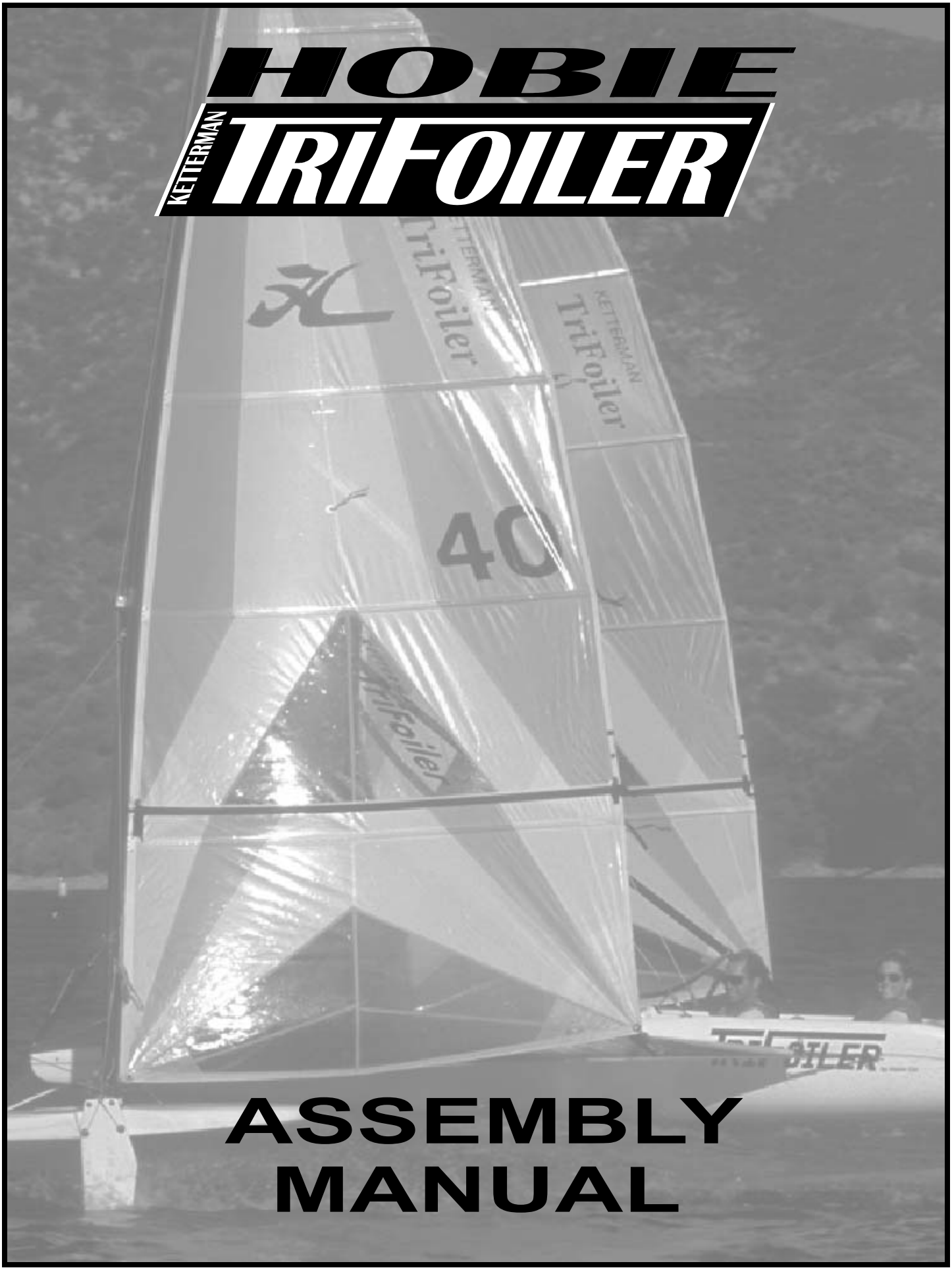
HOBIE
KETTERMAN
TRIFOILER
KETTERMAN
TriFoiler
40
ASSEMBLY
MANUAL

WELCOME TO THE HOBIE FAMILY

Congratulations on the purchase of your new ***TriFoiler*** and welcome to the HOBIE® sailing family.

We offer this manual as a guide to increased safety and enjoyment of your new boat. The purpose of this publication is to provide easy, simple and accurate instructions on how to get your ***TriFoiler*** ready for the water. Please read them carefully and familiarize yourself with the boat and all of the parts spread before you.

Whether you are a new sailor or a veteran of many years, we recommend that you read this thoroughly before your first sail and TRY IT OUR WAY FIRST! If you are new to sailing, this manual alone is not intended to teach you how to sail. There are many excellent books, videos and courses on the safe handling of sailboats. We suggest that you contact your local sailboat dealer, college or Coast Guard Auxiliary for recommendations.

Watch for overhead wires whenever you are rigging, launching, sailing or trailering with the mast up. *CONTACT OF THE MAST WITH POWER LINES COULD BE FATAL!* Be certain that the rigging area and the area that you'll be sailing are free of overhead power lines. Report any such power lines to your local power authority and SAIL ELSEWHERE.

We take pride in presenting the ***TriFoiler*** to you and hope that you'll take as much pride in owning her.

Fair winds and good sailing!

Hobie Cat

CONTENTS

This assembly manual takes you step-by-step through the setting up and sailing of your new HOBIE ***TriFoiler.*** This manual will help you understand each part in detail. For more information refer to the ***TriFoiler*** assembly video tape and your Hobie Cat ***TriFoiler*** dealer.

Setting up your TriFoiler **PAGE**

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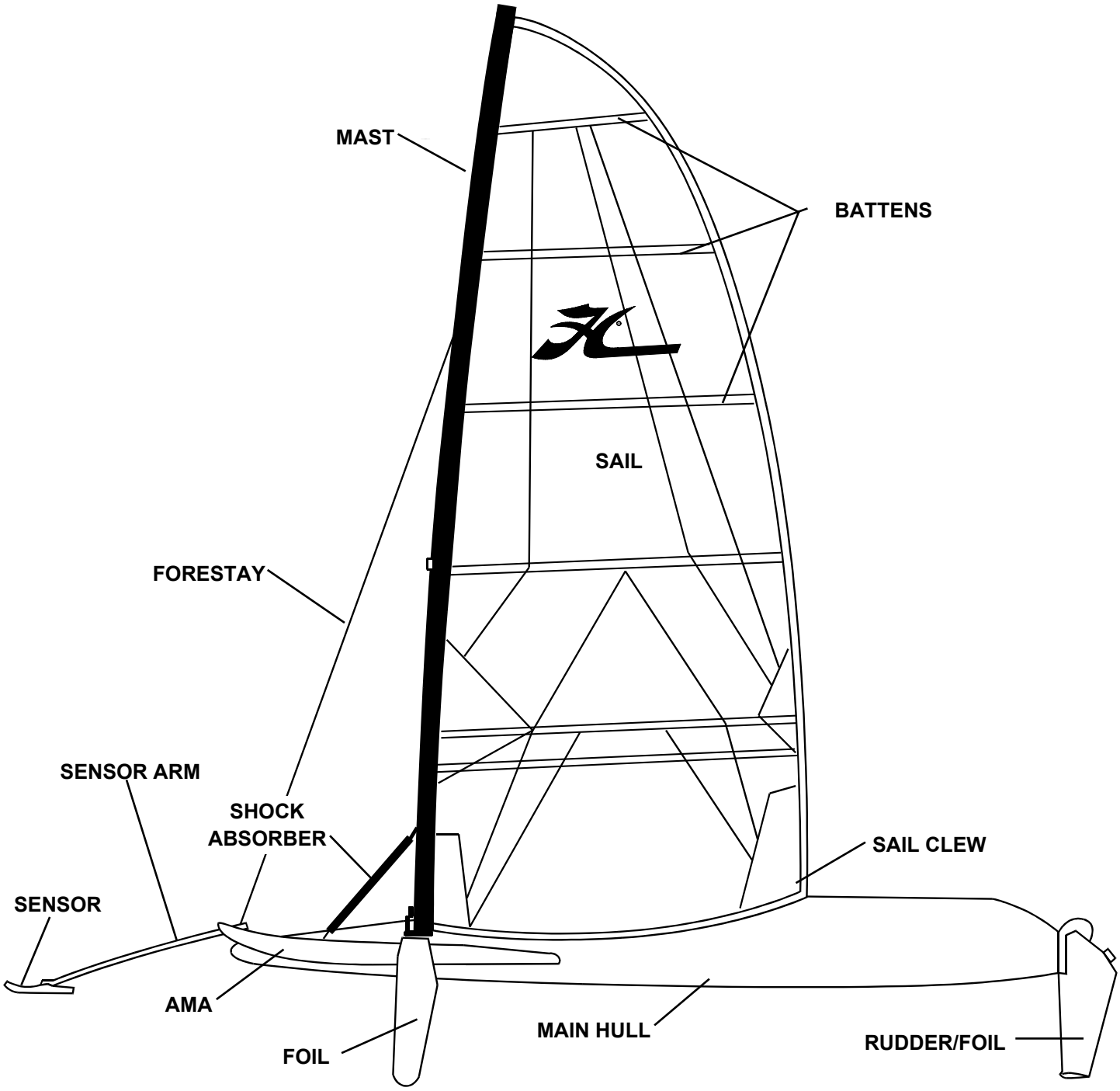
...The FUN starts here!

