

This Old Hobie

Setting Up the Hobie 14

By Wayne Schafer, Bob Curry and the **HOTLINE** Editors

Wayne Schafer, one of the original Hobie legends, and Bob Curry, a Hobie 14 legend of the 1980s and beyond, are both Hobie 14 World and National Champions and both wrote racing guides on the Hobie 14 in their respective eras. What follows is a compendium of their advice, updated for the 21st Century and the newer equipment allowed by the class rules.

Trampoline Frame

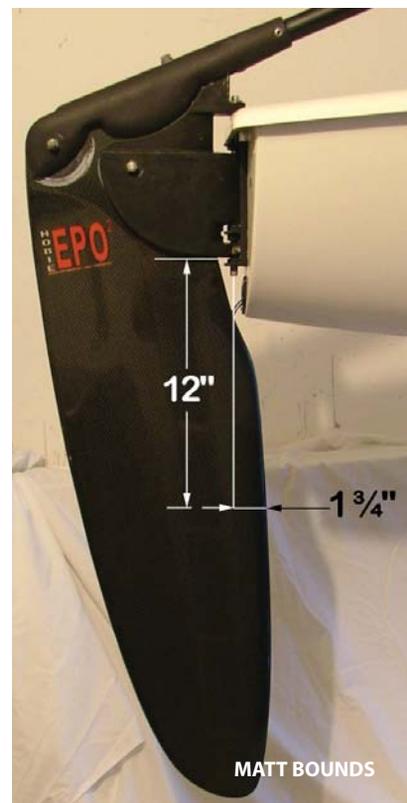
HOTLINE: A stiff boat is a fast boat. The energy used to make the frame flex is better put to use driving the boat forward. Since nearly all Hobie 14s are now over 20 years old, they are loose and wobbly. You can shim the pylons and tighten the trampoline, but the only way to really make the boat stiff is to glue the frame together. Epoxy the castings on to the crossbeams and re-rivet them with long stainless steel rivets. Assemble the frame and epoxy the castings on to the pylons. Don't glue the sidebars as doing so may overstress and break a corner casting. The best place to glue the frame is on a garage floor, where you can level and square the boat before the resin sets. For a more thorough discussion on frame gluing, refer to the "This Old Hobie" article in the March/April 2010 **HOTLINE**.

Rudders

SCHAFFER: I can't say enough about the importance of having the rudders in good alignment and raked for a balanced helm. By balanced helm, I mean a slight weather helm, which is the only way that the skipper can determine the performance of his boat. The rudder blades should be as true a shape as you can make them. I pay particular attention to the leading and trailing edges of the blades. I like my leading edge to be a little fuller and rounded to cut down on separation; that

makes it more forgiving and causes less cavitation (the new EPO rudders have all of this). I trim the trailing edges very fine to cut down on turbulence. I know of no shape that does it all. You have to give something to get something, so anything you do will be a compromise at best. At any rate, a well-tuned set of rudders is essential to good boat speed.

CURRY: This one always causes debate! To measure your rudder rake, start off with the rudders in the locked down position. Measure down the blade 12" from the bottom of the lower casting. Make a line 2" perpendicular to the 12" point. Using a very thin line and starting at the top of the rudder pin, align the line with the rudder pin and check where the line intersects the perpendicular line on the rudder. Optimally, you should have 1 5/8" to 1 3/4" for a measurement. To achieve the 1 3/4" number, you might have to re-drill the front hole on the rudder or file away at the front of the rudder where it hits the casting. "Rake adjustable" rudder castings (post 1983) really don't help here. They're good for taking the slop out of the system, but not for achieving the rake necessary to balance a sharply raked rig.



Rudder toe in should be 1/8" with the rudders in the locked down position again measured from the 12" down point. "Toe-in" means that the leading edges are closer together than the trailing edges.

HOTLINE: In addition to ensuring the foils are fair and aligned properly, you need to be diligent about removing the slop from the whole rudder system. Unless the rudder system is tight, it won't hold an adjustment for very long. Hobie 20 style tiller connectors, stainless steel rudder pins, pin bushings and blade bushings are all part of the arsenal to keep the rudders slop-free and in tune.

Mast Rake

SCHAFFER: The next area I am fussy about is mast rake. There has been a lot said about how much mast rake a Hobie 14 should have; I know of no setting that will work for all conditions. My approach is to take a Hobie and start out with the mast vertical. I sail the boat to determine the balance, then rake the mast bit by bit until the boat feels right sailing to windward. Remember, in smooth water you can get away with less rake than in rough water. Raking the mast moves the center of effort toward the rudders and damps the pitching movement caused by wind chop.

