# Building A Victoria From The Kit

Anyone unfamiliar with the Victoria will build their “Vic” according to the Instruction Manual “Kit Manual” only to find out that it doesn’t work or sail well. This document covers areas of the Kit Manual that can be improved while keeping the cost to a minimum. This is one way to build a “KitVic” or a “Silver Fleet Vic” that will sail well in a wider range of wind on it’s maiden voyage.

After four years of modifying Vics, to a point of having a totally modified Vic to forgetting what it is like to be new to the class, I decided to go back to building a KitVic as my winter project to see what anyone unfamiliar with the Vic might experience with the build and apply some inexpensive modifications to improve the way the boat sails. I started out using as many kit parts as I could. Some of them failed the test.

All these modifications are inexpensive and can easily accommodate a Carbon/Fiber Rig and Paneled Sails when you want to upgrade to a Gold Fleet Vic.

# Deck Measurements

The eyes on the deck, from the bow to the forward side of the eye, are changed from the Kit Manual locations. The jib pivot eye is moved forward to expose more sail area to the wind when going downwind. The leverage lost is regained by the added mast support and higher tension on the shrouds. New holes are drilled with a 5/64 bit and widened out for a easy fit.

Jib pivot: 2 ⅜”

Jib adjustment: 7 ½”

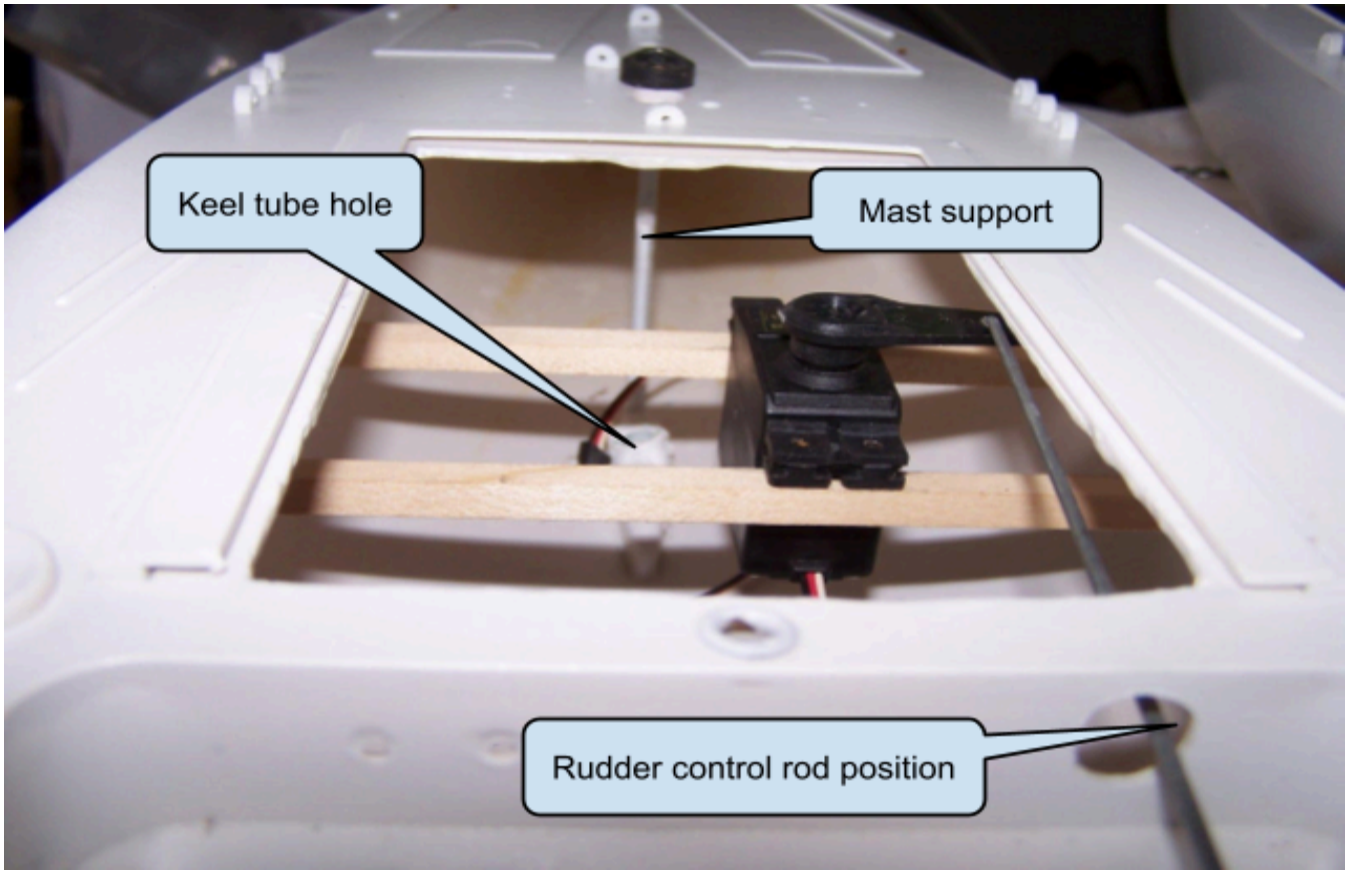
Fairlead: 9 ¾”