Basic *TriFoiler* Terminology



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ASSEMBLY INSTRUCTIONS

Assembling the TriFoiler from the Box

For shipping, the boat is disassembled. When removing the boat from the box, be aware that the forward foam block has a plywood sheet molded into it. The plywood is bolted to the bow of the boat with a single screw which is the bow plate screw. Remove this screw to remove the foam block then replace the screw for later use.

There are a few things you need to do to get to the point where the video assembly manual starts. The video owners manual shows how to assemble the boat and explains some of the features of the boat. It assumes that you already know how to sail. It will say the same thing as this paper owners manual, which came with the boat, but the video owners manual may be easier to follow. The video owners manual does a good job of showing how the boat is assembled once it is on the trailer.

Once the boat is removed from the box, the first thing to do is install the center portion of the main beam. Insure that the six control lines feed through the holes and into the main hull. Be sure they move freely. Using the four large screws, apply some sealant to the threads so they may be removed at some later date. Use a large Phillips screwdriver to snug the four screws.

You will find many of the parts in the rear compartment of the main hull. Use the same Phillips screwdriver to install the forestay plate. One 5/16 Phillips head screw holds this plate on. Please use sealant on this screw.

In the pouch in the rear compartment you will find: Two drain plugs for the amas with gaskets, Two black plastic hooks for the blue foil retraction lines after they are threaded through the beam, Two telltales to be put on the forestays, a small tube of Super Glue to fix the knot in the sensor bow line and a grey line with Two brass hooks to be threaded through the main beam for the mast rotation.

Using shackles, attach the forestays to the forestay plate.

There are Four control lines that need to be connected from the center beam to the outer beams. All are color coded, ie, red to red and green to green. Position the outer beams with the inner ends propped up near the center beam. Port and starboard beams can be identified by the bow wire casting. This casting is near the outer end of each beam and has four holes. This casting is on the forward side of each beam.

1) The red line is already installed in each beam. Connect the shackle on the pulley to the red rope with the loop on the end that is coming out of the end of the outer beam. After these connections are made, wrap the hog rings and the shackles with tape on all lines. The tape will prevent the lines or the shackle on the pulleys from getting caught on anything inside the beam.

2) There are two holes on the forward side of the beam. The boat comes with a small white feeder line in these holes and this feeder line will be used to pull the blue lines and the grey lines through that part of the beam. The blue line exits out of the top hole in the beam

KNOTS TO USE

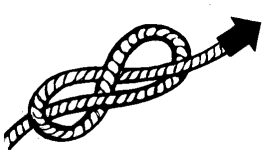
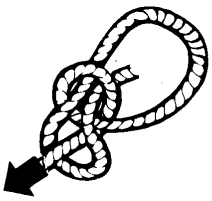
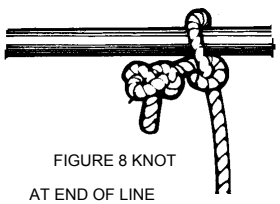


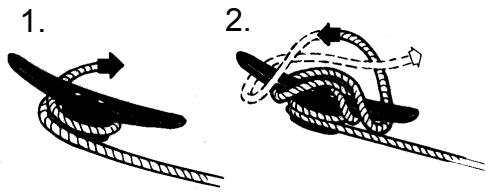
FIGURE 8 KNOT



BOWLINE KNOT



HALYARD KNOT



CLEATING OFF A LINE

and the grey line exits out of the lower hole on the beam. After the blue lines are threaded, put one of the black plastic hooks on the outer end of each.

3) There is only one piece of grey line. It goes from the front of one mast to the front of the other mast. The first step with the grey line is to feed it through the center main beam. Run it under all the pulleys. The grey line exits out the inner lower hole on the forward side of each beam and then it is tied to the brass snap hooks, one on each end. The length of this line is somewhat critical. When both masts are pointed straight ahead, the grey line should be pulled tight. Adjust this after the masts are stepped.

4) The green line is already threaded through the center beam. Connect the shackle on the pulleys to the loop on the green lines coming out of the end of the outer beams.

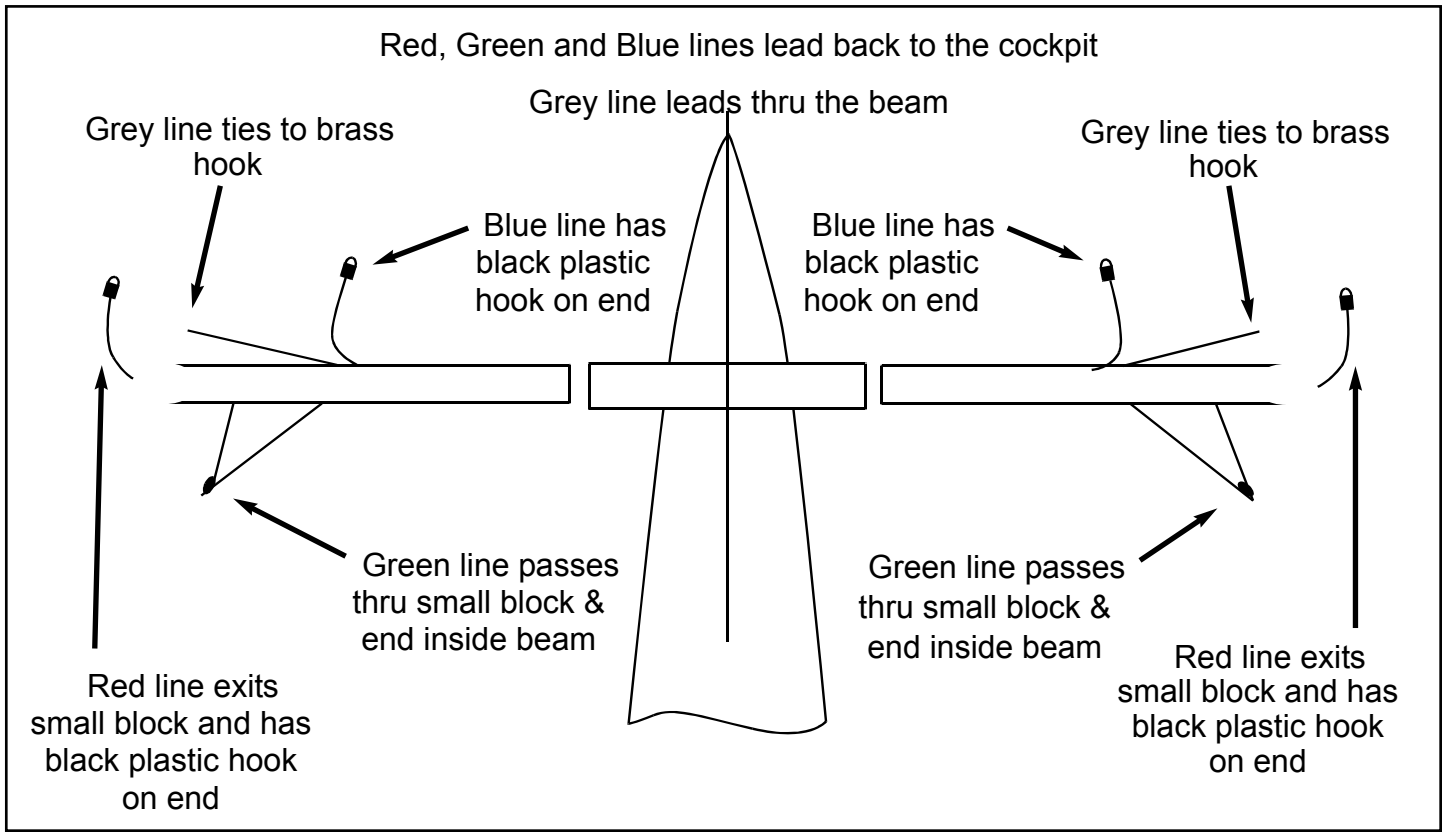
Take the king post out of the rear compartment and install it into the socket in the top of the main beam.

Install the rudder into the rudder casting. Remove the bolt from the casting and be careful not to lose the two plastic shims. Carefully push the bolt through the casting and through the rudder with a shim on each side of the rudder.

The first time the boat is rigged it is very important to adjust and fix the length of the sensor bow line. After the boat is completely rigged for the first time, use the following instructions to fix the length of the sensor bow line.

Install the sensor arm, the shock absorber and the sensor retraction line and completely retract the sensor with the sensor retraction line. Clip the brass hook of the sensor bow line to the pad eye, low on the mast, and tie a couple of hitches in the grey line. Adjust the length of the line so the sensor has a positive angle of attack (nose up). When the sensor is completely retracted there should be a little slack in the line, but the line will be quite snug when the sensor is down. When the length is fixed, apply a little Super Glue to the knot (a small tube is in the pouch in the back) to prevent the knot from coming out. If the line stretches and becomes too long, put a knot in the line to shorten it.

