100mm. up from inner gunwale.

Jib Barber Haul - 400mm from fully pulled on.

Jibsheets - Firm to keep telltales flowing.

Strong Winds : 15- 20 knots. "Wild Thing" this is where it got its name.

The harder you work the faster you go. Steer down in the gusts and up in the lulls. Move your weight back .The crew should be sitting on the leeward hull or on the tramp deck as far aft as possible and the skipper on the windward hull. This helps keep the bow up and makes the boat easier to steer.

Luff Tension - Pull down the luff slightly to induce twist in the top of the sail.

Mast Rotation - 80 deg.

Mainsheet - Firm to hard, ease the mainsheet in the gusts to control the power in the sail.

Foot - 100 camber in foot

Traveler - Set traveler 100 up from inner gunwale.

Jib Barber Haul - 400 from fully pulled on.

Jibsheets - Firm to keep telltales flowing. Ease the sheets if the bow starts to go down

Strong Winds : 20 knots plus

Sail the boat flat; and deep as pointing higher will not increase your speed, you are already at maximum hull speed. Steer down in the gusts and up in the lulls. The harder you work the faster you go. Move your weight back as far aft as possible with the skipper on the windward hull. This helps keep the bows up and makes the boat easier to steer.

Luff Tension - Pull down the luff firmly to induce twist in the top of the sail.

Mast rotation - 80 deg.

Mainsheet - As much as you are game, ease the mainsheet in the gusts to control the power in the sail.

Foot - Leave flat; the same as the upwind setting. Heavy crews can have 100mm of camber in the foot

Traveler - Out as far as possible.

Jib Barber Haul - 100 from fully pulled on.

Jibsheets - Firm to keep telltales flowing. Ease the sheets if the bow starts to go down.