



CRACK PITTS

MOTOR: 1x CSP-2814/1050kv/100g
ESC: 1x CS 45A ESC
SERVOS: 4x CSP-D14M
PROP: 1x 11x4.5-MR
BATTERY: 4s 1500mAh-2200mAh



RADIO: 4 channel
WINGSPAN: 40"
LENGTH: 41"
AUW: 28oz to 30oz
depending components used

SAFETY NOTES

- ✓ Before assembling and flying this model, read carefully any instructions and warnings of other manufacturers for all the products you installed or used on your model, especially radio equipment and power source.
- ✓ Check thoroughly before every flight that the airplanes' components are in good shape and functioning properly. If you find a fault do not fly the model until you have corrected the problem.
- ✓ Radio interference caused by unknown sources can occur at any time without notice. In such a case, your model will be uncontrollable and completely unpredictable. Make sure to perform a range check before every flight. If you detect a control problem or interference during a flight, immediately land the model to prevent a potential accident.
- ✓ Youngsters should only be allowed to assemble and fly these models under the instruction and supervision of an experienced adult.
- ✓ Do not operate this model in a confined area.
- ✓ Do not stand in line with, or in front of a spinning propeller and never touch it with any object.

IMPORTANT: PRIOR TO ANY ASSEMBLY

Please Note: after removing kit from shipping box, lay each piece flat on a hard surface, this will allow the airframe to straighten out if lightly bent from shipping. Do not worry since EPP is very pliable and can be bent back if out of shape.

TWISTED HOBBYS

Website: www.twistedhobbys.com – email: sales@twistedhobbys.com

Thank you for your purchasing a Twisted Hobbys' model. Please read through the entire manual before beginning to build this model. If you have any questions please contact us at the above indicated email address.

WARNING INFORMATION

This R/C Aircraft is not a toy! Read and understand the entire manual before assembly. If misused, it can cause serious bodily harm and property damage. Fly only in open areas, and AMA (*Academy of Model Aeronautics*) approved flying sites. Do not overlook the warnings and instructions enclosed or those provided by other manufactures' products. If you are not an experienced pilot and airplane modeler you must use the help of an experienced pilot or an authorized flight instructor for the building and flying of this model aircraft.

These instructions are suggestions only on how to assemble this model. There are other ways and methods to do so. Twisted Hobbys has no control over the final assembly, the materials and accessories used when assembling this kit, or the manner in which the assembled model, installed radio gear and electronic parts are used and maintained. Thus, no liability is assumed or accepted for any damage resulting from the use of the assembled model aircraft or from this instruction manual including but not limited to direct, indirect, incidental, special, and consequential damages. By the act of using this user-assembled product, the user accepts all resulting liability. In no event shall Twisted Hobbys' liability exceed the original purchase price of the kit.

SHIPPING DAMAGE

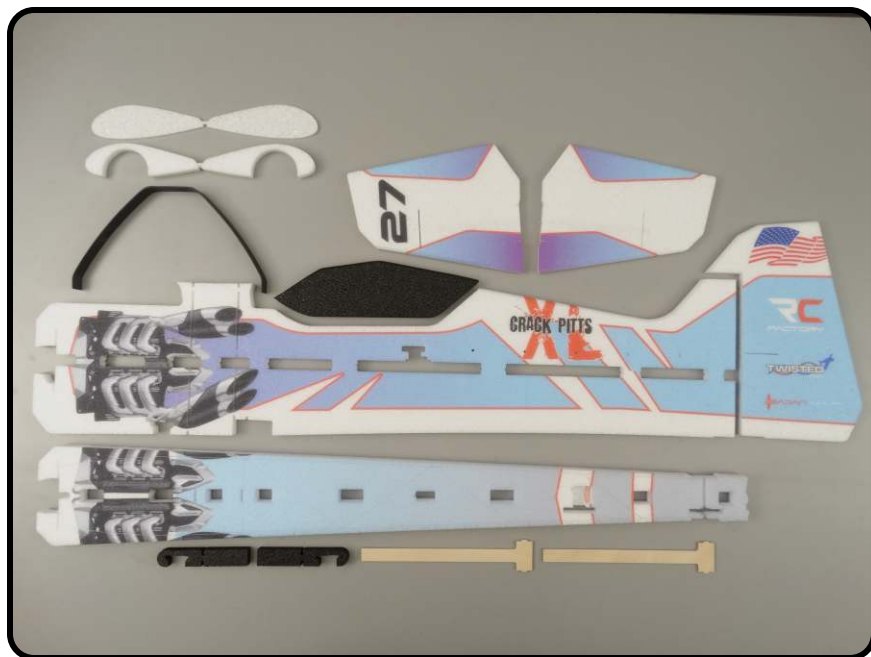
Twisted Hobbys checks each plane before shipping to ensure that each kit is in fine condition. We have no bearing on the condition of any component parts damaged by use, modification, or assembly of the model. Inspect the components of this kit upon receipt. If you find any parts damaged or missing, contact Twisted Hobbys immediately. We will not accept the return or replacement of parts on which assembly work has already begun. Twisted Hobbys reserves the right to change this warranty at anytime without notice.