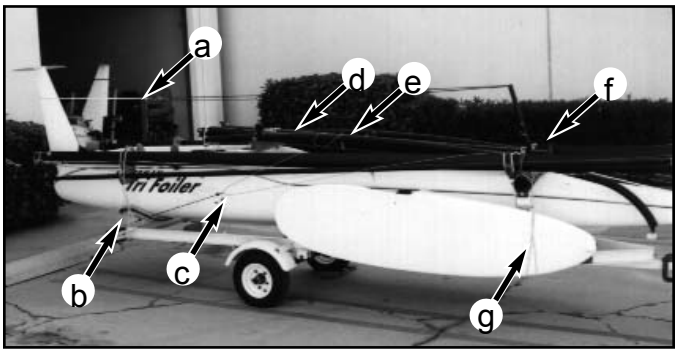
Now the boat is to the point where you see it in the video owners manual and you can finish rigging it with the assistance of those instructions.



RIGGING INSTRUCTIONS

Rigging the boat

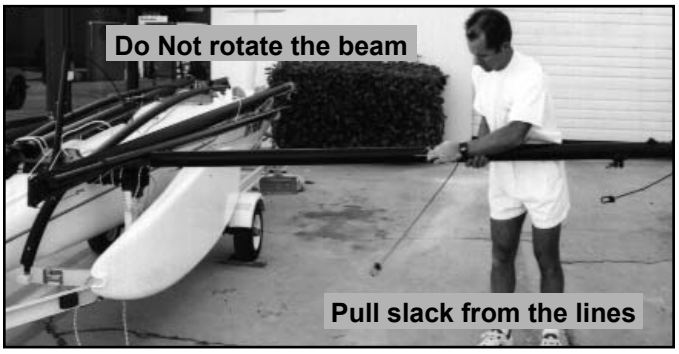
1) Unhook all bungi cords securing the parts to



the trailer.

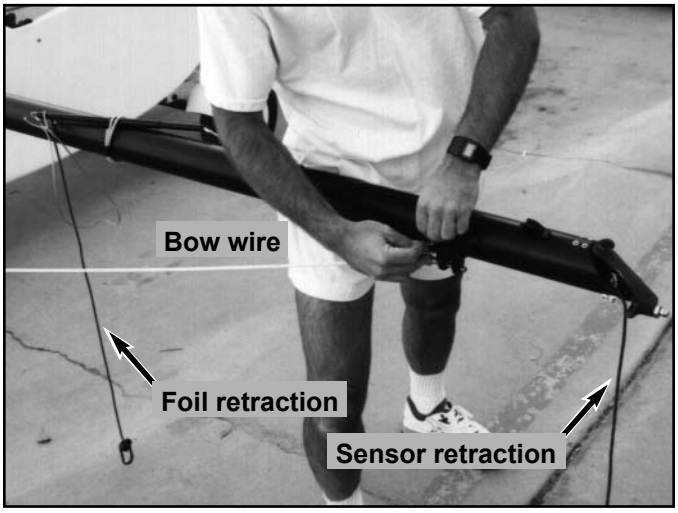
Beginning at the back of the boat: remove the bungis between a) the rudder and the king post wire b) the rear end of each mast c) The forestay d) the back end of each beam e) each bow wire f) front end of the masts, beams and booms and g) the bows of the amas. ***Do not remove the bungis that secure the main beam of the boat to the trailer until the boat is ready to be launched so the boat is more secure during rigging.***

2) Install the outer beams into



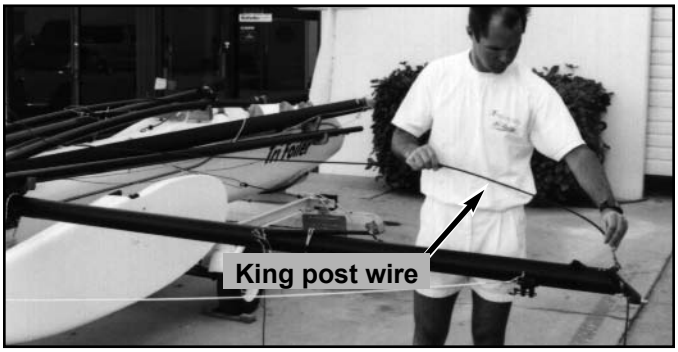
the center main beam.

Lift each outer beam from the trailer and hold it next to the center main beam ***(being careful not to spin the beam, twisting the control lines inside the beam)***. Pull the slack from the control lines so that excess line is inside the beam. Insert each beam into the center main beam. Push the beams in until their stainless tabs are seated in the stop indents.



3) Attach the bow wire.

Double check to make sure that the beam is still seated on its stops. Stand behind the beam and use your hip to bend the beam slightly forward. Put the pin in the hole that puts the least amount of tension in the wire. (ie if the pin will fit in a hole without bending the beam, flex the beam slightly forward and put the pin in the next hole further outboard on the beam.)



4) Attach the king post wire.

Hook each end of the king post wire onto the hook at each end of the beam. Be sure that the king post wire is fed under the forestay wire since the forestay will need to go up when the mast is raised.

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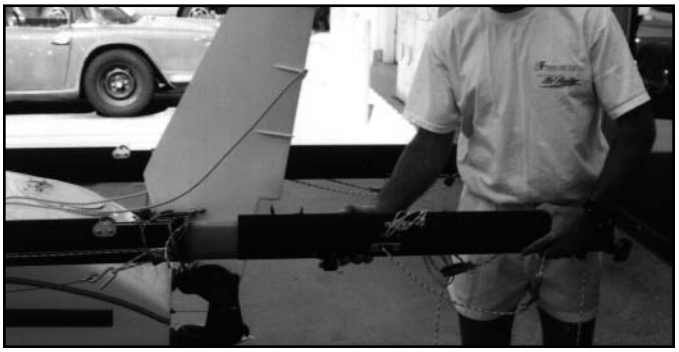
5) Attach the amas.

Lift the ama from the trailer and move out to the end of the beam. With the outboard side of the ama on your thighs, insert the pin on the outboard end of the beam into the hole in the ama casting. Align the holes on the inboard side of the ama with its beam fitting. Use your index finger to depress the button on the quick pin and insert it through the aligned holes. Repeat for the opposite side.

6) Attach the mast base to the



bottom of each mast.

While the masts are still on the trailer, remove the mast bases from the cockpit and place them onto the bottom of the masts.

There is a right and a left mast base. Make sure that the foil retraction lines and the halyard cleats are on the outward side of each mast.

NOTE: For good mast rotation it is good to lubricate the mast pivot points. There are four on each mast: the compression strut, the boom, the shock and the mast base socket. A little silicone lubricant is very helpful on these points. The steel quick pins work better with a little oil as well.

7) Secure the port mast base to the port ama.

Lift the port mast from the trailer and move back to pull the mast from under the king post wire. Move it forward until the mast base is near the ama and the top is forward of the boat. Set the mast down. Align the holes between the plastic mast base socket and the steel mast base bracket on the ama. Insert the quick pin.

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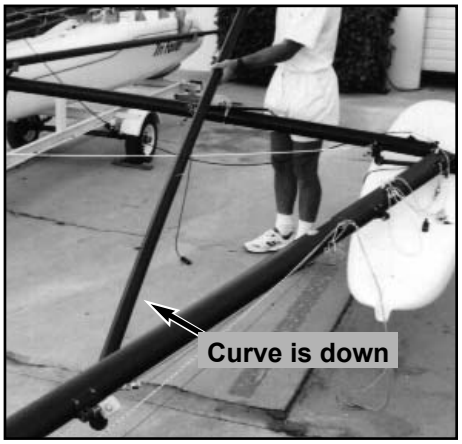
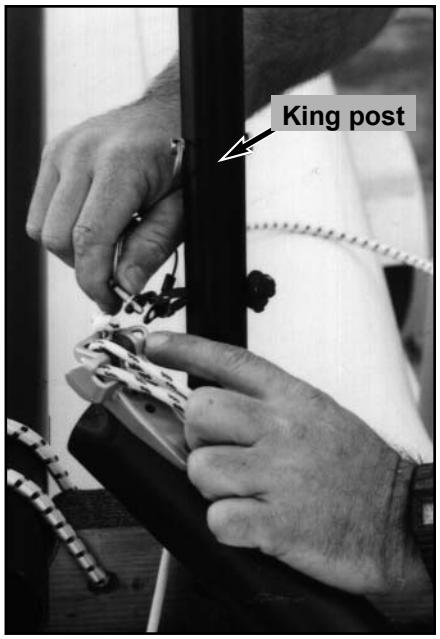
8) Attach the port boom to the port mast.



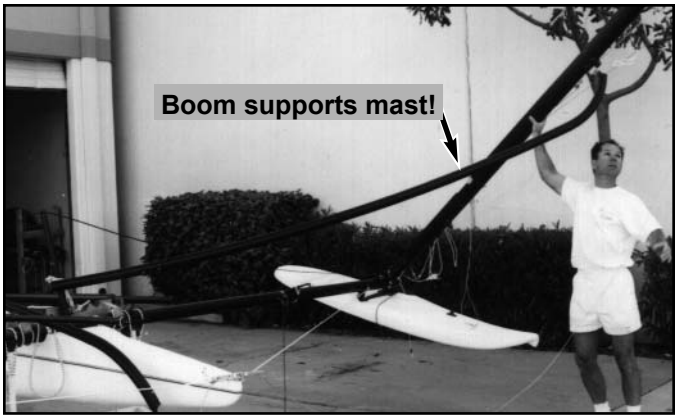
Slide the plastic block on the front end of the port boom over the pin on the port mast. Be sure that the curved portion of the boom is down. The plastic block is as shown in the picture. The 1/2" bolt is in the upper half of the block. A detent ball in the plastic block will engage into a groove in the pin on the mast. This ball will hold the boom onto the mast and would require a quick jerk to remove the boom from the mast.