Mast step eye: 12” from the bow, offset to the port side from the centerline by ½”.

The aft and forward chain plate eyes are not really needed. Save them for extras or use them if you need to. The other eyes are placed in the locations provided, according to the kit instructions.

The mast-step is rotated 180deg forward. A new forward hole is drilled with a 3/32” bit. This will give the boat less weather helm in gusts.

A mast support is needed because the deck sags with the higher rig tension. I use a 5/32” X 3 3/32” aluminum tube placed on the forward tip of the keel socket to the deck under the mast-step. Any material you have around will serve the purpose. (Chopstick?) Then install the keel tube.

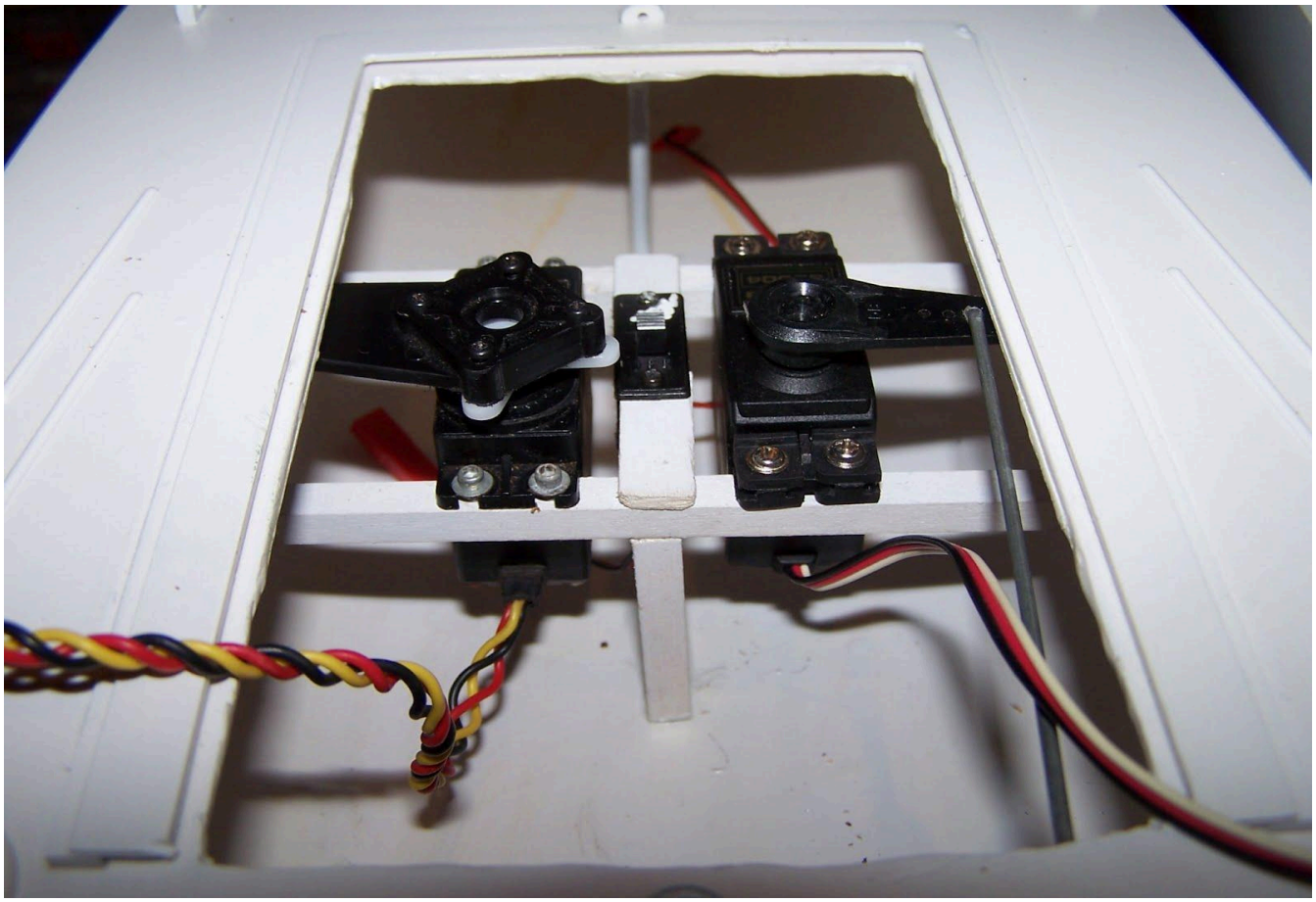


