Hobie Cat
4925 East Oceanside Blvd.
Oceanside, CA 92056
tel 619 758-9100
fax 619 724-6887

August 21, 1995

Adjustable Shock Absorbers

Background

As it turns out the length of the shock absorbers or the spring force that the shock absorbers generates is actually quite critical and the amount of spring force required will depend on a number of factors.

If the shock does not generate enough spring force meaning the shock is too short, then the sensor will come off the water on the leeward side and the foil will lift the boat too high. We call this situation "Sensor Rising". However if the shock is too long, then the shock will press the bow of the ama too low and it will require more wind to get onto the foils.

Anytime the foils is required to lift more weight, then the shock needs to generate more force in order to keep the sensor on the water. Sailing with two people in the boat or pointing close to the wind will require more lift from the foil. Surprisingly the foil will have to lift more weight in light wind than in heavy wind (in heavy wind the drive vector is pointed more forward and there is less healing force) Even with the boat properly adjusted it maybe possible to cause sensor rising by trying to get onto the foils while pointing too high. There are a techniques that can help avoid sensor rising. Once the boat gets up to speed then the sensor will stay on the water. When you see the sensor come off the water, bear away a few degrees and the sensor should come down. When the boat gets up to speed you may head up again. If the sensor does not go down when you bear away, then be patient. Do not let the boat accelerate until the foil comes to the surface, because then it will draw air and fall back down and you will have to start over. Usually as the stern of the boat comes up the boat pitches forward which pitches the masts forward and automatically increases the spring force. So usually a little patience will get you on the foils.

I like to sail with light spring pressure so the boat gets on the foils in as little wind as possible and the sensors are as lightly loaded as possible. When I sail by myself I will occasionally see sensor rising and when I sail with a passenger I will routinely see sensor rising, but I automatically use the above technique to get the boat on the foils. Only when I am going to let a novice sail the boat will I increase the spring force so they do not need to worry about sensor rising.

Mast rake will also affect the force generated by the shock absorbers, because mast rake will affect the position of the top of the shock absorber. If you rake the masts forward that will compress the shock slightly and increase spring force and visa versa.

Adjuster Kit

We are now offering a kit that will make your shock absorbers easily adjustable. The kit includes the lower shock fitting and 2 rivets.

The first step will be to remove the old lower fitting by drilling out the old rivet.

Next determine how long to make the tube. It may be desirable to shorten the tube to give your shocks a greater range of adjustment. The length of the tube will depend on how your shocks are currently performing and if there was any space between the bottom of the tube and the shoulder of the old lower fitting. On some of the boat we did not have the lower fitting completely engaged into the tube and if this is the case then there is no need to shorten the tube. On the other hand if the tube is bearing on the shoulder of the old lower fitting and you suspect that your shocks are too long or about right then you will want to cut about 3/8" off the lower end of the tube to allow you to shorten the shock by that amount.

Next drill a 3/16" or a #11 hole 2 3/4" up from the bottom of the tube.

Finally install the rivet through the wall of the tube and into the predrilled hole of the white delrin bushing inside the tube.

Now you will be able to simply turn the whole shock to change the length. As you look down on the shock when it is on the boat 3 turns to the left will extend the shock almost a 1/4".

I suspect when competitions for the TriFoiler are popular the length of the shock absorbers will become a highly talked about issue. All other sailors will not have a clue as to what you are talking about.

Good sailing.

Sincerely;

Greg Ketterman Ext. 203