9) Attach the rear end of the boom to the king post.

Connect the carbine hook, hanging from the king post, through the hole in the cleat on the end of the port boom.



WARNING!! **Watch for overhead power lines. Never rig, trailer or sail the boat near overhead power lines. Mast contact with a power line could be fatal.**



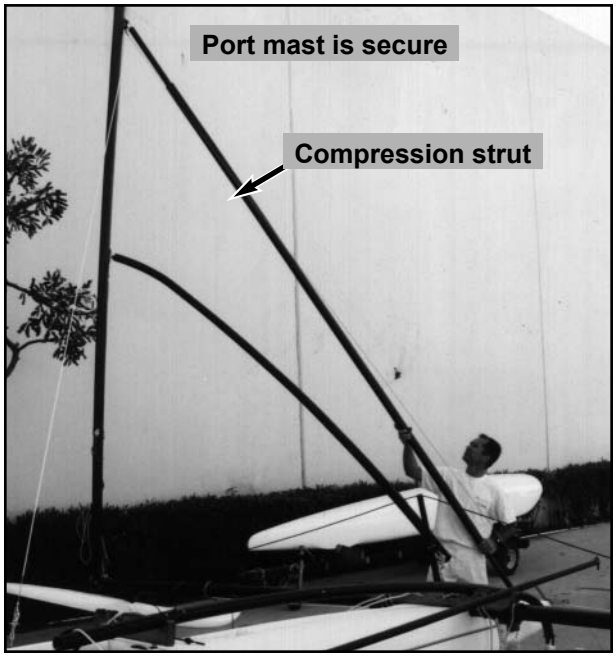
10) Raise the port mast.

If the trailer is not hitched to a car, beware that the tongue of the trailer may move as you push the mast up.

Being sure that the forestay and the backstay are clear, starting near the top half of the mast, walk the port mast up hand-over-hand to the upright position. ***Watch to make sure that the mast is not binding on anything when the mast is going up or down.*** Once the mast is up it should only require a small amount of pressure to keep it up. Walk back holding tension on the backstay and hook the backstay to the pad eye on the hull.

The port mast should be secure and held in place by the forestay, backstay and port boom.

11) Attach the compression strut to the port mast.



Always put the compression strut onto the port mast first. The compression strut screws onto each mast. *(The threads on the port mast are a little longer.)*

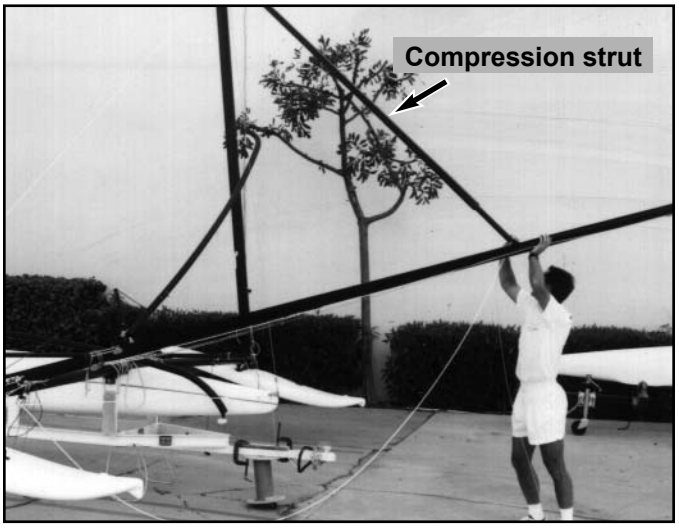
Lift the compression strut from the trailer. Lift one end to insert the threaded pin on the port mast into the hole on the end. Screw the compression strut all the way onto the port mast. Let the compression strut hang from the port mast and prepare the starboard mast.

NOTE: The compression strut can be installed before or after the port mast goes up.

12) Secure the starboard mast to the starboard ama.

Use the same procedure as the port mast.

13) Attach the starboard mast to the compression strut.

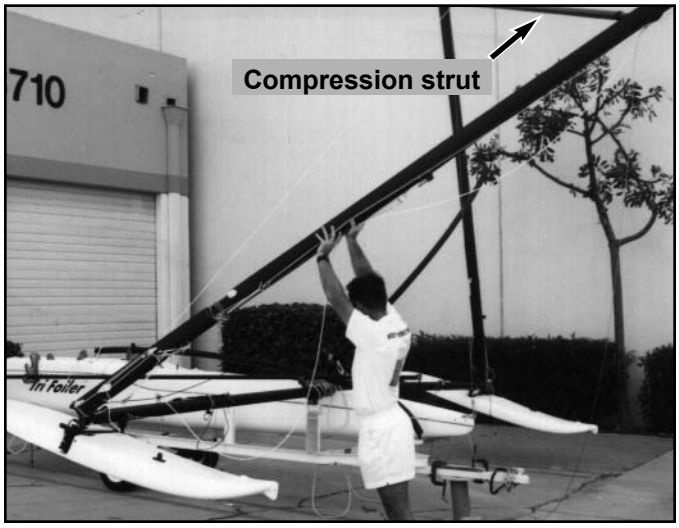


Move the top of the starboard mast closer to the port side so that the compression strut will reach. The starboard mast will be at its limit of articulation at this point.

Get the threads started onto the starboard mast. As you spin the compression strut onto the starboard mast it will partially unthread itself from the port mast. The starboard side should bottom out while there are plenty of threads still engaged on the port mast.

When de-rigging, simply unscrew it from the starboard mast and then unscrew it from the port mast.

14a) Raise the starboard mast and compression strut.



Walk the mast up. Holding tension on the backstay, walk back to the cockpit and hook the backstay to the pad eye on the hull. Make sure that the lashings are completely extended. Use a small amount of force to get the hook onto the pad eye. The mast should be secure at this point. Now is a good time to double check the rig before you completely tighten it. Make sure that the compression strut is engaged onto the pins at each end. Make sure that all the wires are straight and not kinked. Make sure that the outer beams are completely engaged into the center main beam.

14b) Backstay Tension

We are using a 3:1 purchase system on the starboard backstay. This will allow you to comfortably hook up the backstay and tighten the whole rig.

After checking the rig, tighten the system all the way until the cleat bottoms out on the stainless steel hook. Cleat the line and tie a bunch of hitches in the rope to use up the excess line.

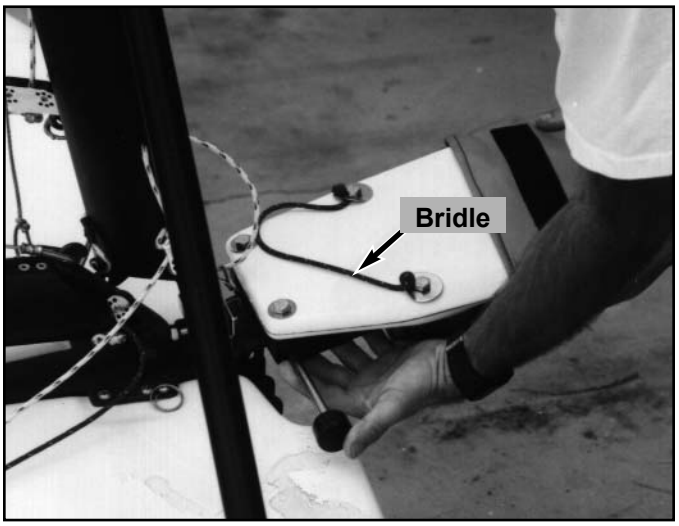
When de-rigging the boat, ***BE SURE THAT THE PORT BOOM IS CONNECTED TO THE KING POST.*** Untie the knots in the backstay purchase system and slacken the system all the way before unhooking the backstay.

15) Detach the port boom from the king post.

Detach the port boom from the king post. Temporarily hook the outhaul to the port shroud. The port mast will not rotate fully with the boom connected to the king post.

16) Install both shock absorbers.

The body of the shock goes down and the shaft protrudes from the top. Attach the top portion to the mast first and then the bottom of the shock to the fitting on the deck of the ama.



17) Install the foils.

The foils curve under the boat and the air dams are on the leading surface. Keep most of the foil inside the cover to protect the foil while installing it. Remove the pin from the foil plate. Align the holes of the foil plate with the holes on the ama and install the pin. Now connect Three hooks; **1)** Connect the brass hook to the wire thimble next to the mast base. **2)** Connect the brass hook to the short bridle rope on the foil. **3)** Connect the plastic hook on the blue rope exiting out of the beam to the blue rope exiting near the mast base. These three connections are necessary to retract the foils.

18) Raise the foil and remove the cover.

Pull the blue line and cleat it into the jam cleat on the beam, then cleat it into the cam cleat in the cockpit for safety. Remove the cover.

NOTE: You may want to leave the covers in place until you are ready to launch the boat to further protect the foils.

19) Install the sensors.

Remove the sensors from the cockpit. Place the hole, located in the back end of the sensor arm, over the small stainless steel pin in the deck of the ama. Then align the horizontal hole in the sensor arm with the holes in the ama and insert the black aluminum pin. Secure the pin with the bungi cord by looping the end over the opposite end of the pin.

20a) Hook up the sensor retraction line.

Uncoil the grey line from the mast. Hook the looped end of the grey line to the black plastic hook on the red line (coming out of the end of the main beam). The grey line runs over the small block on the mast then out to the end of the sensor arm. Hook the plastic hook to the pad eye on top of the sensor arm.