# Mounting The Servos

Two ¼” square Spruce cross beams are cut: fore = 6” 13/16 and aft = 6” ⅞ along the top side. Sand the lower half of the ends to match the shape of the hull. Center the rudder and mark the position of the rudder arm with a pencil. Without gluing the mount, place the servo on the mount. Set the servo arm parallel to the rudder arm. The fore-aft position of the servo mount along with the port-starboard position of the servo determines where the rudder servo will be mounted to the mount. When the rudder control rod is on the starboard side of the hole in the cockpit wall and the rudder is straight, the mount and rudder servo should be in the correct position.

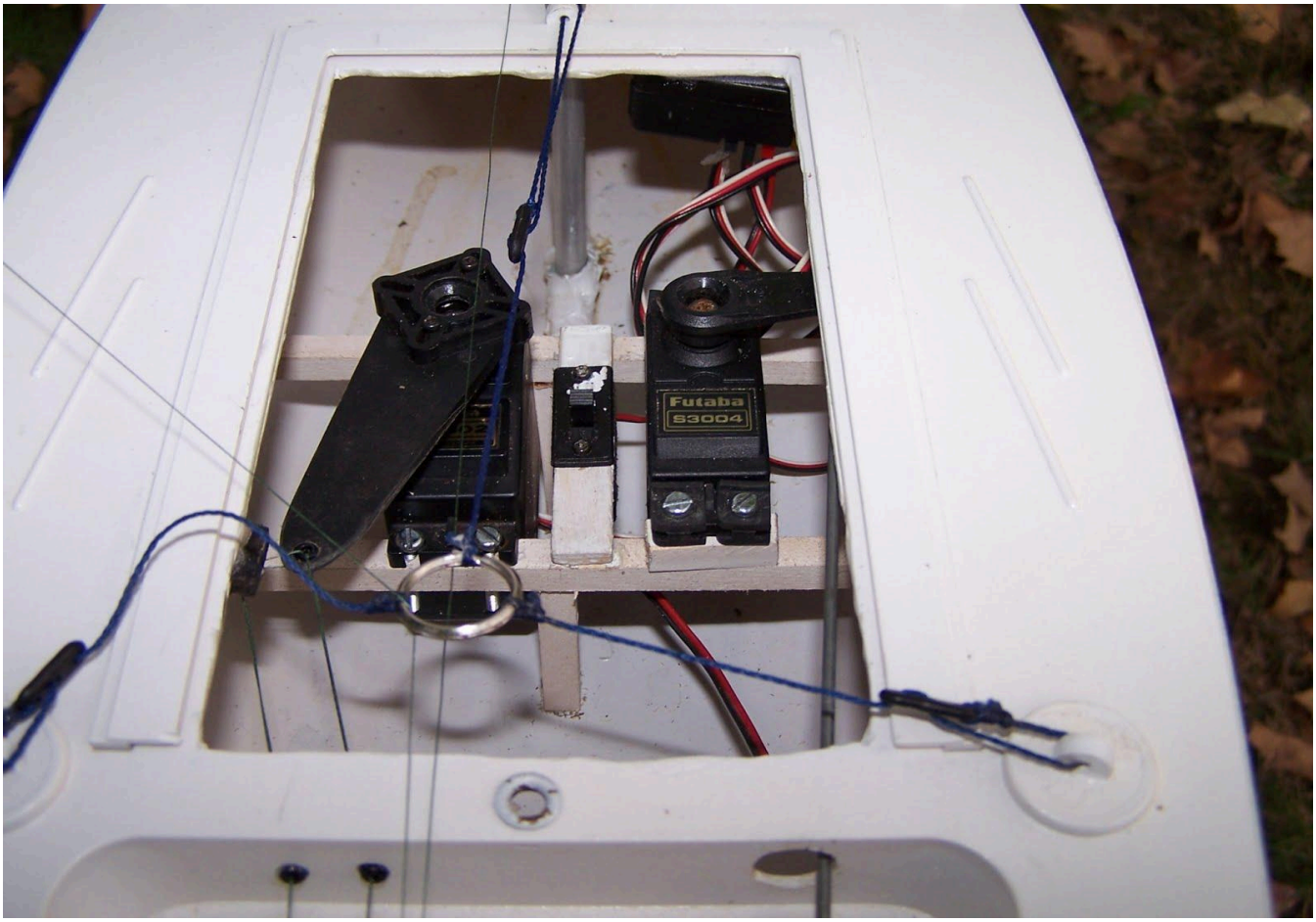
Mark where the servo will be mounted. Drill holes in the beams and mount the beams to the servo. With the rudder servo and beams assembled parallel and square and level, “CA” (Cyanoacrylate glue) the beams to the hull.