CURRY: I take a more quantitative approach. The first thing you want to do is step the mast on the trailer. Then, using a carpenter's level butted up against the shroud chain plate on the sidebar, level the boat. Undo your main halyard and attach a 5 lb weight, like the crescent wrench shown in the photo above right.



Measure the distance from the halyard to the bottom of the mast cutout for the mainsail. A good ball park number will range between 45"-57" depending on your body weight. Lighter skippers will favor the larger number (more mast rake) and heavier skippers will favor the smaller numbers (less mast rake). Since I weigh 160 lbs, I opt for a 55" mast rake.

Rig Tension

SCHAFFER: In light weather, try loosening the shrouds to let the whole rig sag to leeward a few degrees. This allows you to carry your traveler closer to the centerline of the boat. A loose rig is very effective downwind as the mast can swing forward, the boom can move farther forward, and the loose shrouds will interfere less with the sail shape.

CURRY: I normally carry a loose rig when not trapezing. This is tested by grabbing the leeward shroud with your hand and turning it to 120 degrees.



As the breeze freshens, I tighten the rig to keep the leeward hull from depressing too much. This is very important to remember in choppy water. When trapezing, adjust the shroud tension to 45 degrees using the same described previously. This will keep the rig powered up and not dump you in the water in lulls.



STUART CRABBE

HOTLINE: If you capsize with a loose rig, there is a good possibility the mast could come out of the step, making righting difficult and a tow to shore necessary. To prevent this, wrap the halyard in a figure-8 pattern around the dolphin striker and the cleat and lash it together as shown in the photo.

You can combine Bob's mast rake and rig tension settings into a table, customized to your own boat. By systematically varying the forestay and shroud pin positions, you can develop the table of mast rake and rig tension for each pin setting (see below).

HOTLINE: Since the early days of racing Hobie 14s, racers have installed a mast raker line from the forestay adjuster to a cleat on the front crossbar.



CURRY: The mast raker line should **only** be used downwind to help keep the rigging from banging around too much. Raking the fast forward also helps boatspeed downwind by standing the rig up and increasing projected sail area.

Mast Rotation

SCHAFFER: Another tip for race tuning is to slightly over-rotate the mast stops; this allows the mast to bend more, flattening the sail and relieving the leech in windy conditions which helps hold down the boat. I usually cut about an eighth of an inch off each side of the mast stops. You can cut off as much as a quarter of an inch on each side if you prefer; I don't recommend removing much more.



Hobie 14 Mast Rake and Rig Tension Matrix

Note - this is not a general application - each boat will have different adjustments based on wire lengths

		Shroud Adjuster Hole						
		Top						Bottom
Forestay		1	2	3	4	5	6	7
Top	1	62 200°	61 173°	60 145°	59 118°	58 90°	57 63°	56 35°
	2	59 190°	58 163°	57 135°	56 108°	54 80°	53 53°	52 25°
	3	55 175°	54 148°	53 120°	52 93°	51 65°	50 38°	49 10°
	4	53 160°	52 133°	51 105°	50 78°	49 50°	48 23°	47 0°
	5	50 145°	49 118°	48 90°	47 63°	46 35°	45 8°	
	6	47 130°	46 103°	45 75°	44 48°	43 20°		
	7	44 115°	43 88°	42 60°	41 33°	40 5°		
	8	41 100°	40 73°	39 45°	38 18°			
	9	39 85°	38 58°	37 30°	36 3°			
Bottom	10	36 70°	35 43°	34 15°				

Top cell is mast rake, measured from the sail track slot to the halyard hanging vertically
 Bottom cell is degrees of twist when gripped with a fist.
 Colors represent wind / wave conditions (blue-light, red-heavy)

HOTLINE: With the introduction of the mast rotation control a few years ago (see the photo at upper left for its location and control system), you can completely eliminate the mast rotation stops. Set the rotation for the wind/wave conditions – less rotation for more power and more rotation for less power. The principles are the same as Wayne's solution, but a lot more flexible. You can really "blade out" the main in high wind to reduce power.

The mast rotator is typically not adjusted during a race unless the setting is way off or the wind conditions change markedly. The initial setting for most conditions has the adjuster arm pointed at the shroud when sheeted in. Mark the line at this point with a Sharpie pen for reference.