20b) Sensor Bow Line

The sensor bow line is the grey line which is attached to the bow of the sensor. The brass hook on the end of the line hooks to the pad eye on the mast. The pad eye is on the front of the mast and is located about 5” inches from the bottom of the mast.

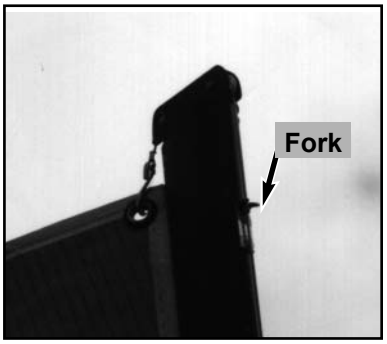
This line is very important to the safe operation of the boat **(see page 5).** Please be sure it is operating correctly and the line length is correct. The line length should be adjusted so that the sensor always has a positive angle of attack (front end up). The line will have some slack when the sensor is completely retracted, but the line will be quite snug when the sensor is all the way down.

21) Raise the sails.

Attach the halyard to the head of the sail. ***Make sure the boat is turned into the wind.*** The first two-thirds of the sail should go up very easily, but because this is a fully battened sail with considerable luff curve it may catch in the luff opening as the sail is raised. *Hint: push up on the sail and keep the sail bunched up in the lower part of the track while it is going up.* This will negate the effects of the luff curve and the sail will go right up. While pushing up, it is not necessary to feed the sail into the track. If you do not push the sail up, the sail will not feed in and it will jam.

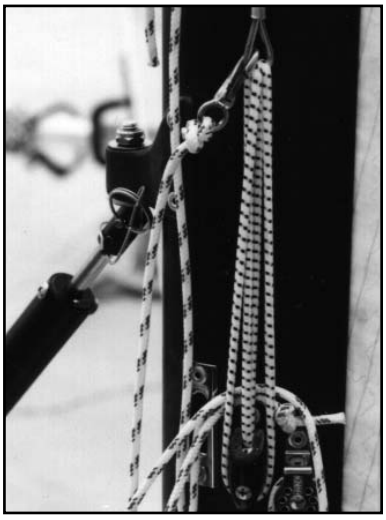
22) Lock the halyard.

Once the sail is all the way up, you will lock the halyard by getting the locking ball under the fork at the top of the mast. First make sure that the ball is below the fork by pulling the sail all the way to the top. Then place the cable between the forks and pull the sail down by the foot while easing the halyard out. The ball will get forced into the fork.

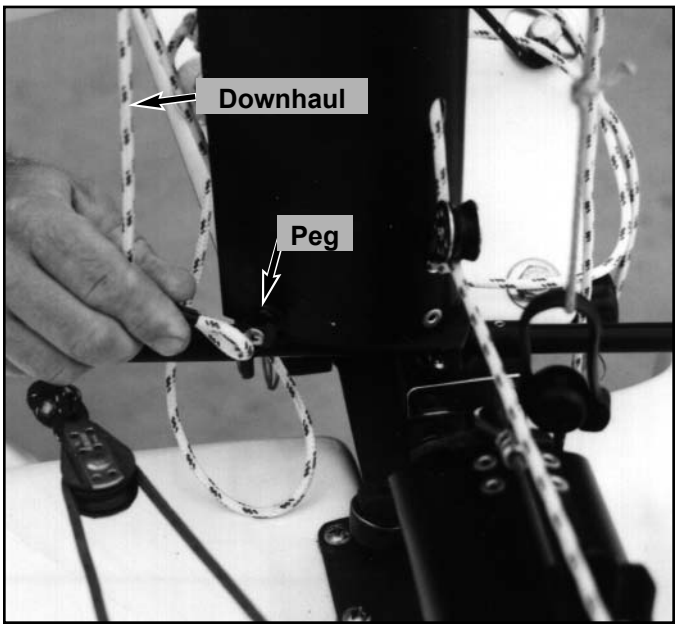


23) Remove the halyard and stow it.

Thread the bungi cord on the mast through the thimble on the end of the halyard cable and secure it to the plastic hook. Unhook the rope halyard from the cable and stow the rope in the back of the main hull.



24) Secure the downhaul.



Feed the lower part of the sail into the mast. Insert the tail end of the downhaul through the tack of the sail and then hook it to the peg on the base of the mast. Pull the downhaul tight until all the wrinkles are gone from the luff of the sail and cleat it. Coil the excess line and secure under the downhaul lines.

NOTE: The boat will be easier to handle on the beach during windy days if the downhaul is loosened while beached.

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25) Attach the starboard boom.

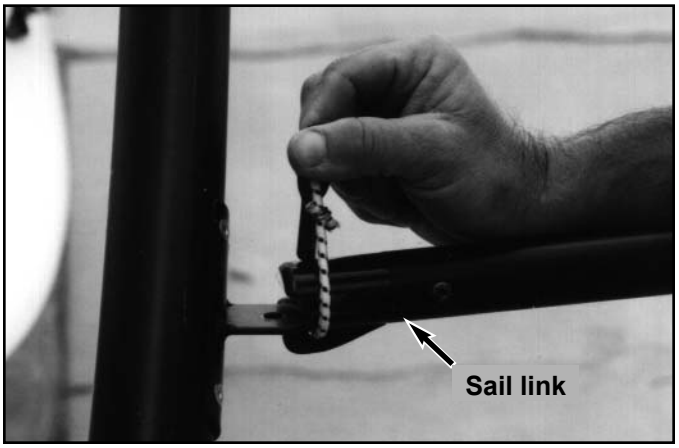
Lift the starboard boom from the trailer and install the pin from the mast into the hole in the plastic block on the boom. Again, the plastic block has a detent ball in it and will require a short, quick push or pull to get the boom on or off.

26) Attach and tension the outhauls.

Be sure the lines are straight and hook the outhaul hook to the clew of the sail. Tighten the outhaul and cleat it in the jam cleat. A bungi cord will pull the excess line into the boom for storage.

27) Install the sail link.

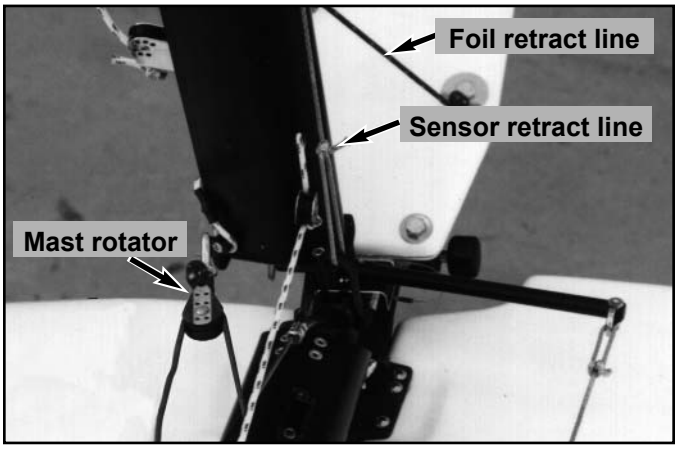
Note the stickers that identify the port and



starboard ends of the sail link. While on the trailer, the starboard side is to rear. The pad eye near the center of the sail link should be up. Lift the sail link from the trailer and rotate it counter-clockwise to attach the ends to the booms. Note that the pad eye is about 5” to the starboard of center line.

Be sure that the stainless tabs on the booms are horizontal and not vertical before attaching the sail link. If the booms are reversed, connecting the sail link will damage it by preventing normal rotation. Be sure that the connecting pin inserts as shown above.

28) Position the mast rotator bars.



Lower the mast rotator bar to the forward-pointing, horizontal position and attach the grey rotation line. Attach the rear rotation inducer line (green) to the eye strap located on the rear lower mast base.

29) Install the seat.

The smaller ID tube goes down and forward. Install the forward tube and install the rear tube in the corresponding slot in the rear support. For example, if the forward tube is in the second slot from the front, the rear tube will be the second slot from the front. The seat should have good tension in it.

Now the boat is ready.

When you are ready to launch, remove the trailer tie-down bungi from the center beam area.

NOTE: When launching the boat lift with your knees and not your back.

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USING THE TRIFOILER

De-rigging

The de-rigging process is the reverse procedure of the rigging process. Here are a few reminders. The first step is to get out the sail covers, foil covers and put all the spar racks on the boat. Remove the sail link. As soon as you undo the outhaul for the port sail, connect that boom to the king post.

Do not release the backstays without clipping the port boom to the king post!

Take off the sails, starboard boom, mast rotators, foils, shocks, sensors. ***Check the port boom connection to the king post!*** Then lower the starboard mast. Stow the starboard mast and compression strut. Lower the port mast and stow the mast and the port boom. Remove the amas and the beams. Clip on all bungi cords, double check everything and you are ready for the road.

Controls and Operation

Steering

The standard TriFoiler comes with bicycle steering, meaning if you press with your right foot you will turn left. It can be switched to airplane steering, ie, where if you press with your right foot it will turn right, but bicycle steering is highly encouraged.

In the event of a problem with the steering pedals or during beaching and launching it is possible to steer the boat while seated on the rail in the back of the cockpit.

Mainsheet

The center large rope is the mainsheet, or more precisely, it is the traveler control. There is a 4:1 purchase system in the main hull which pulls the sail link to center line and thus brings the sails to center line. There is a large cam cleat for the mainsheet.