I mount the switch 3/16” away from the rudder servo and the sail servo 3/16” away from the switch using a 3/16” spacer. Place a stud under the center of each beam to reduce the effects of torsional twist.



# S3802 Servo Mount

The S3802 Futaba sail servo might be the most common servo to use in a sailboat the size of a Vic. It swings 100deg without the trim. The trim adds another 20deg for a total of 120deg. It's taller and slightly longer than a standard sized servo. I lowered the servo mount in order to mount this servo. By adding spacers, this mount can be used with standard sized servos as well.




In the picture, the servos are mounted with the spline forward.

The rudder servo: Because the control rod is so long. 10 ½"

The sail servo: because the arm is longer. 2 ¼" (the arm is mounted upside-down)

The cross beams are made of ¼" square Basswood about 172mm along on the topside. The rudder servo uses spacers, made of the same material as the cross beams, to raise it up to the correct level. A standard sized sail servo can be used with spacers as well.

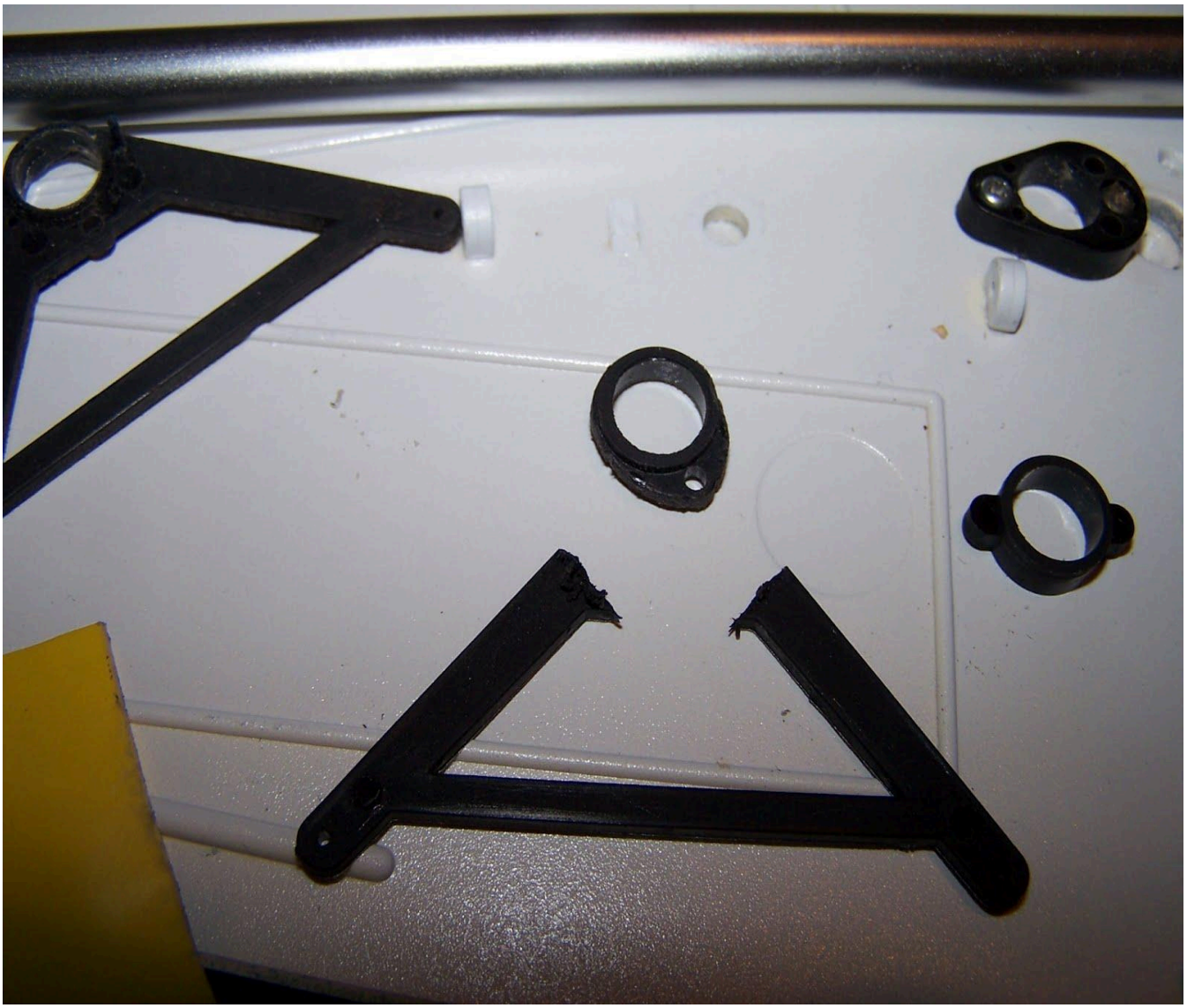
# Mast And Booms

The kit part#37 isn't strong enough to keep the mast from bending at the joint of the two masts tubes and complicates tuning the main sail shape.

I use a 8 millimeter diameter wooden knitting needle that fits snug. I also use a product called Chair-Loc which swells the wood. If you have doweling that is slightly smaller in diameter than the inside diameter of the aluminum tube... use thread or yarn wrapped around the doweling. Saturate it with glue and sand it to a snug fit.


To CA plastic parts to the aluminum, I mask the tube with electrical tape and sand the area where the part should go with 80 grit sandpaper. Remove the tape. CA around the tube and slide the part into place.

I've changed all the measurements for the placement of the plastic parts starting at page 10 of the kit manual. The large spreader is not used. The small spreader is placed at the join. The jumper spreader's spars are cut off, saving the ring for the fractional rig. Even the smaller spreader's spars could be cut off, saving the ring to tie the lower shrouds onto. These parts are only there for aesthetics and they increase upwind drag.



The ring that is used for the fractional rig is part#39 and placed at 7 ¼” from the top of the aluminum mast. This placement keeps the leach of the jib parallel with the mast. Part#40 is placed on top of part#39 for the upper shroud attachment point. At the lower end of the mast, the vang attachment point is at 3mm and the gooseneck is at 43mm more. This lowers the boom. Remember to include parts in diagram A on page 11 before you glue the gooseneck to the mast.

