

## **RAIDER II TURBO TUNING GUIDE**

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Raider II Turbo #107

The Raider II Turbo still has the potential to be faster. These are just a few things that I have found that work. Maybe you can come up with other ways to make the boat faster without adding expense or undo complication.

**Mast rake:** Measured from the top of mast with mainsail halyard to top of upper gudgeon on transom: 23'6" You will have to enlarge the back of the mast hole in the deck plate that is on the mast for it to go back to that position if you have an early Raider II Turbo built before we figured that out.

**Spreaders:** each side is 18-1/2" from the side of the mast to the wire; it is 35-1/2" from wire to wire; a straight line between the wires is 6-5/8" behind the back of the mast. The spreaders should be pinned so that they do not move from that position.

The **jib tack** should be affixed as close to the Harken furler on the bow as possible.

My Turbo has a jib stay. If yours does not, make sure the halyard is tied to the head of the jib really well, as you don't want it coming off, suddenly loading up the mast aft ward. I set my jib stay, and therefore shrouds, to be quite tight for all conditions (once measured at 240# with a Loos gauge. I limit the amount the turnbuckle can tighten to that setting for safety). The Jib halyard is snugged up to that setting in a blow, eased down a very little bit in light air, but with no luff wrinkles to speak of. If you have no jib stay and want to sail without the jib, an extension on the jib halyard tied securely to the Harken furler at the bow would suffice.

The **vang** from the factory is lead to the deck before ending at the two side's cam cleats. This makes a bad lead that changes when the boom is let out. Instead, the vang line that you adjust should go to the same place that the small line that goes to the boom is attached. I simply tied a strong, exotic piece of line through the bottom mast bale and around the mast, making it about six inches long aft of the mast. It has three blocks on it, one for each control line and the middle one with becket that has the small line from the boom going around it and back to the becket to tie off. Works much better.

The **boom** should have a guard around it that encompasses the main sheet where you go under the boom on tacks and jibes. Most simply use a piece of Dacron sail cloth formed into a loop about two feet long and hanging down two inches. Spot glue it or tape it to the boom. It keeps the sheet from catching on your life jacket, which you wear when sailing, of course.

**Dagger board** should be polished enough and the carpet in the well 'McLubed' enough that you can pull the top of the board aft in light to medium air, putting the board forward toward the bow under water. In heavy air it should be straight down. Err on the side of less board up on free legs of the course, rather than lots of board up. It is an efficient shape; going sideways is not.

**Rudder** MUST be all the way down at all times when sailing. Faster and safer. I have drilled a hole through the housing and blade to put a pin there while racing so it does not kick up even a little.

The class **asymmetrical spinnaker** is relatively small by modern standards. It can be used on broad reaches and downwind in significantly strong winds. When on closer reaches there comes a wind speed where just using the jib is faster. The asymmetrical needs a '**twing**' set up on the sheets. While it is nice to have the spinnaker fairlead block and cleat aft out of the way, it is not a good angle for the sheet. The 'cleanest' way to get the right angle is to drill two holes in the outer rail on each side of the boat even with the cleat for the spinnaker that is in the middle of the boat. A Harken Micro Block or equivalent is tied on with line looped through it with a knot under each hole. You can use a nice bale with bolts, but then you have to sit on it. The knotted method hangs over the side an inch and is out of the way when not used. An alternative is to get the sail maker, Joe Waters, to raise the clew of the spinnaker a foot to make it correct for the aft fairlead block. But you do lose some sail area.

To **protect the spinnaker**, consider a tube of PVC or other plastic a few inches long at the bottom of each shroud. Mine are tied down to the deck with a small line going through a hole in the rail. Since I have a jib stay with a turnbuckle to tighten the rig before sailing, I put a tube around the bottom area of the jib stay for the spinnaker to go around without catching things.

A piece of cut off pipe cold weather tubing wrapped and taped under the **Harken furler** on the bow helps keep the spinnaker sheet from getting caught on jibes.

**Sailing:** Sit well forward in light air. You are limited only by the length of your tiller extension. If you have crew, they should sit right up to the shrouds or inside the boat with legs under the vang. Get the bow down and the wide stern area out of the water. A slight heel to leeward helps fill the sail and diminishes lee helm that is present in most boats in light air, including the Raider.

As the wind increases, or as waves get larger, move aft. Hiking out helps. But if you get tired or just don't want to be uncomfortable, do sit yourself out to the edge of the wing on the high side. Makes a difference.

The Turbo seems to like to be driven fast, not pointed high. As on all dinghies, keep the aft third of the top batten parallel to the boom, using the vang and mainsheet to keep it there. Many sailors pull the mainsail in too tightly in light air, closing off the upper mainsail. Jib, too.

It is not fast to sail directly downwind with the spinnaker. I've tried winging out the asymmetrical spinnaker, but without a pole it is very difficult to keep it from collapsing. It takes practice, and another boat for reference, to determine how far from dead downwind to sail for best results.

Finally, having a **crew** is faster on the Raider Turbo in anything over about 10 knots of wind. In over 15 it is significantly faster upwind with a crew, as has been demonstrated by Raider on Raider testing in race conditions. In lighter air having a crew does not seem to hurt speed much. Yes, the Raider can be sailed single handed in most any kind of breeze. On a day of measured 30-knots, when all racing was then cancelled, a Raider Turbo under reefed main sailed comfortably single handed while other types of boats were not. Off the wind the jib was unfurled and great speed with relative safety was attained.

Have Fun! You have a special boat.