Sensor Retraction Lines

The two red lines with a red knob will pull up on the sensors. Raising the sensors off the water when the wind is light will greatly reduce the drag at low speed. Lift the sensors up when the wind is light, there is no hope of getting onto the foils and when you put the boat on the beach. ***Be careful when moving the boat backward or sideways on the beach so that the sensors do not get stuck in the sand and damage the sensor arm or the bow of the ama.***

Raising the sensors off the water in marginal wind may allow you to get onto the foils in slightly less wind than otherwise possible. Once you get onto the foils, make sure these lines are all the way out or the sensor will not stay on the water and the boat will fly too high.

Foil Retraction Lines

The blue lines are meant to retract and deploy the foils; however, there is some technique required to retract and deploy the foils.

Deploying the Foils

To lock a foil down it is necessary that the foil being locked is on the leeward side of the boat. If the foil is on the weather side of the boat, water pressure will prevent the foil from coming down all the way and locking. When the foil is on the leeward side, the water pressure will push the foil down and in. It might be necessary to sail on both tacks to get both foils locked down. If the boat is in irons, it is possible to simply push the sail link from side to side, which will move the boat side to side and lock both foils down.

If you release the line and the foil does not go down, see if it is cleated in the cleat on the beam. If it is, pull on the line to un-cleat it. If the line still does not go out, try releasing the sensor retraction line. If the lines are twisted in the beam, tension on the sensor retraction line can cause too much friction on the foil retraction line.

Retracting the Foils

Do not retract both foils unless you are ready to jump out. The boat will not go to weather

and will not go into irons unless there is at least one foil in the water. Refer to beaching and launching instructions.

The weather foil will come up simply by pulling on the line. On the leeward side water pressure is pushing the foil down and in and the foil retraction system is not designed to overcome this force. Therefore, go into irons, stop the boat, and raise that foil.

Mast Rotation lines

The green lines near the pilot's thighs are for rotating the masts after each gibe or tack in light wind. In heavier wind the masts will rotate by themselves, but in light wind the masts need help to rotate onto the new tack.

The length of the grey line that goes between the front of each mast is somewhat critical. If it stretches and becomes too long, it will not completely rotate the leeward mast. We have found that it is best to simply put a knot in the line to make the adjustment.

The masts are easiest to rotate when the sails are filled with wind and driving the boat. A loose outhaul will make it more difficult to rotate the mast. Proper lubrication of the four joints (shroud pin, boom pin, shock pin, and mast base socket) on each mast will make mast rotation easier.

Rudder operation

The rudder can be retracted and deployed while sitting on the edge of the cockpit in the back or while standing next to the boat in the water.

To lock the rudder down, release the holding clip and push the rudder down until the bullet clicks into position. It is a good idea to check the rudder to make sure it is locked down before sailing.

To lift the rudder, simply pull up and forward on the large black knob. This action will do two things, first it will unlock the rudder by pulling the bullet away from its lock, and second, the rudder will start to come up. Pull the rudder all the way until it locks into its locked-up position. Replace the holding clip.

If the rudder hits something while moving with speed, a shear pin should shear and the rudder will kick up. The shear pin holds the bullet on the threaded shaft. There are spare pins in the pouch in the rear compartment, but it may require a tool to drive out the old pin. A 1/8" punch or nail and hammer will do it. A piece of tape should be used to keep the pin in place.

The rudder rake adjuster or the rear ride height is covered in the tuning section.

Beaching and launching

It is easier to launch and land the TriFoiler with the help of a friend holding the boat. The beginner sailor should always have help when launching or beaching. It is surprising how quickly the boat can drift and move while a beginner is getting ready. The sensors should be retracted when on the beach or when preparing to come into the beach.

The use of a small buoy anchored off the beach is recommended. It will be easier to hold the boat while getting ready and it is easier to grab a buoy or trailed line when coming back to shore. A paddle will also be very helpful.

Launching from a beach with the wind blowing off shore

It is possible to simply float the boat in knee deep water, jump on, let the boat drift back into deep water and then deploy the foils. ***Always deploy the foils before the rudder because the foils will help keep the boat pointed into the wind.*** The boat will not stay in irons if the foils are retracted and the rudder is down.

If the wind is strong or the launching area is congested, it is safer to lock the foils down before you get on the boat because with the foils retracted the boat may not drift straight back. Therefore, while standing in waist-deep water, lock the foils down, then climb onto the bow of the boat, then move carefully back to the cockpit. Lock the rudder down and double check that the coast is clear. It may be preferable to do some sailing while holding the rudder by hand to get the boat into a safe position before you get seated.

Launching from a beach with the wind blowing on-shore

This is very easy with two people, but may be difficult solo. It is important to get all three foils locked down before you get into the boat. It should be easy to lock down both foils while the boat is pointed into the wind by using the sail link to move the boat from side to side. It is important to keep the boat pointed into the wind. *Refer to the section (pg. #18) on keeping the boat pointed into the wind while standing at the back of the boat*. After the foils are locked down, lock the rudder down.

When you are ready to go, let the bow of the boat point away from the wind slightly, sheet in a little and let the boat start to sail. The tricky part is that you must keep some tension on the mainsheet, a hand on the rudder and jump into the boat at the same time. If you let go of the sheet or the rudder, the boat will round up into the wind and you may have to start over. If you let the boat round up into the wind, you may not be able to get it out of irons before drifting back onto the beach.

There are a couple of ways to do this. One is to use the traveler line (white nylon line connected to the center of the sail link) to sheet the sails in while lying on your stomach on the back of the boat and steering with one hand. Once the boat picks up some speed, you may take your hand off the rudder for a little while to get more comfortable, but sail out about 100 yards or so before you get seated in the cockpit.

Launching from a beach with a side-shore breeze

This situation should be handled the same as if the wind were blowing on-shore except that it is not as important to get both foils down. It is important to get at least the leeward foil and rudder down. Use the same technique to jump on as described above for launching with an on-shore breeze. Once you get out on the water you can go into irons, get seated and get the weather foil down.

Beaching with the wind blowing off-shore

The TriFoiler will not sail upwind with the foils retracted; therefore, it is necessary to sail in close with the sensors retracted and the foils down until you know the water is shallow enough to get out (But not so deep that your will not be able to hold the boat). If the shore is steep, sail slowly until you feel the foils touch bottom. If the shore is steep and rocky, you should have help on shore to prevent damage to the boat.

Once you are standing on the beach, go to the back of the boat and raise the rudder while keeping the boat pointed into the wind. When the rudder is up, move to each ama and raise each foil using the cleat on the beam to lock up each foil. When the foils are retracted, the boat can be pulled up the beach.

Beaching with the wind blowing on-shore

If the wind is light, it is possible to retract the foils out on the water and sail the boat right up the beach. Retract the foils and sensors out on the water. Sit on the rail in the back and steer the boat by hand. When nearing the beach, unlock the rudder and raise it up part way. Before the rudder touches bottom, and lock the rudder up and let the boat drift into the beach.

If the wind is strong, it is necessary to turn the boat into the wind and let it drift backward onto the beach with the foils up. It is surprising how fast the boat will drift backward, so put the boat into irons off-shore and then pull up the rudder. Be sure that the boat is straight into the wind. If you raise the foils and the boat is not straight into the wind, it may drift sideways more than back. Be sure to raise the rudder before the foils. If you raise the foils before raising the rudder, the boat may not stay in irons.

With the foils and rudder up, let the boat drift back into shallow water ***(be sure that the water is not too deep and never let go of the boat)*** and hop out. Be aware and keep the boat pointed into the wind. Then pull the boat up the beach.

Beaching with a side-shore breeze

This is similar to beaching with an off-shore breeze, but it helpful to retract the foil that will be closest to the beach when the boat is pointed into the wind. This will allow you to get closer to the beach without the foil hitting bottom. It

is best to retract that foil before you get close to the beach. When you are heading toward the beach, the leeward foil will be retracted so you will not be able to push it hard or that hull may submerge. Therefore, sail slowly toward the beach. As the water gets shallow, start turning into the wind. Get the rudder up. As soon as the rudder is up, jump out and keep the boat into the wind. Retract the remaining foil from the cockpit and you are ready to pull the boat up the beach.

Reefing

The TriFoiler has 215 square feet of sail. The sails can be reefed to 150 square feet. It is desirable to reef once the wind is above 16 knots. Beginners should learn to sail with the sails reefed as the boat is easier to sail this way. The masts rotate better and things happen more slowly, although the top speed of the boat is better with the sails reefed.

To reef: undo the outhaul and the downhaul. Undo the load straps and unzip the panel. Attach the rope halyard and unlock the halyard at the top of the mast. Let the sail down and lock the halyard in the reefed position. Coil the excess halyard and stow it onto the mast. Redo the outhaul, the downhaul and it is ready.

When replacing the panel, make sure there is tension on the load straps.

Skills the TriFoiler Pilot Should Have

Getting out of Irons

Irons: the boat is pointed into the wind and cannot sail.

