Kantun S MX – Internal Component Setup Guide

By David Jensen v1.0 4/1/2016

The Kantun S MX is produced under license from Jelacic Sailing by MX Components Italy. Although the hulls are the same in their exterior shape the S MX is quite different inside when compared to the Jelacic built version. This is an addendum for the Kantun S MX and will show the differences and provide you with the information needed to maintain the boat. Refer to the Kantun S setup guide by Bob Wells which has links to videos by Zvonko Jelacic (on YouTube) showing how he sets up his boats. Although the internal component setup is different the setup procedures are quite similar.

The following is my internal component setup preferences for the Kantun S MX. I do not profess to be a world class sailor however I do have 28 years of RC flight experience and 18 years as a flight instructor. I do know a lot about RC radios and their programming capabilities. My setup is not the only way, nor should it be construed as being better than other setups. This setup for the winch, internal sheeting and rudder control works for me and I hope it can help you when installing a winch or changing out your S MX sheet lines.

The Interior Components:

- RMG Model EF or ES sail winch. The EF is the faster of the two. The new RMG 290 series does fit.
- RMG 32mm or 42mm drums both work, however RMG does not recommend the 42mm drum with the EF model. Go to the RMG web site for more information.
- 80 lb. cord (Berekley 0.66" diameter Fireline Braid 80lb.) for the drum's pull and return lines. No need to specify anything else.
- 40 lb. cord (Berekley 0.33" dia. Fireline Braid 40lb.) for the sheet lines.
- A swivel is not provided but is highly recommended for the drum's pull cord with the jib/main sheets attached to the other end.
- Rudder servo can be any standard size servo with a minimum of 70 to 80 in/oz of torque. I also prefer strong digital servos because they center better and more importantly they hold center better.
- Rudder linkage is not provided with the boat but can easily be made from parts found at your local hobby shop or on line.
- Receiver/battery. This is a personal choice with many options to choose from.
- On/off switch is also a personal choice and is optional.
- Double sheet block, is provided with the hull and is connected to the front jib support web with a stainless steel wire hook.

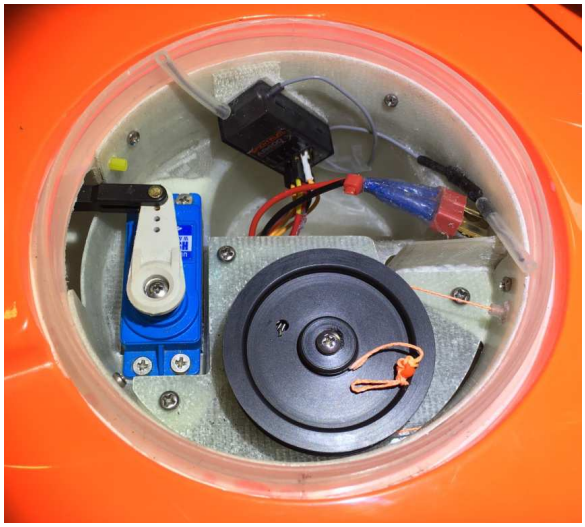
Your "goals" will include:

- Jib boom will swing from pointed at shrouds to about 85º from center.
- Main boom will swing from centerline to touching shrouds.
- To achieve this the RMG power and return lines need a minimum of 275 mm of sheet travel from "fully sheet out to fully sheet in" positions. The swivel should end up about 10 mm short of the forward block and the aft main sheeting tubes, and you will use EPA (end point adjustment) or servo travel on your transmitter to refine the sheet travel end points.
- Making the winch installation easier by removing some of the lip close to the rudder servo (see pictures).
- Rudder will swing from centerline to about 45º to 50º from center (a little beyond pointed at transom corners).
- Installation of a 4th hook for A-rig jib to allow for 320mm to the pivot point recommended by Jelacic Sailing.
- Set up the radio's throttle curve to mimic a spiral drum and give more accurate sheeting control when sheeted fully in and fully out.