Boom Vang / Preventer

SCHAFFER: I don't consider a boom vang as essential as I used to. I think that you can lose more than you can gain by fiddling with one every time you sail off the wind. Racing around the buoys requires concentration, and having to remember to set and release "go-fast" gadgets sometimes can cost you more than the help they can give. I carry a very simple vang, much like a large rubber band with a hook at either end, and generally use it only in extremely light or heavy conditions.



HOTLINE: Racers these days

don't use a vang at all. Bob Curry introduced us to the shock cord preventer – essentially what Wayne describes above. It's only used in light air downwind. With it, you can sail slightly by the lee if you need to. Just hook it into the trampoline slot at the corner of the front crossbar.

Sail Shape

SCHAFFER: Sail shape is a biggie ... everyone has their own set of preferences and techniques. I look at it like this—the Hobie 14 sail has been through a lot of development over the years and the present sail is as good as any I've seen. The sail has a fine shape and using the stock battens with some adjustment to the mast rotation is a pretty clean way to go.

I would start out by altering the mast rotation as discussed earlier, and then put in the battens with just enough tension to get the wrinkles out. Next, do some sailing to see how the boat balance feels. By altering the mast rotation, you automatically shift the draft forward, moving the center of effort forward, as well. This will cause the boat to be more tender in her bows and that is when raking the mast becomes useful.

As you sail and adjust the mast rake, you will find a point at which the boat trims out well to windward. The main reason for setting up a Hobie to sail close-winded is that Hobie races are seldom won on the downwind leg. If you're not there at the weather mark with the lead boats, you're not likely to catch them downwind.



CURRY: There are a lot of different thoughts on this area. I will address what has worked for me. The basic, optimal sail shape has its maximum draft position at 45% aft and the maximum draft is 16% of the chord length.

By and large, the shape is built into the sail, but you can modify it by tapering the battens. The bottom three battens usually don't need tapering. The top three battens are tapered and soft.

A good way to set up the draft is to raise the sail with some batten tension and downhaul applied to eliminate the wrinkles. Take the tail of the main halyard and run it down the sail starting at the aft end of the headboard to the middle of the boom. The maximum draft should be at this line intersecting the sail. You will probably have to use a belt sander to taper and soften the top three battens to achieve the draft/camber point.



HOTLINE: If you have access to photo editing software, like PhotoShop, you can measure the position and amount of maximum draft by taking photos of the sail, then drawing / measuring the draft lines on the computer.

Horizontal red lines in the photo above are the chords at each batten position. The vertical red lines are the draft at the position of maximum draft. By measuring the lines, you can calculate the percentages.

Batten Tension / Outhaul / Downhaul Adjustments

SCHAFER: Sail shape in a Hobie is chiefly influenced by means of downhaul and outhaul tension once you have decided on the proper batten tension. The more tension in the battens, the more camber in the forward part of the sail. This will also tighten the leech somewhat.

I generally adjust the battens so that they are just tight enough to take out the wrinkles, then I adjust the down haul and outhaul until I get the sail close to a uniform shape. Next, I go sailing to see how the sail sets with some wind on it and then fine tune the sail shape if necessary. Often, one or more of the battens will need some individual attention to perfect the overall shape. It is a good idea to mark the downhaul, outhaul, and battens to keep track of the adjustments you have already made.



CURRY: I tension the battens starting from the bottom and working to the top. This is done with the sail lying on the trampoline:

- #6 (Bottom): Almost standing up (moderate tension)
- #5: Barely standing up (a bit more tension than #6)
- #4: Standing up (a bit more tension than #5)
- #3: Standing up (same as #4)
- #2: Barely standing up (a bit less tension than #3)
- #1: Almost standing up (a bit less tension than #2)

(“Standing up” means that the batten has enough tension to maintain its curvature vertically - under its own weight - when the sail is lying flat on the trampoline)

SCHAFER: In very light conditions - three to five knots of wind and smooth water - you may set your sail with light batten tension to compensate for reduced downhaul tension; however, be sure to retain a uniform shape in your bottom panel. Although a Hobie usually sails best with the draft in the forward 35 to 45 percent of the sail area (including mast), in very light conditions the wind does not have the power to bend around a full sail section, especially the forward part. By easing the downhaul you reduce the draft in the forward part of the sail. Now, when you sheet in the main, the draft will tend to move aft.

CURRY: For the downhaul, there is really only one rule of thumb; wrinkles out in all but very windy conditions. Pull the downhaul hard in windy conditions to bend the mast and release the leech.