OUR MISSION

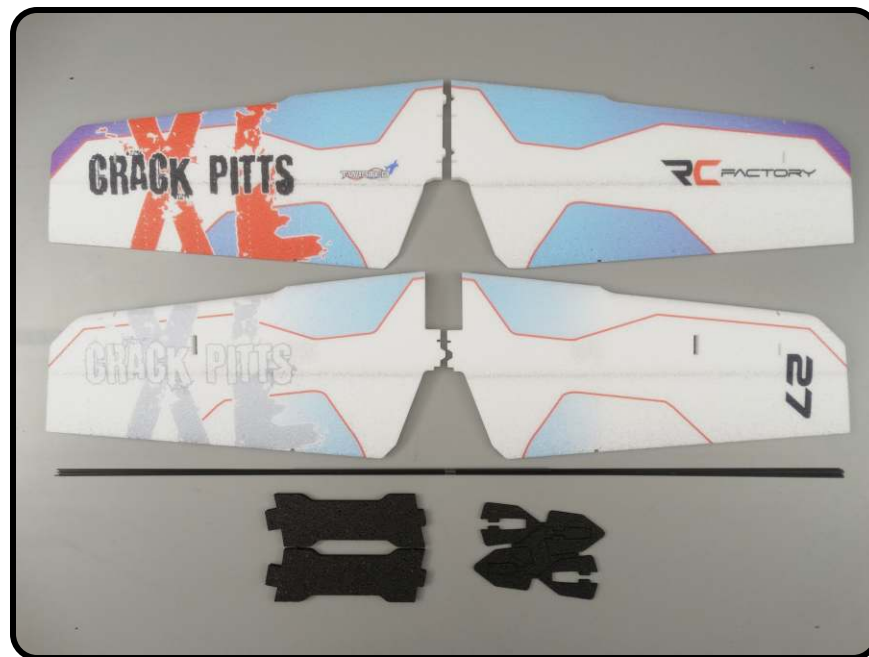
To provide the best products and service to our customers at the lowest prices possible. We take great pride in our company, our commitment to customer service and in the products we sell. Our online store is designed to provide you with a safe and secure environment to browse our product catalog.

Thank you for shopping with Twisted Hobbys!

kit contents



Fuselage Parts

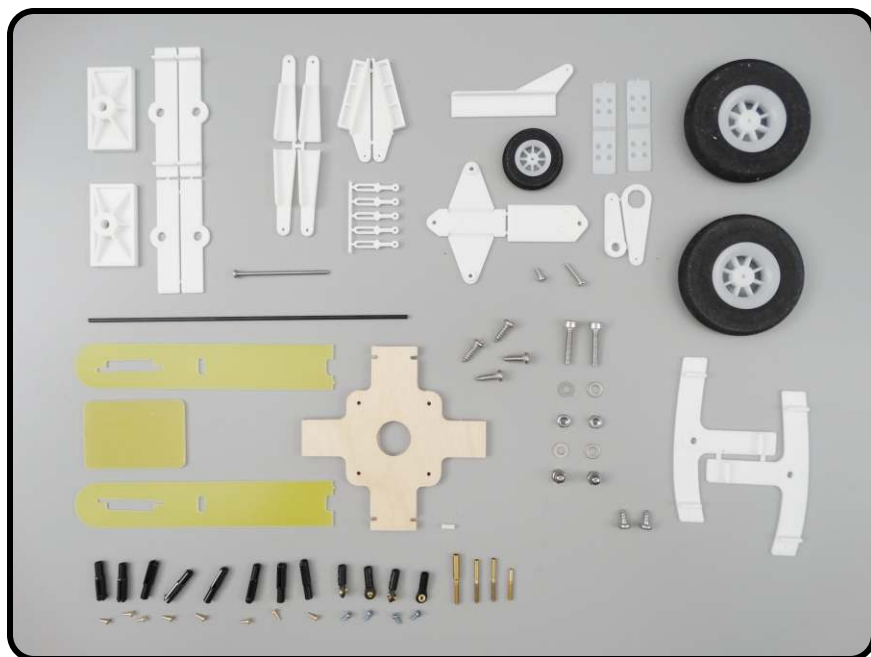


Wing Parts

Double check that you have all the above pictured items. Note - some kits might have slight deviations from the above pictured items.

DETAILED DESCRIPTIONS OF ITEMS WILL BE CALLED OUT IN THE BUILD STEPS

hardware & electronics



Hardware Kit



Power Combo

There are many different combinations of servos, motors, escs, props, etc. Above-Right is a suggestion offered from Twisted Hobbys for good durability and weight management.

***** THESE ARE OPTIONAL ITEMS - THEY ARE NOT INCLUDED IN THE KIT *****

TOOLS AND ADHESIVES NEEDED



Tools shown and listed are suggestions only.

Depending on your building technique you may not need everything indicated – and/or – you may find that other tools available to yourself may be of benefit to your Build.