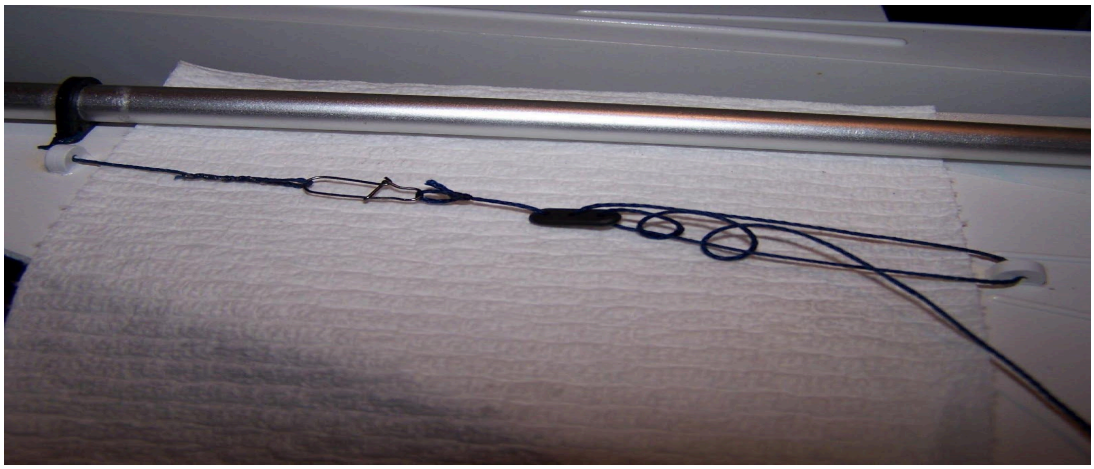
On page 11 the main to vang ring is at 4 ½” and the sheet ring is at 1 1/2” more. (don’t glue the sheet rings until the boat is tested on the water). The jib swivel ring is at 2 ¼” and the sheet ring is at 6 3/4” more.

Standing Rigging

The blue line that comes with the kit unties faster then it can be tied. It's best to CA the knots if you don't have better line to use.

I like using #1 Eagle Claw Dual Lock snaps on the mast crane for ease of adjustment. A threader is useful to thread line through small holes. I use a guitar string bent in a diamond shape like a needle threader to thread line through small holes and a fine curved tipped tweezer to help with tying knots.

First, mount the shrouds onto the mast. Lay the mast on a table. Cut two lines about 42” long and tie a bowsie on each. Hook 2 kit hooks into the vang to mast hole. Thread the lines through the hooks and through the bowsies, then through the spreader and the upper shroud attachment point. With the bowsies set equal, take the slack out of the line and tie the line to the upper shroud attachment. CA the knot and cut off the extra line. Two more hooks are placed in the eye of the upper shrouds for the lower shrouds. Repeat the process with 26” lines and knot them to the spreader. Make the backstay and use it as a temporary forestay to mount the mast. This will keep the mast upright while the jib is installed. Hook the backstay to the jib fairlead and mount the shrouds in the middle chainplate eye. With the main boom resting on the rudder arm, tighten the shrouds so the mast is straight up from side to side. Then tighten the temporary forestay so the mast is straight up fore and aft. This will add more tension to the shrouds. The adjustable jib pivot was suggested to me by Bob Szczepanski, our Class Secretary.



Connect the jib club to the swivel eye. Connect the clew of the jib to a spring ring. Tie the forestay onto the jib club. Thread a bowsie on the forestay for the jib uphaul. Run the forestay through the hole in the plastic part#39, thread a bowsie on for the forestay adjustment, run the forestay through the most forward snap in the mast crane and back to the bowsie. Tie a bowline on the head of the jib and connect it to the uphaul bowsie. (This jib uphaul arrangement allows the mast to be raked back and forth without having to adjust the uphaul).

The topping lift is tied with a slipknot around the plug that fits in the end of the jib club. Then the plug is pushed in the club. It runs up the same way as the forestay except it runs through the snap closest to the mast. (This will have to be adjusted when the mast rake is changed for different wind conditions.)

Remove the temporary forestay from the jib fairlead and place it on the stern. Adjust the mast so it is vertical fore and aft.