Suggested Tools:

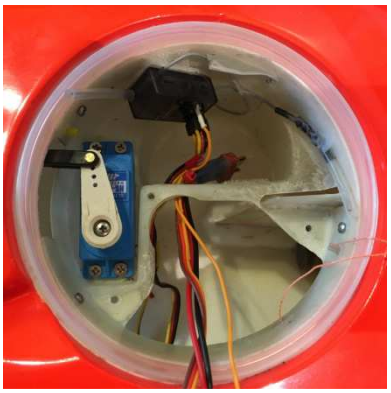
- Sharp scissors or an Exacto knife.
- CA glue (both thin and medium grades).
- Cigarette lighter. (This is to melt your Spectra cord into a “ball” on the end.
- Phillips screwdriver (to remove/install the drum and mounting plates).
- Tweezers and/or hemostats.
- Lubricating oil to occasional lube metal parts and/or a rust preventative like Corrosion-X.

The Kantun S MX straight out of the box. Note this boat has the old fin and pot design. MX Components has changed the design of the pot to move the winch closer to the center for a better fit and the results made the battery area a little smaller. The new fin design does not have a box shaped top and recess in the hull. Instead it is “fin shaped” and tapered all the way to the top. It is lighter than the older fin and the opening in the hull (new fin box) is also fin shaped.

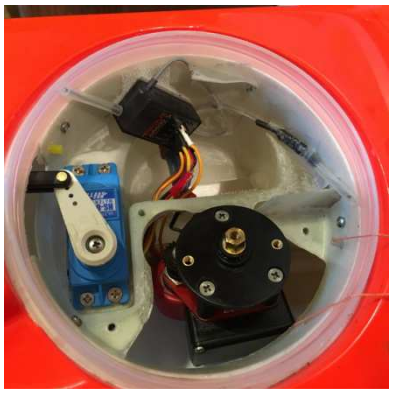


The Kantun S MX radio pot (less battery) has a very clean and easy to maintain layout. It provides enough room for all your radio gear. Note the two antennas placement (the yellow tube above the rudder servo is an Antenna tube for a previous receiver). Shown here is the 42mm self tensioning (left handed) drum. Note the string on top of the drum. This is the tension line and can be adjusted using the bead to pull more line to make the tension stronger if needed.

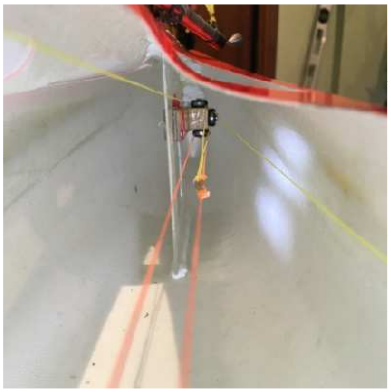
- **Installing/Removing the RMG Winch:** The winch mounting location has easy access to the drum, and changing the lines is quite easy as you don't have to remove the winch to replace the lines. I made some modifications to the pot lip with a dremel sanding drum to allow easier winch removal/installation (see pics). You will notice the rounded area near the rudder servo. This is all that's needed and you can see the winch fitting right through the rounded part. There is still some twisting and pushing to get it under the pot but by removing the lip as shown, its easier to get the winch in and out. You will have to remove the winch mounting plate from the winch before you can put it in or take it out. Once in you can secure the mounting plat to the winch and then position it in place and put the 3 screws in securing the winch mounting plat to the pot. Once in place follow the RMG instructions for initial winch setup and programming. I program the winch so it moves full travel without binding at the ends and then use the end point adjustments in the radio to limit the travel to what is needed (about 270 to 275mm). This allows some wiggle room between the A,B and C rigs so they can easily be adjusted for use. I use the RMG ES model and have used both the 32 and 42mm self tensioning drums (left hand rotation) and they line up with the sheeting tubes entering the pot very well. The 32mm drum will have more servo resolution and torque at the expense of speed however the EF model has plenty of speed and the newer 290 models have plenty of power. Another reason I use the self tensioning drum is there is limited room for a spring tensioner on the return line inside the hull.