It is also recommended that you have a flat building surface, one that will accept stick pins and push pins.

An Acoustic Ceiling panel from your local hardware store fits this bill nicely, and will lay flat on your work table. Over size / long push pins are available at your local craft store. These two items are by no means required, but will aid in the building process, and can be used for future projects

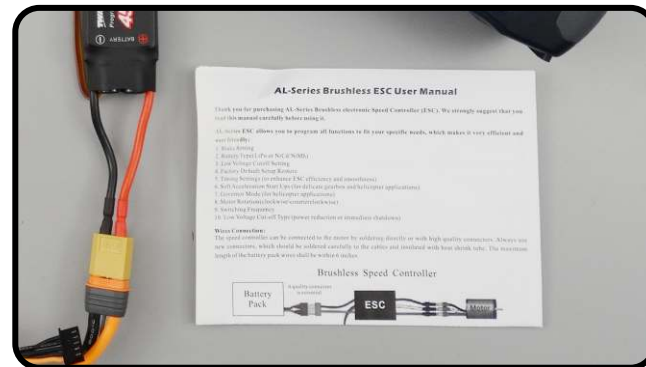
- **Motor Tool**
- **Small Drill Bits**
- **Tape Measure or Ruler**
- **Servo Tester**
- **Welders or Foam Tac Glue**
- **Hobby Knife w/new Blade**
- **Needle Nose Pliers**
- **Wire Cutters**
- **Low Temp Hot Glue Gun**
- **Course Sand Paper**
- **Scissors**
- **Small Phillips Screw Driver**
- **Thin and Medium CA**
- **CA Applicator Tips**
- **Activator**

the build

CONSTRUCTION METHODS:

Building surface should be at least 2ft x 4ft and flat. Weights or some small heavy objects will be handy for holding things in place during the time glue is setting.

Welders or FoamTac glue is used for FOAM TO FOAM joints. Thin and Medium CA can be used on the PLASTIC TO FOAM and CARBON TO FOAM joints. **When using the Welders or FoamTac glue for a butt joint, apply a thin film to each surface, allow to sit briefly per mfg instructions, then assemble.** Note that this method will create a nearly instant bond, so locate carefully when bringing the two pieces together. **If alignment is necessary or a slip joint, do not allow the glue to tack up**, simply apply and join immediately, you will have several minutes to locate the two parts before the glue sets up. In most cases the parts being glued can be handled with care in 30 minutes, full cure is approx 24 hours.



- ☐ Locate all the electronics that will be used on this model
- ☐ Create a model on your transmitter
- ☐ Following your radio mfg. instructions, bind your radio to the power combo components
- ☐ Calibrate the ESC.
- ☐ Confirm all components work properly.

Carefully fold the ailerons back with weight for 1 hr



1

First step will require Foam-Tac or Welders



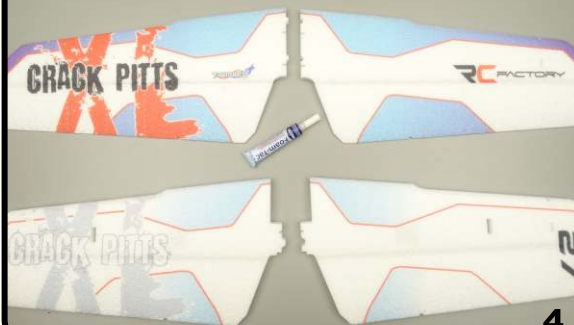
2

Cut the tip of the nozzle and open the safety seal



3

Tack up Method - Coat one mating surface / bring surfaces together / separate / let sit for 2 minutes



4

After 2 min. carefully align and join wing halves



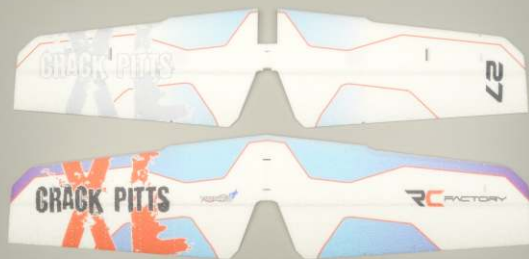
5

Repeat for the other wing



6

Locate the 4pcs 1.5mm round x 1000mm long and clean them with some alcohol.