Tie a bowline on the head of the main with the knot just above the eye. Cut the line at 6”. Thread a bowsie on and run the line through the snap in the second hole aft of the mast and tie it to the bowsie. The tac of the main is tied with a square knot around the main boom at the gooseneck. The clew is attached with a spring ring from the kit.

The luff rings that come with the kit are not used. Besides being nonadjustable to sail cut, I think they hold the sail too close to the mast. I use 35# test braided spectra fishing line tied with a square knot. I leave the knot unglued so it can be adjusted with 2 pairs of needle nose pliers. Getting the proper sail shape in the main is critical. If a bubble forms from the clew to the mast, it will point to the loop that is too tight. Adjust the loops so the main sets correctly. The square knots will hold the main in position without gluing the knot.

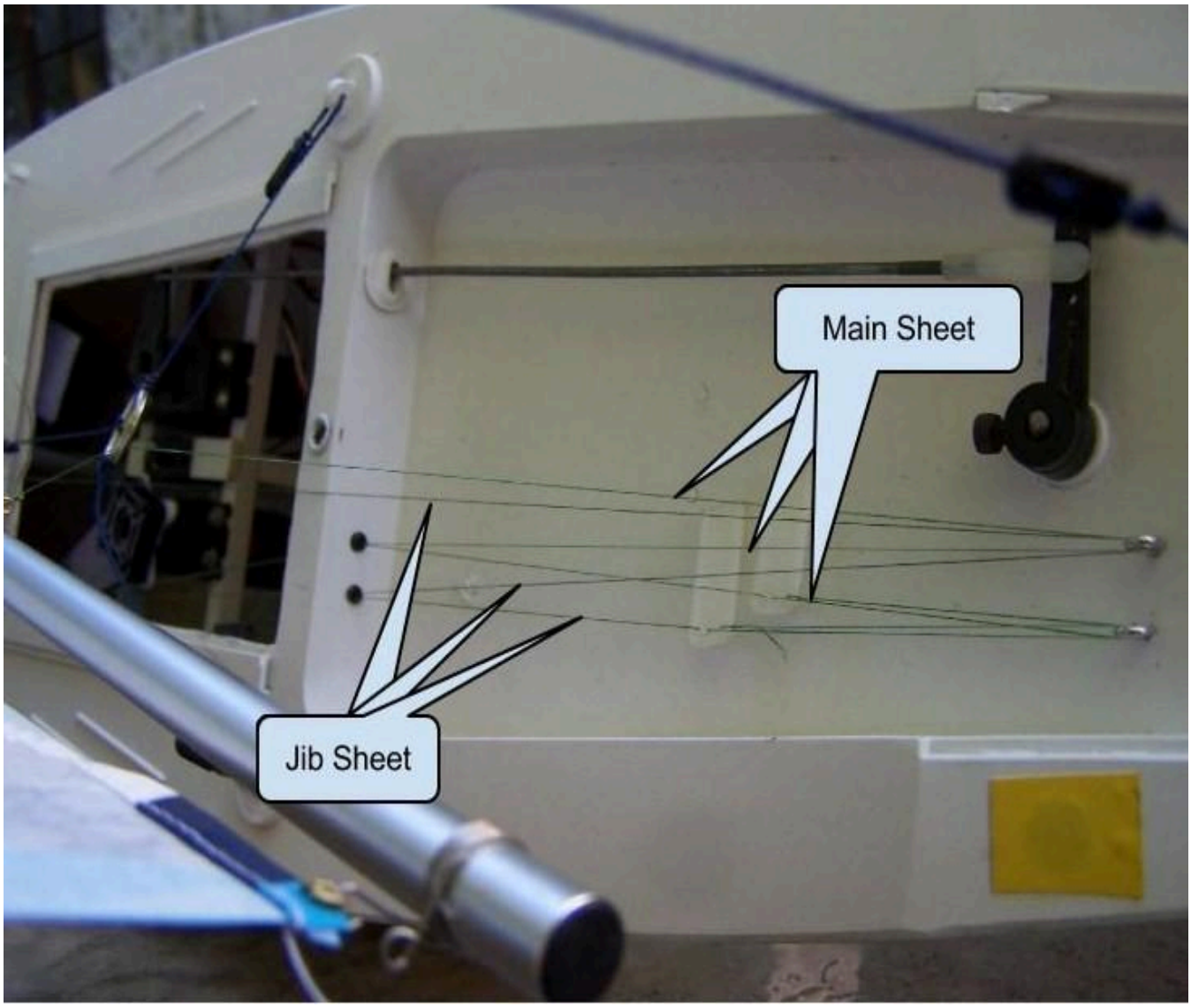
## Sheeting

The blue line that comes with the kit creates a lot of friction. The servo and the batteries have to work hard to bring the sails in. I’m using 10# test braided spectra fishing line without a problem. I use glass beads in the holes in the forward cockpit wall and in the sail servo arm to reduce friction.

My servo is modified to travel 145deg without the trim when using a 2channel 75MHz radio. The servo travels 145deg from close-hauled to all the way out. The extra 35deg is used to tweak the jib in more than the main to help turn the boat downwind in strong wind. To make more effective use of the trim I run the jib sheet through an eye-screw placed under the deck at 1 3/8” fore of the forward cockpit wall and 2” from the port side of the boat. The trim is used only if the boat won’t turn downwind. It may not be necessary.

The servo arm that comes with the kit is used instead of a double arm setup. The silver ring setup is used for the main fairlead and fairleads on the foredeck for the jib. The “Y” sheet line is split into two seperate lines. One for the jib and one for the main. This eliminates the bowsie on the jib club and the cleat in the cockpit. Two eye-screws are added. One for the bowsie adjustment and one to run the sheets through. They are placed between the rudder arm and the port cockpit wall. The steering wheels are not necessary.