Pot with winch removed

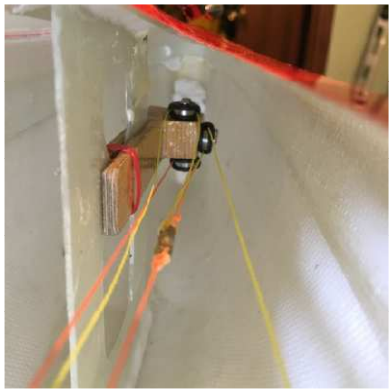

inserting the winch


note winch orientation

- **Double sheet block:** As stated above one of the challenges with the SMX is to get enough sheet travel to allow the booms to extend all the way out. Moving the double block forward about 3/4 inch or about 20mm gets you the min. 275mm of sheet travel needed. Sheeting travel is different from the measurement between the double block and the sheet tubes. You have to subtract the length of the swivel and have about 10mm short of the double block. There are several ways of moving the block forward, and the easiest is to shorten the wire hook. This should get you enough if you use a self tensioning drum and a short swivel. If you add a sheet spring as used in the Jelacic version or a tensioner spring you may need to move the block even farther forward to get enough travel. It all depends on the length of the swivel/spring assembly and where the double block ends up. The stock double block works well, however I had a problem with the sheet lines getting stuck in between the pulley and the frame. I had to squeeze the center pivot rivet to close up the gap between the pulley and frame. I was also having problems with the jib and main sheet lines twisting around each other and when sheeting out quickly the jib sheet would sometimes get stuck wrapped around the main sheet. I would have to sheet back in and let out slowly to get the jib out which is frustrating in light winds. My solution was to built a crutch which straddles the jib support web and moves the position of the block almost 2" (45mm) forward, giving me all the room I need. I replaced the double block with three single blocks mounted to the crutch. This helps keep the 3 lines separated from each other and limits the amount of string twisting around each other as well. This crutch is easy to push forward and remove from the hull for maintenance and replacement of the lines just like the stock block on the wire hook. See Pictures.



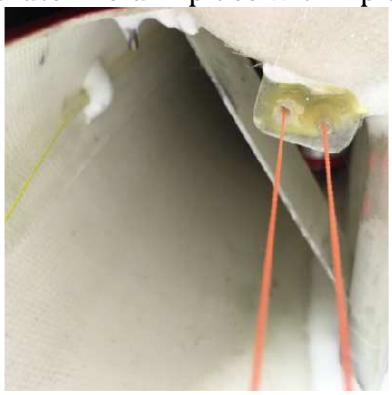
My triple block set up



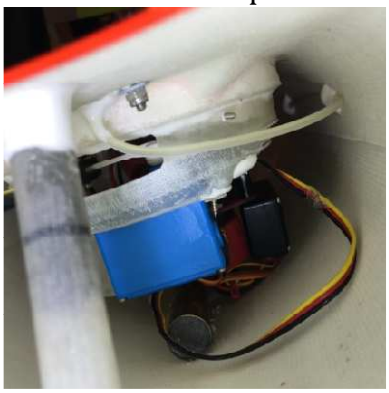
Crutch held in place with zip tie

Wood crutch top view

Wood crutch side view



Power lines and main sheet tube

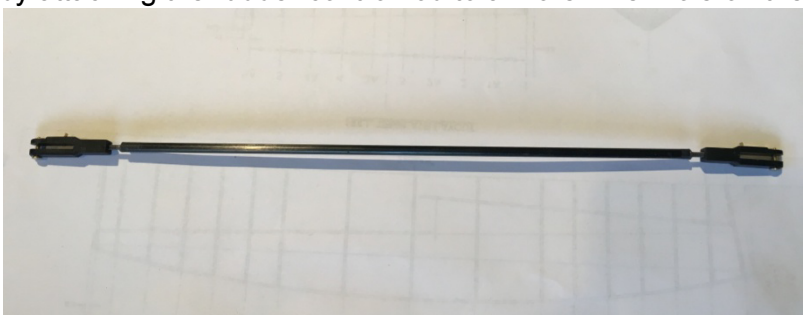


Main sheet tube (aft end)