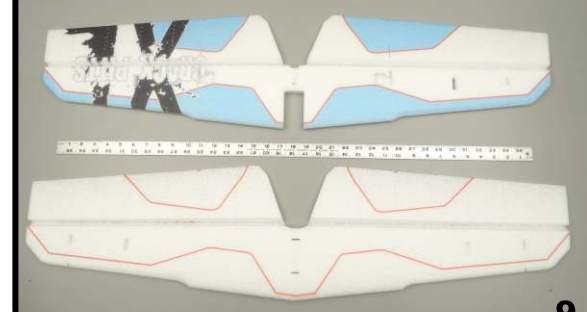
7

Things you will need for the next couple steps



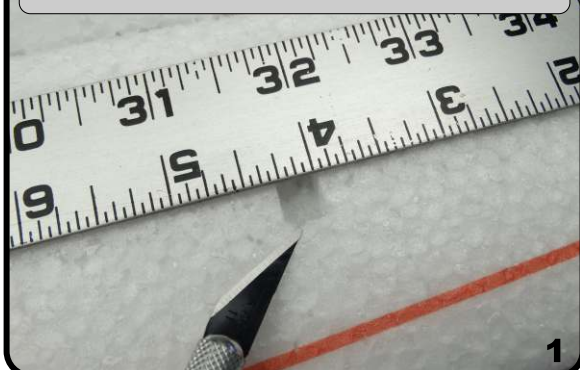
8

Grab your wings and straight edge

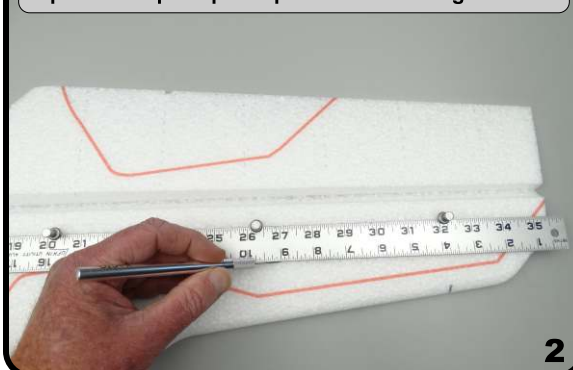


9

We want to locate the slit right at the leading edge of the tab cut out for the cabane strut



Line up the straight edge as stated and use the push pins to help keep it in place while cutting the slit



To get the location of the other side, stick a pin thru



Here you can see the pin pushed to the top - Do this on both ends of the wing



Use it to locate the straight edge



Do the push pin thing again to hold the straight edge in place while cutting



Cut the slit like was done on the bottom side



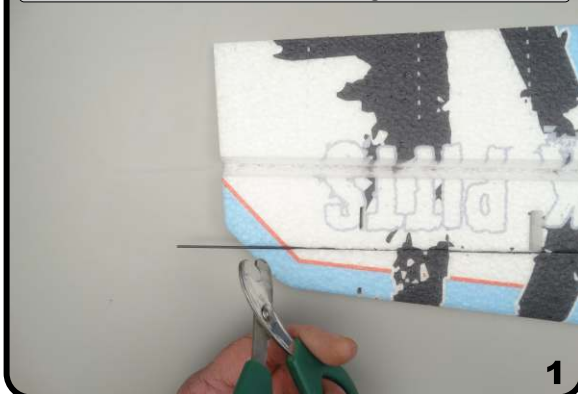
Repeat for top and bottom of both wings



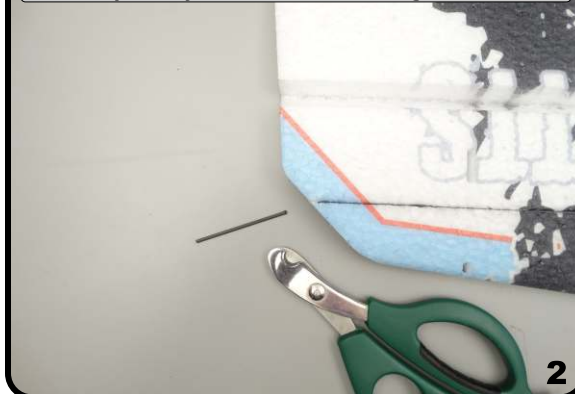
Lay the carbon rod into the slit - push in just below flush for the full length - DO NOT GLUE IN YET



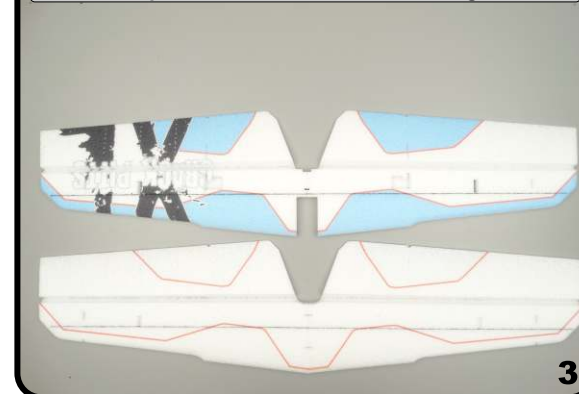
There will be a little extra length - trim it off



Cut it just shy of the end of the wing like shown



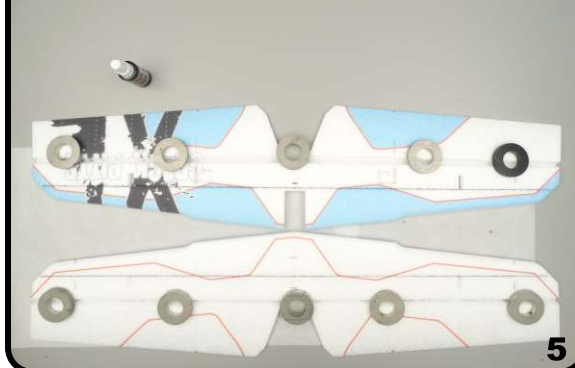
Repeat for both sides on both wings



With the bottom of the both wings facing up, make sure they are completely flat with the work surface