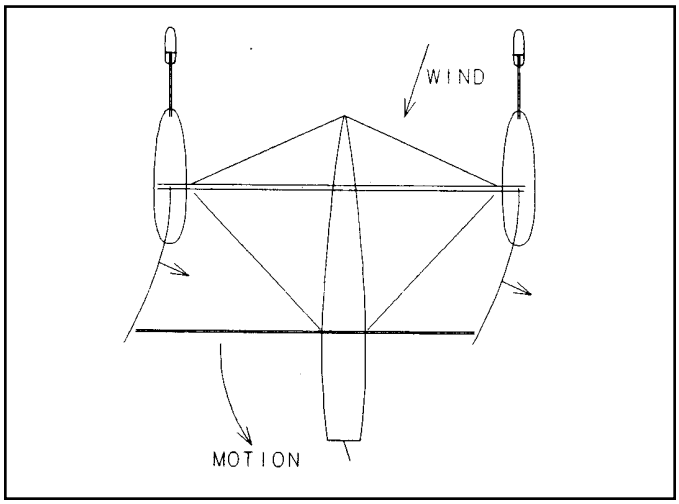
Since the TriFoiler does not have a jib, there are several techniques one can use to maneuver when it is in irons. Getting out of irons becomes more difficult as the wind speed increases. The reason for this is not obvious, but it is good to understand why. The basic reason is that the center of effort on the sail moves back as the wind speed increases and the boat has a greater tendency to round up. In light wind it is easy to sheet in tight and make the sails work properly; then the boat can take off. In stronger wind it is difficult to sheet in tight and get the sails to fill totally and work properly.

As you sheet in, the center of effort will move forward and cause the bow to bear away, but ***you should not sheet in too much or you will sink the leeward ama***. Therefore, you need to sheet in tight, but be ready to sheet out quickly if the leeward ama goes under.

The pilot can do several things to get out of irons:

1) The new sailor should learn to back up the boat. This takes practice. There is a lot to learn about getting the boat to go backward, but once it is going backward you can use the rudder to steer it away from the wind.

In stronger wind the boat will begin to drift



backward by itself, but it is good to know how to use the sails to go backward. In general, to get the boat to go backward you want to use the sail link to push the sails away from center line, but if the wind is coming from the wrong direction, the boat will sail forward or sideways and not backward.

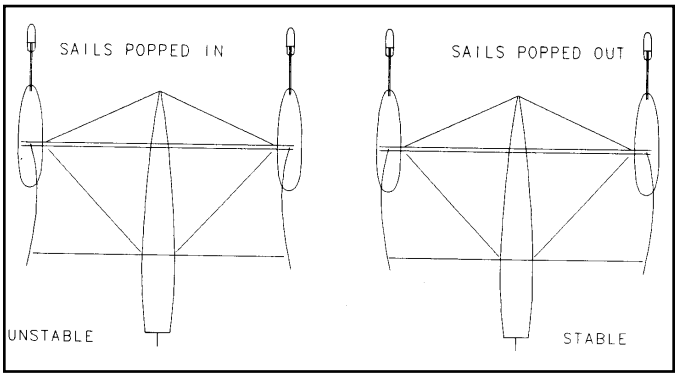
If the boat does not go backward when you push the sails out, you should push the sails out to the other side. If the wind is slightly off the nose, it will go backward much more easily with the sails on one side as opposed to the other. For example, if the wind is coming slightly off the starboard side, you want to push the sail link to the port side and turn the rudder to the right. Since the boat is going backward, it will turn to the left.

Once the boat has backed up and turned sufficiently away from the wind, you can sheet in, reverse the rudder (turn to the left) and take off. If the wind is strong, you need to sheet in quickly as the boat will begin to round up as the sails are beginning to fill. The boat will tend to round up when the sails are partially filled, but once they are completely filled, it will begin to bear away and move forward.

2) You can skull the rudder to help turn the boat. For example, turn the rudder all the way to the right slowly and then quickly turn it all the way to the left. This action will turn the boat slightly to the left. This is only helpful when the wind is light, but can be useful in tight quarters.

3) Retracting the sensors will help you get out of irons. At low speed, the sensors will create some lateral resistance and since they are well forward they will cause the boat to head up. If all else fails, pull the red lines and retract the sensors. Just remember to release them as you pick up speed.

4) The curve of the battens will have an affect on the action of the boat. If the battens are curved out on each sail, the boat will be very difficult to get out of irons. If the battens are curved in, it will be impossible to keep it in irons. To get the battens to pop over, you can give a quick push or pull on the sail link to pop them to the other side.



Boat Handling

The new sailor should practice boat handling in open water so he/she is proficient at handling the boat in confined areas. It is quite likely that you will be able to sail all day with no problems; but, you may suddenly need to get out of irons and onto a particular tack and you have very little space to back up. It is important to know how the boat will respond to different inputs in various conditions.

The key things to look for are which direction the wind is blowing and in which direction the boat is moving. Keep "tell tales" on the boat. A piece of yarn or magnetic recording tape half way up the forestays is best and look at the water next to the hull to determine if the boat is moving forward or backward. Whether the boat is moving forward or back will determine which way to turn the rudder.

Tacking

When on the foils, a tack is very easy to do. Simply turn into the wind. Start the turn slowly, but as the boat slows down, increase the rate of the turn until the rudder is all the way over. For a better tack, sheet in as the boat nears the eye of the wind. Continue turning until you are on a reach again. Let the sheet out so that the sail link is about 2' off center line or the sails will stall when you start the new tack.

It is possible to complete tacks with boat speed when tacking on the foils in smooth water with the sensors retracted. Be sure the sails are set right and that boat speed is good. Begin the turn slowly and increase the rate of the turn as the boat slows down. Sheet in as the boat nears the eye of the wind. The boat should come through the eye of the wind with some speed.

Sailing upwind, when the wind is above 13 knots, it is fastest to sail on the foils. Get onto the foils and then head up as high as possible while keeping the boat on the foils. If you feel it is slowing down or coming down, bear away and get more speed.

If the wind is marginal, it might be faster to come off the foils and sail in displacement mode.

It is easy to over-sheet. The sail link should be about 1' off center line.

Steering by Hand

Occasionally it is desirable to sail from the back with a hand on the rudder and a hand on the mainsheet. If anything goes wrong with the steering pedals, it is good to be able to steer by hand. It is a good idea to practice this method to see what is involved.

Keeping the Boat in Irons while being Held by the Stern

Occasionally it is necessary to keep the boat in irons while holding the boat from the stern. This is difficult because it is like balancing a broomstick on the palm of your hand. It is unstable. This is the case when you are preparing to leave from a beach with the wind blowing on shore or you have backed up to a dock or are taking on a passenger from a power boat etc. *This is where you should exercise some caution.* As long as you keep the boat in irons, everything will be OK. If it bears away too far, it will take off.

If it goes past the point of no return, try to grab the sail clew or boom near the clew.

The sails can be used very effectively to steer the bow into the wind. Use the sail link to steer the sails and keep the bow into the wind. If the bow starts moving to the left, push the sail link to the left and the sails will push the bow to the right and vice versa.

Tuning

Adjustable Shock Absorbers

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), 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, the shock will press the bow of the ama too low and it will require more wind to get onto the foils.

Sensor Rising only occurs on the leeward side, because the leeward side lifts a lot more weight. Anytime the foil is required to lift more weight, 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 heeling force. Even with the boat properly adjusted, it may be possible to cause Sensor Rising by trying to get onto the foils while pointing too high.

There are techniques that can help avoid Sensor Rising. Once the boat gets up to speed, the sensor will stay on the water. If 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, be patient. Do not let the boat accelerate until the foil comes to the surface, because it will draw air and sink 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. A little patience will usually get you on the foils.

Normally it is best to sail with light spring pressure. The boat gets on the foils in as little wind as possible and the sensors are as lightly loaded as possible. When sailing solo, you may see sensor rising. When sailing with a passenger, you will routinely see sensor rising, so use the above technique to get the boat on the foils. When letting a novice sail the boat, increase the spring force so they do not have to worry about sensor rising.

The length of the shock can be adjusted simply by turning the shock while installed on the boat.

If adjustments are made to the ride height of the boat, theoretically, it will be necessary to adjust the shocks.

Ride height of the stern

This is the most important part of tuning the TriFoiler and maybe the trickiest. The TriFoiler will tolerate some divergence from the ideal ride height, but the pilot should know

what is ideal and what the symptoms are from riding too high or too low.

Remember that it is better to err on the side of riding too low than too high. For the back of the boat it is important that the stern of the boat not ride up too high. It is very difficult for a new pilot to judge how high the stern of the boat is riding since you cannot see below the main hull.

One method of determining the height of the stern is to stretch your arm over the side and reach for the water. Of course this will depend on how long your arm is, so calculate how far you need to stretch to reach the water with the stern 8" off the water. Sit in the boat when it is on the trailer and put something on the ground so it will be 8” below the bottom of the hull. If you cannot reach the water, maybe you can look over the side and estimate the distance between the tip of your finger and the water. The distance should not be measured from the wave tops but from an average of the surface.

You also want to be careful at what speed you measure the height of the stern. The stern will rise up when you are going faster, so you want to measure the height at a pretty good speed. (I recommend about 26 mph). If this does not work for you, you could simply start with the stern very low and slowly raise it until the stern just comes off the water when you get up to speed.

The ride height is critical for several reasons. The steering will feel very unusual when the stern is too high because you will not have enough rudder area in the water. If the rudder is too high it is possible that it could ventilate all the way down past the lowest fence and to the horizontal foil. If the rudder does ventilate all the way down to the horizontal foil, you will lose a lot of directional stability and the stern will drop down 6" or so.