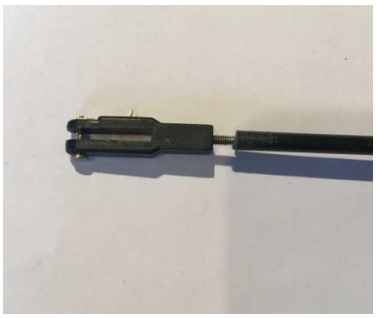
- **Installing the sheet lines:** The double block in the bow needs to be pulled out of the hull and the new sheeting lines can be placed through the opposite side of the block from the pull/tension line. The easy way to string the lines is to put them in from the top fairleads and feed the lines to the block then to the swivel and tie them off. Don't forget to CA the knot and burn the end of the string. The diagram shows more detail than I can write here (picture = many words). Once the sheeting lines are in place position the winch to the full out position and stretch the lines to the points shown in the drawing and tie a loop on the end of the sheet. Refer to Zvonko video to see how he does this step. Adding a sheet spring is optional but recommended by many Kantun S sailors. The SMX has some spring effect built into the sheeting system. When you pull on the sheets there is a surprising amount of give however it is nowhere near that of the Jelacic set up (refer to Bob Wells setup guide for a picture and further explanation). The sheet spring must have a string down the middle to limit the amount of stretch the spring has to less than ½" (10mm). The tension on the return line must also be loosened or the two springs will counter each other. It is a delicate balancing act between the two springs. I have tried the sheet spring with the self tensioning drum, but I do not use one anymore. One trick I have found is to have several wraps around the tensioning side of the spool when full sheeted out. When you want to remove the double block you just unwrap the tension line from the drum and easily get enough slack to remove the block. I use a small bead to hold the end of the tension line. This allows me to adjust the amount of tension on the line by pulling the line and retying it to the bead. You can see this in the pictures.

- **Rudder Servo and linkage:** The rudder servo should be mounted with stainless steel screws. Most servos do not come with these so I purchased these separately. You must make your own rudder control rod and there are many ways of doing this and this is the way I do it. After measuring the length between the center of the servo and rudder post (282 mm on my hull) I use a thin (4mm) carbon tube and glue with epoxy, stainless steel 2/56 all thread (about 2" long each) into both ends with one inch protruding from the carbon rod. Once the glue is dry screw any stainless or plastic clevis onto the 2/56 all thread, adjust to length (282mm) and you're done. You may want to wrap the ends of the carbon tube with thread and CA glue to reinforce the tube so it won't split. It's important to have a 90 degree angle between the control horns and the control rod at both ends

when the rudder is centered. I am currently using the Hitech HS 5646WP waterproof digital servo with about 150 in/oz of torque. It's a heavy servo (2.15 oz) but well adapted to marine use with all stainless steel hardware. Most servos do not have stainless steel case bolts. I use a 3 step switch to give me low, medium and high rates on my rudder. I use the High rates (50º) in high winds and low rates (about 20º) is used when you need finesse. I have a tendency to over control my rudder and the low and medium rates helps to limit my mistakes. I also use some exponential to smooth the center of the rudder stick when in high rates and just a little in medium rates and none in low rates. To get the full rudder throw you can increase the amount of servo travel from inside the radio. The servo travel adjustments or end point adjustments allows you to increase the servo travel to a full 60 degrees each way by increasing the numbers to their maximum. Be careful not to over drive the rudder however on my boat I have increased the throws to their maximum and now get the near 50 degrees needed. If you need to get more rudder throw you can do so mechanically by attaching the rudder control rod to a more inner hole on the rudder horn.



The completed rudder control rod with the ends at 282mm



The clevis on the all thread

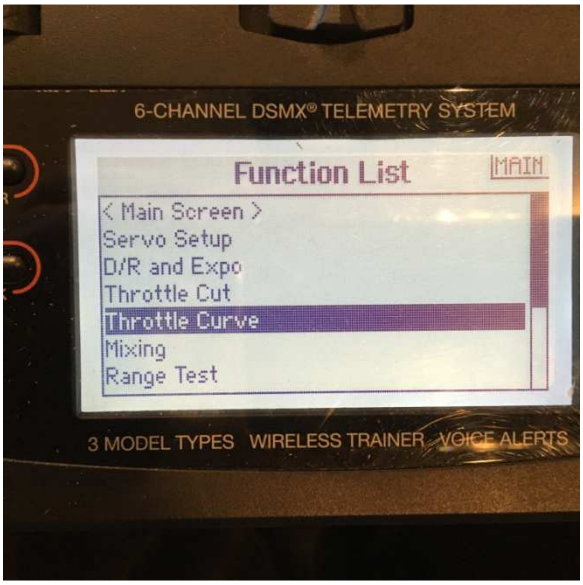
- **Receiver and Battery:** Positioning the receiver and battery are a personal choice but you can see how I did mine in the pictures. I cut a portion of the bottom out from the pot to allow the battery to get to the bottom (lower purchase). I use goop and seal the bottom of the battery so it's more water resistant. The receiver should have the antenna's located about 2" apart and 90 degrees to each other for optimum reception. Some receivers have short fixed antennas and I will bend one so it is 90 degrees to the other and orientate the receiver so both antennas are pointing up at 45 degrees. I'm using 1500 mah 2 cell lipo batteries. At 75g they are a little overkill. Any 2 cell lipo with 1200 mah will be sufficient for 3 or more hours of continuous sailing. You do not want to draw down the lipo to below 7.4v or their life span will shorten.