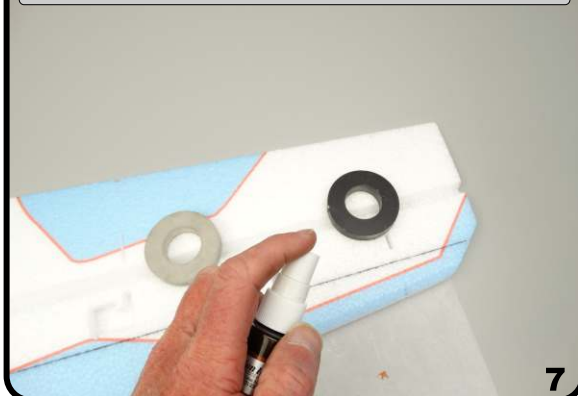
Use some weights to keep things flat



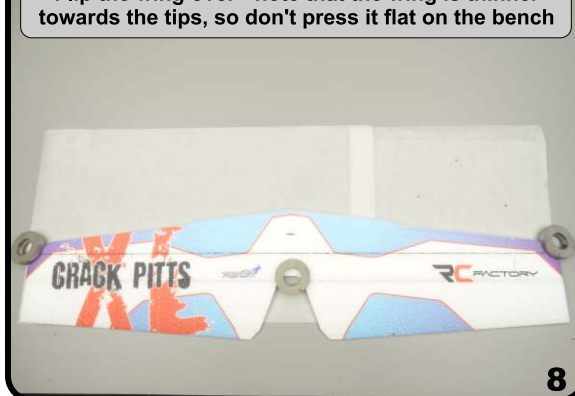
With thin CA secure the round spar to the wing



Cure with kicker



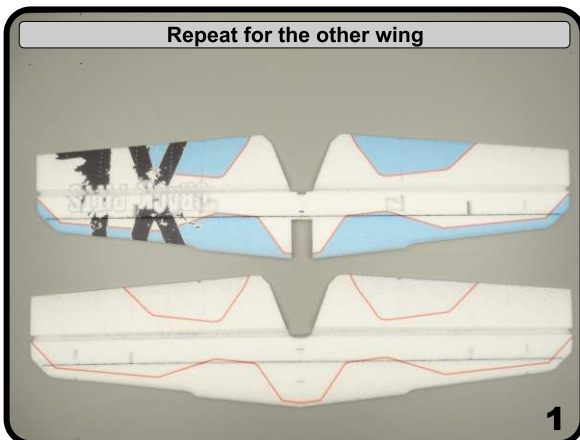
Flip the wing over - note that the wing is thinner towards the tips, so don't press it flat on the bench



About two quarters spacing is about right - secure the spar from this side like was done on the bottom side with thin CA and kicker