The jib sheet is about 50” long. The main sheet is about 34” long. Add extra inches to tie knots on the ends of each and cut the lines. Tie a bowsie on the end of each line. Thread the lines through the outside eye-screw and through each bowsie. The Jib sheet is threaded through the outside hole in the forward cockpit wall and the main is threaded through the inside hole. Thread the jib sheet through the eye-screw if you are using the extra trim. Both sheets pass down through the servo arm. The jib goes back through the outside hole and the main goes back through the inside hole. Both lines run through the inside eye-screw from the outside in toward the rudder. From there on the sheets run the same as the instruction manual.



## Tuning The Rig

Loosen the forestay so the main boom is almost touching the rudder arm. Point the boat at a door jam so you can see how vertical the mast is from side to side. Adjust the shroud bowsies as tight as possible while still keeping the mast in line with the door jam. The main boom should be hovering over the rudder. Turn the boat sideways to the door jam. Tighten the forestay so the mast is in line with the door jam. Take a mirror and hold it over the mast crane to see if the mast is bent. If it is you can try to adjust the bowsies but repeating the process 1 or 2 times should be done. When you're satisfied that the mast is tuned, take the slack out of the backstay, then slide the bowsie ¾" more to tighten. This should give ample leverage on the jib boom to keep the topping lift taught.

With the electronics working, adjust the rudder so it's centered. If the rudder isn't centered, it will ruin your whole day of sailing.

Set the booms close hauled. Jib is just inside the shrouds and the main is at the corner of the transom. Go outside and hold the boat to the wind to see which sail luffs first. They should luff at the same time at every angle of sail. If the jib luffs first when the sails are close to all the way out and the main luffs first when they are close hauled then the main fairlead split-ring needs to be moved forward. The sheet connection points on the booms, not being glued, can be moved to change travel adjustments. Once the setting is found the rings can be glued.

## Epilogue

After a Summer of testing, I've found that most of the time, this Silver Fleet Vic is only a few boat-lengths behind the Gold Fleet Vics... but it does what you want it to and it doesn't break down. It has the bugs worked out of it. A lot of fun can be had if you sail along with a Silver Fleet.

A Vic needs to be modified in order for it to sail well. Anyone can build their Vic their own way as long as they stay within the rules. It will take some time to find out what works and what doesn't. See, it's taken me almost a year to tell you about it.

10/7/2012 by J.C.N.
5/13/2013 finetune trial measurements under MAST AND BOOMS