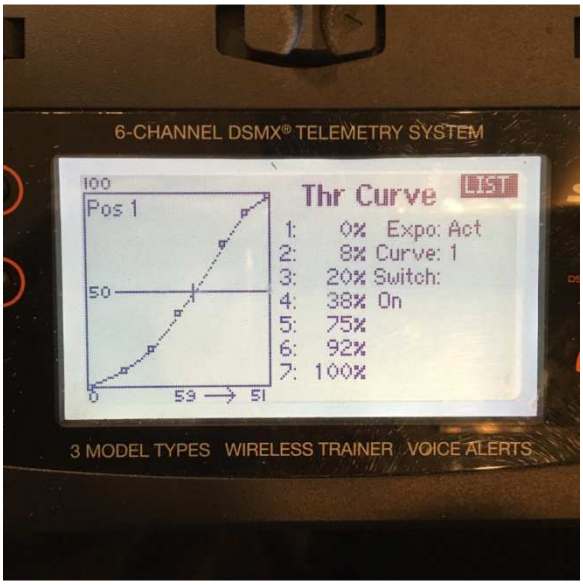
- **On/Off switch:** I choose not to use one on my boats as I have had too many fail in my airplanes. I use Deans Ultra Connectors (considered the industry standard) just because I have lots of them. I add goop around the solder ends to help waterproof the wires.

- **Fourth Hook:** If you are using Jelacic 3D Mono sails (and why wouldn't you be) the Jelacic rig tuning guide shows a 300 to 320mm difference between the jib pivot point from a more tensioned rig to less tensioned rig setting. With the S MX you cannot push the pivot point to 320mm and still have the jib boom get past the mast. I added a 4th hook 15mm forward of the most forward hook. Problem solved