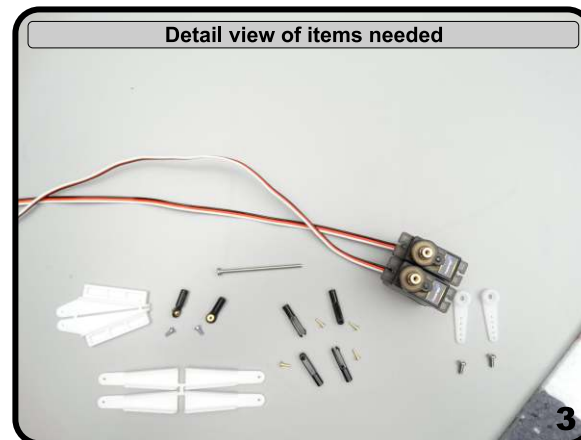
Repeat for the other wing



Gather up all the stuff for the bottom wing



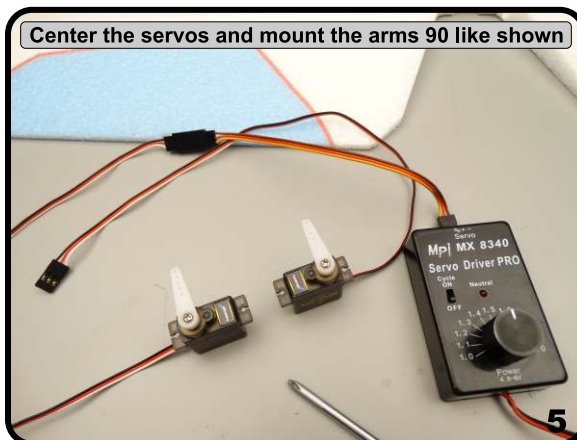
Detail view of items needed



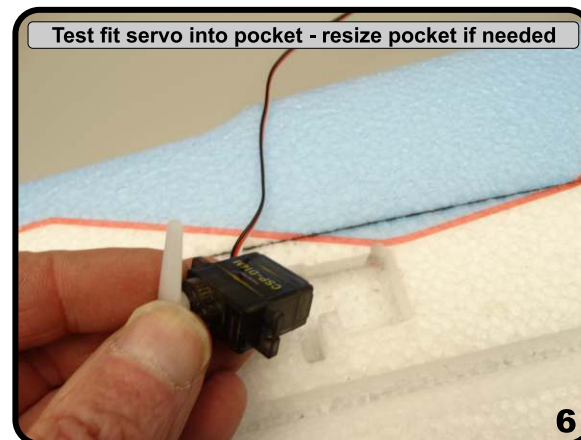
Clip all the pieces free and trim them smooth



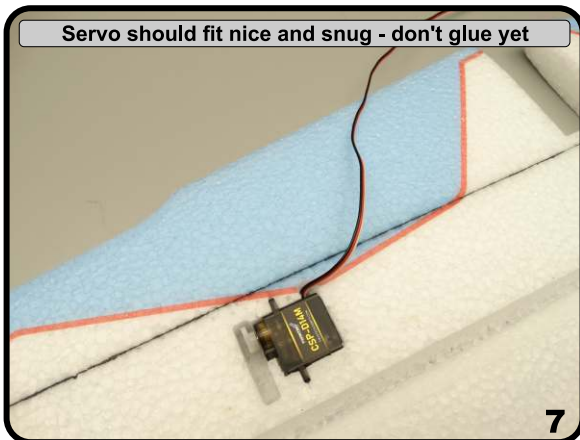
Center the servos and mount the arms 90 like shown



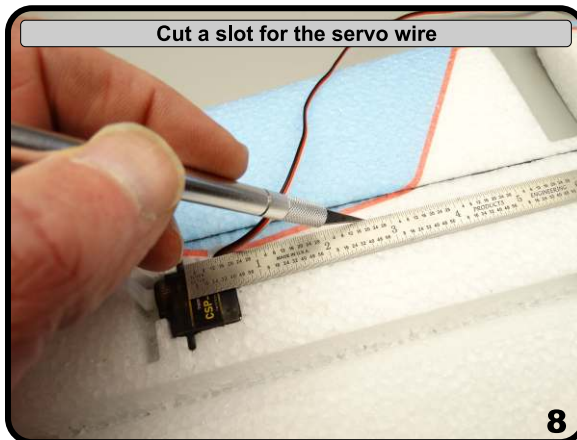
Test fit servo into pocket - resize pocket if needed



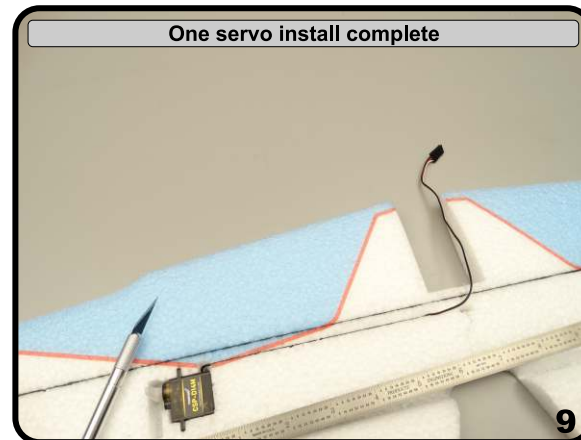
Servo should fit nice and snug - don't glue yet