It is important to keep in mind that the boat works best at just the right height, which is just off the water. The objective of the foils is not to lift the boat to a specific height, but to lift the boat just off the water. If the rudder comes up too high, the leeway angle becomes too high. If the speedometer stops working because the Pitot tube comes out of the water, that is much too high.

To change the ride height of the back of the boat, turn the large black knob to the right or clockwise to lower the boat, and to the left or counterclockwise to raise the boat. One full turn will change the ride height 1.5 inches.

If you are just starting out and do not know where the rudder should be set, lock the rudder down and turn the knob to the left all the way until it stops; and then turn it back about five turns.

Caution: ***If you turn the knob all the way to the left, the bullet may be jammed into its lock and the rudder will not swing up when the knob is pulled to release it***. To get the rudder up, turn the knob to the right several turns and it will swing up.

Ride Height of the Main Foils

The ride height of the main foils is also important. It is easier to see how high they are flying. Once the main foils are set, there is no reason to change them. The main foils are not as sensitive to crew weight because they have the active control system of the sensors.

The angle of the main foils is set at the factory. The foils are set so that the distance from the trailing edge of the foil 10" from the bottom tip of the foil to the bow of the ama is 58 5/8" for the starboard ama and 58 1/4" for the port ama. The foil angle is adjusted by loosening the four bolts that bolt the foil to the foil plate and pitching the foil fore and aft. The measurement point on the amas bow is just under the flange where the sensor arm rests.

These four bolts should be checked occasionally as the foil may get compressed and the bolts will become loose.

The water level should be halfway between the top two fences; however, it is a little more difficult to determine the actual height because the main foil height depends on more than just speed.

If you want to change the ride height of the front of the boat, loosen the four bolts and pitch the foil forward to raise the boat or pitch the foil aft to lower the boat. Pitching the foil forward 1" will raise that side 3".

It may take a few runs to determine what is just right. If the boat is riding too low, it will take a little more wind and boat speed to get onto the foils. If it is riding too high, the leeway angle will be too great and it may have a tendency to come off the foils more often in very rough water.

Downhaul and Outhaul Tension

The downhaul, outhaul and battens should always have enough tension so that all the wrinkles are pulled out of the sail. The take-off performance is usually better with the sails a little fuller, so in this case, the outhaul and downhaul should be a little looser. If the wind is strong the sails should be flatter which means more tension on the outhaul and downhaul.

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Do's and Don'ts

• **Do not submerge the leeward ama.** If the boat is moving slowly, it is possible to sheet in and cause the leeward ama to sink. If the leeward ama begins to sink, sheet out quickly and let the boat get more speed before sheeting in too tight.

• **Do not leave the beach until you are sure that the foils are locked down.** The boat will not head up unless at least one foil is locked down.

• **Do not leave the foil partially retracted.** The foil is vulnerable when it is halfway down. If it hits the bottom, it could damage the castings.

• **Do make sure that the rudder is tied up on the road.**

• **When in doubt sheet out.** A common mistake is sheeting in too tight and shadowing the leeward sail. It can be confusing to sail with the bi-plane rig for the first time as the wind can get very turbulent between the two sails. If you are on a reach but the boat is not going, you probably need to sheet out and head up. The weather sail is stalled and shadowing the leeward sail.

• **Keep "telltales" on the forestay** and keep the apparent wind forward.

• **Do not make low speed gibes in strong wind.** The force of the sails slamming from one side to the other can damage the booms or sail link. At high speed the booms will not slam across. If it is unavoidable, sheet the sails in very quickly just before they gibe and then ease the sheet out as the booms swing across.

• **Keep your hands away from the sail link** as it can be dangerous when you are about to gibe in strong wind with little boat speed.

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Go through the following checklist before sailing the boat:

- Check tension on the steering cable.
- Check clevis pins on both forestays.
- Check lashings on backstays.
- Check all four stays, both bow wires and king post wire for broken strands.
- Check the drain plugs on each ama.
- Check the load straps on the reefing zippers on each sail.
- Check the latching mechanisms on both foils and the rudder.
- Check to see if each pin on the mast is engaged in the compression strut.

Go through the following checklist before dropping the mast when de-rigging:

- Cover, then remove the foils.
- Take off the shock absorbers.
- Take off the sensors.
- Stow the sensor retraction lines.
- Take off the mast rotators.
- Take off the starboard boom.
- ***Attach the back end of the port boom to the king post. The masts will fall if the port mast is not supported by the port boom.***

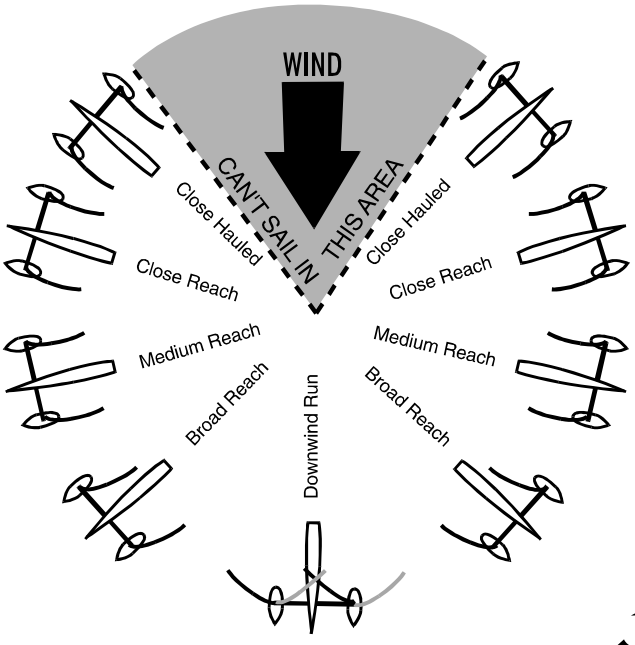
CAUTION / SAFETY TIPS

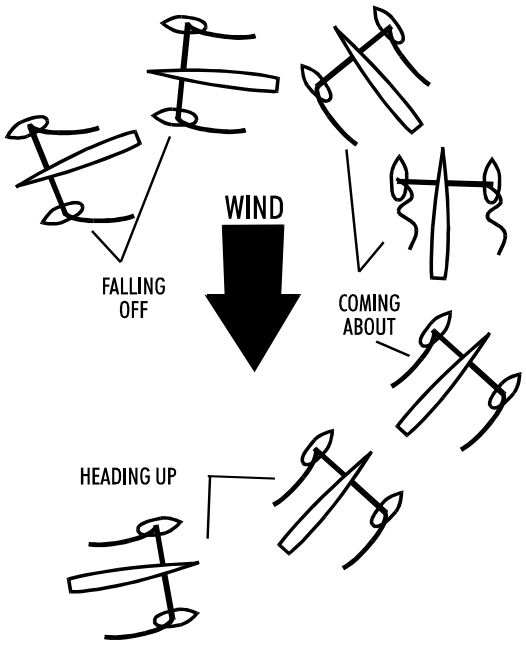
- Whether on land or on the water, watch for overhead power lines. Contact with power lines can cause serious injury or death.
- Do NOT sail while under the influence of alcohol and/or drugs.
- Only sail in conditions in which you feel comfortable and where you feel confident that you can safely sail the boat. Never go out in conditions beyond your ability.
- Everyone on board should wear a life jacket at all times.
- If you are in the water, remain in contact with the boat, even if it is capsized. A sailboat can drift away faster than a person can swim.
- Never sail without a righting line.
- Wear appropriate clothes. Wear a wet suit or dry suit in cold weather or cold water conditions.
- Remain seated while sailing.
- Read the instruction manual carefully.
- ***Make sure everyone on the boat reads and understands these safety instructions*!**

READ THIS BEFORE SAILING YOUR TRIFOILER

- The Hobie TriFoiler moves at high speeds. Extra care must be taken - especially when turning - to avoid other boats, obstacles, and swimmers.
- The foils and rudder ***DO NOT*** kick up on contact with land or objects in the water. Hitting objects while sailing can cause severe damage or personal injury.
- Make sure that the water is deep enough at all times.
- When sailing, avoid hitting anything in the water. Do not sail at night or when visibility or water conditions make it difficult to see objects in the water.
- Stay clear of people in the water at all times.
- Do not sail with equipment which is damaged or has been modified.
- If the leeward ama submerges, sheet out immediately.
- A good rule: If in doubt... sheet out.
- Always check the direction you will be going before making a turn.
- While an inexperienced person can enjoy sailing the TriFoiler, always have an experienced person with you until you are fully trained and comfortable with sailing the boat.
- Do not sail with either foil partially retracted. This could result in damage to the foil mechanism.
- Be aware that the boat will not sail upwind, Go into or stay in irons if the foils are not down.
- The foils and rudder must be fully raised before beaching the boat. Always raise the rudder first.
- Wear eye protection to protect you from hazards which can arise from spray and glare on the water.
- Carry a paddle to help in very light wind conditions or when the rudder is retracted.
- When the wind is strong, reef the sails. If in doubt... reef.
- When not sailing, always keep the boat pointed into the wind whether in the water or on the beach.
- Before sailing, always check:
  - All control lines to ensure that they are not twisted and that they move freely and easily.
  - Adjustments of the bow sensor line.
  - All wires for broken strands.
  - Rudder and foil latching mechanisms.
  - Drain plugs.

BASIC SAILING AND POINTS OF SAIL





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