For the outhaul, I tension this as hard as I can and cleat and forget it! Since it is not a loose-footed sail, the main does not benefit by releasing it.

HOTLINE: With the introduction of the 6:1 power downhaul, it's much easier to adjust the downhaul during a race. Wrinkles are not all that bad in light air. As the wind builds, tension the downhaul more. Release it when you turn downwind. A knot in the line will prevent it from running out too far and a ruler strip on the mast by the gooseneck slide will help you get consistent, repeatable settings.

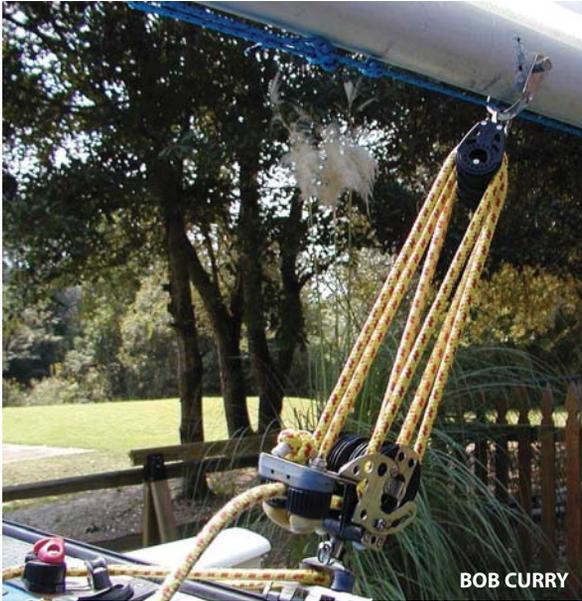
SCHAFER: Moderate to medium winds, eight to fifteen knots, call for readjustment of the sail shape. More batten tension is required to put additional camber in the sail. More downhaul tension is needed to pull the draft forward. Making these adjustments so that you have a full bottom panel next to the boom should help give the sail good power to drive your Hobie through chop. Remember, there are no fixed settings for adjusting your sail shape to different conditions. You must sail and race while working with these adjustments to learn what works best for you.

When the wind begins to get into the range of 15 to 30 knots, you will again want to readjust your sail shape. If your mast is over-rotated, you can either tighten the downhaul or leave it as it is, depending on your weight (more weight - less downhaul). Mast bend will flatten the forward part of the sail and let the leech twist off.

Mainsheet / Traveller

SCHAFFER: Traveler position should be changed to help you sail as flat as possible. The only way to sail upwind on a heavy day is to ease the traveler car out until you can control the heel of your Hobie. If you constantly have the weather hull way in the air, you are pretty much stalled out and making excessive leeway.

CURRY: A low-profile mainsheet system - just like on the Hobie 16 - is critical to obtaining proper leech tension on the main with a severely raked mast.



Instead of rivets to attach the boom bail, I use a through bolt that allows the bail to pivot with the changing angle of the mainsheet.

With regards to the traveller, when sailing upwind, 5" - 6" out from center allows the boat to be footed with a great deal of speed if you have the sail set up as above. When trapezing, only let the traveler out 3". Reaches will be out to the hiking strap and deep reaches/downwind will be all the way at the end of the track.

HOTLINE: Upwind, the sail is very sensitive to mainsheet tension. Tell-tales on the very edge of the leech in the upper two panels of the sail are critical to setting the proper mainsheet tension (see the photo on the opposite page). Sheet in until they just start to "lick around" to the leeward side. In gusty conditions, you'll need to constantly play the sheet to keep the tell-tales flying properly.

On the lower mainsheet block, attach the eye strap on the side to get true block-to-block sheeting.

Trapeze

HOTLINE: To connect the trapeze wires to the single hole tang on the mast, use an old trick from the original Hobie 16 setup. Put the shrouds and forestay on the bow of the shackle and the trapeze wires on the pin, leading them back under the shackle (see photo at right).

CURRY: Instead of the usual J&H "Can't Miss" handles on the trapeze, I use a "dogbone" style trapeze ring. Since it has two places to hook in, it allows you to change heights "on the fly" during a race. This is really useful in marginal trapezing conditions or in big waves, when you need to be higher to avoid getting swept off the boat.

One Last Trick

CURRY: There are many times when you need to adjust your rig tension on the water. Normally, this would be dangerous, with a risk of dismasting. However, by carrying extra pins and rings on the shroud adjuster, you can "walk" the shroud up or down by inserting a second pin through the eye of the shroud, then removing the other one. You still need to be careful - don't drop any pins or rings!