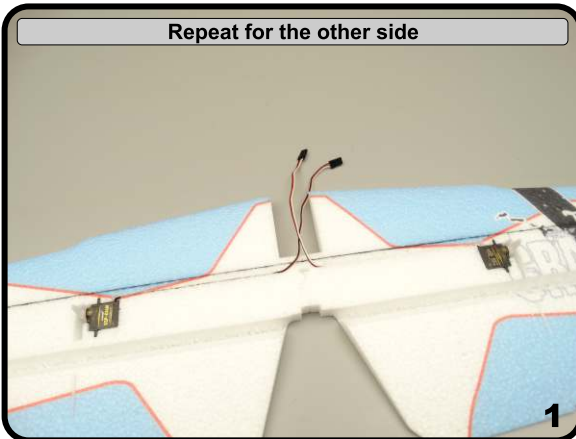
Cut a slot for the servo wire



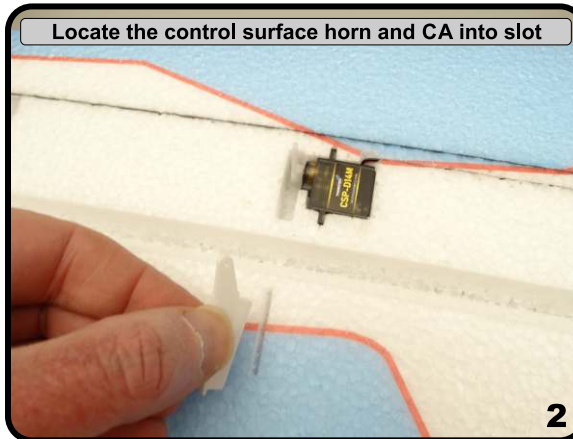
One servo install complete



Repeat for the other side



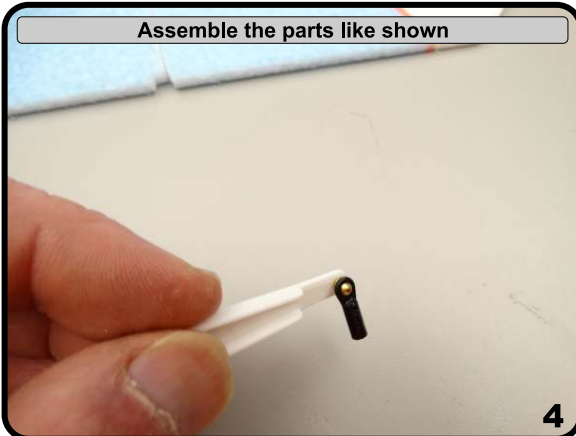
Locate the control surface horn and CA into slot



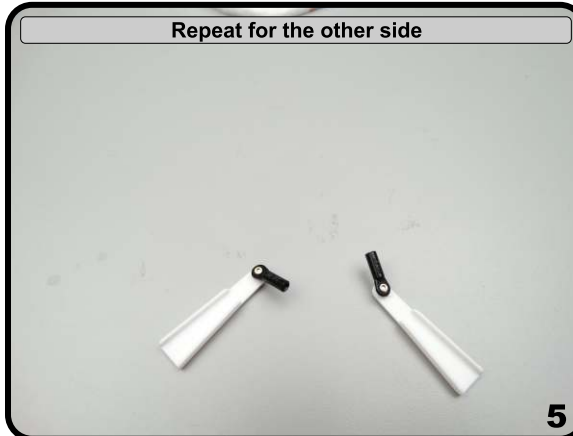
Gather up these items to make the gang horns



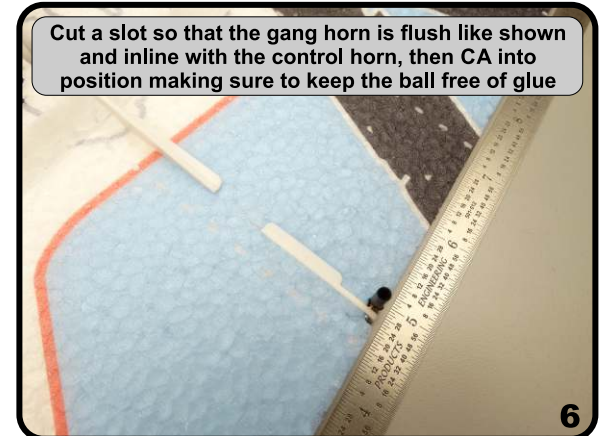
Assemble the parts like shown



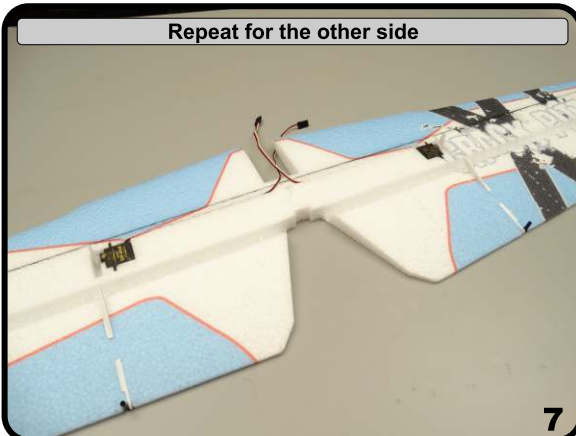
Repeat for the other side



Cut a slot so that the gang horn is flush like shown and inline with the control horn, then CA into position making sure to keep the ball free of glue



Repeat for the other side



Aileron linkage is next - locate the items shown



Start with the 40mm long screw and cut off the head as close as you can to the base



You should be left with about 40mm of thread, if it is a little shorter that is fine



1

... next cut it in half



2

You should now have two pieces that are 18mm to 20mm long each



3

Remove the burrs with a rotary tool or file



4

With the Servo and Aileron in the neutral position double check the length, should be like shown



5

Now take the two clevis ends and threaded piece...