The 4th hook positioned 15mm foreword of the A-rig hook

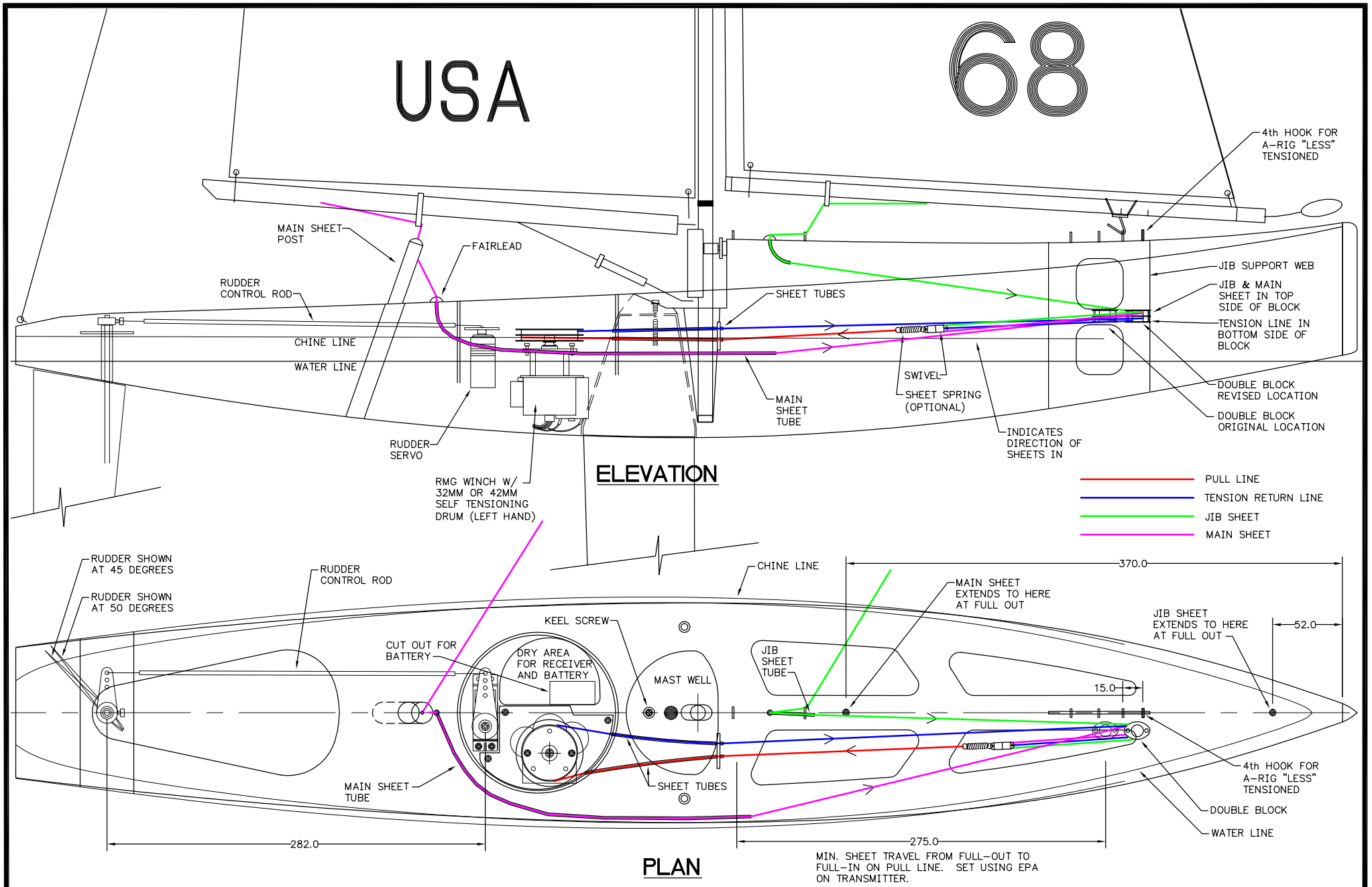
- **Throttle curve:** Most radios have a throttle curve function. It is primarily used for airplanes and helps the pilot get a more defined throttle response, especially at low throttle settings. It's common for most engines to increase the rpm's quickly from idle as the stick is moved forward. The first 1/8 throttle stick motion produces say 2000 rpm and the last 1/8 throttle stick motion only produces 200 rpm's. It's important for the pilot to be able to control the throttle during landing so he needs to be able to adjust engine rpm's with some finesse. The same is true for the sheeting control on our boats. The Jelacic Kantun S uses a spiral drum which performs very much like a throttle curve. It also increases the power of the winch with a shorter moment arm on the drum, however with the newer ES290 winch power is not a problem. When fully sheeted in, I like to be able to move the stick about 1/8 throw and only get about 1" of sheeting travel out. This allows the skipper to sheet out just a little (say ½") when a gust hits the boat. It also allows the skipper to sheet out just ¼" in light air and he will know its only ¼" due to the throttle curve programming which allows this kind of minute boom movements with repeatability. The throttle curve is completely adjustable and can be programmed to any curve so you can experiment and find what works best for you. Normally the curve is not that curvy and the overall effect can be minimal. These pictures show my throttle curve in my radio. Most all radios will look similar for the throttle curve function. There is a different curve needed between the 32 and 42mm drums, for obvious reasons. You will want to turn on the expo function to make a smooth curve from the 5 or 7 points along the throttles range. If the expo is off the line between the points will be a straight line not a smoothed curve.





Some radios like the Spektrum DX6i have a throttle curve in the heli side of the programming and there is no problem using the heli side for our boats. The throttle curve function will usually have 5 points along the throttle stick throw. My radio has up to 7 points so I place the program points in an "S" shape and you can see the resulting input to output. The net effect is very much like exponential but few radios have expo on the throttle stick. At home in my shop I experimented with many settings until I got to where I like it. I moved the stick and watched where the booms let out. I changed the numbers on the curve until I got a consistent ¼" and ½" and 1" boom movements with repeatability.

I hope this guide has been helpful. I would like your feedback and would like to include your ideas into this document in future revisions. You can contact me at david.jensen@comcast.net.



MX COMPONENTS

Delačić

KANTUN S MX

INTERNAL COMPONENTS

DRAWN BY: DAVID JENSEN 2/29/16