6

.... and thread them on equally so that there is a 10mm gap between the two ends



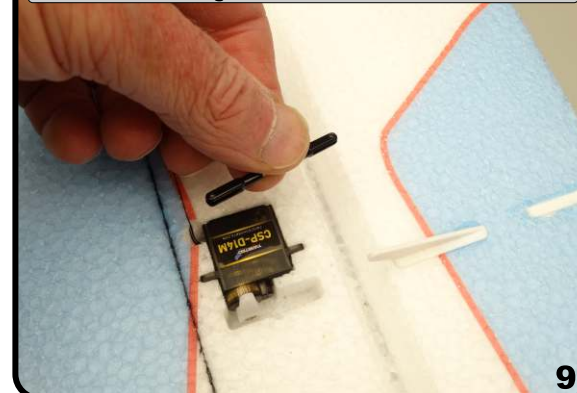
7

Repeat for the other side



8

This link will go between the horn and servo



9

Snap the small pins in flush on both ends



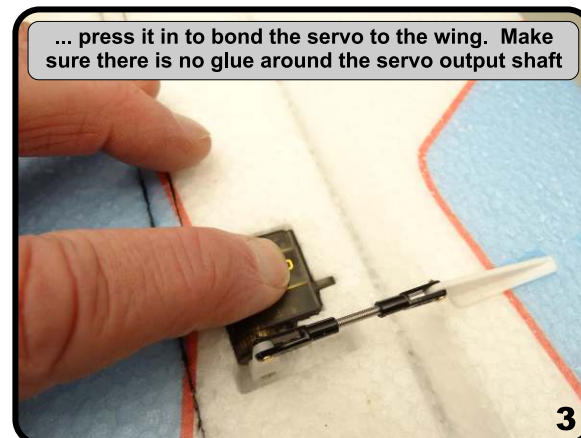
1

Now we are sure everything is lined up and installed so the servo can be glued in. Put a large dab of FoamTac down in the hole...



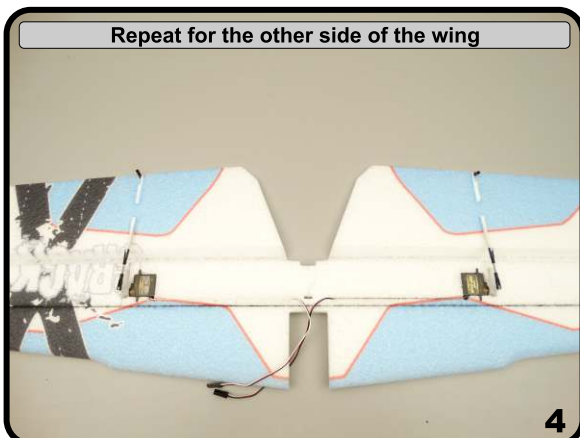
2

... press it in to bond the servo to the wing. Make sure there is no glue around the servo output shaft



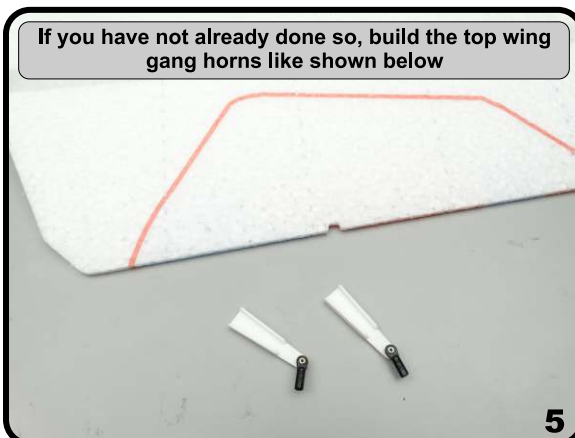
3

Repeat for the other side of the wing



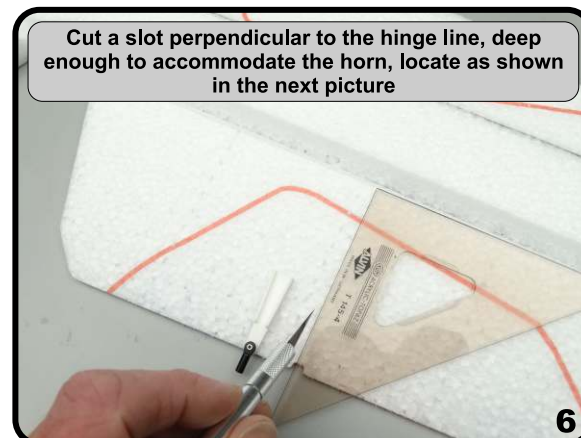
4

If you have not already done so, build the top wing gang horns like shown below



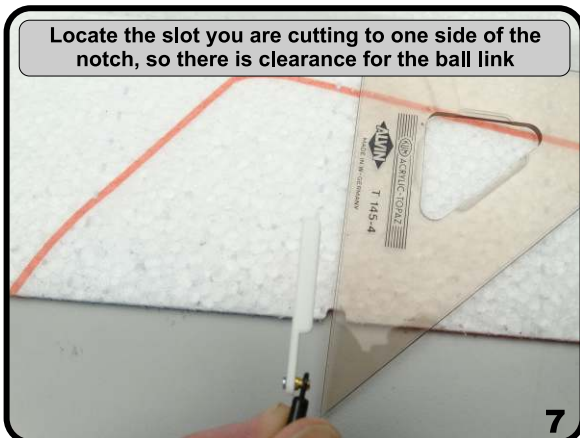
5

Cut a slot perpendicular to the hinge line, deep enough to accommodate the horn, locate as shown in the next picture



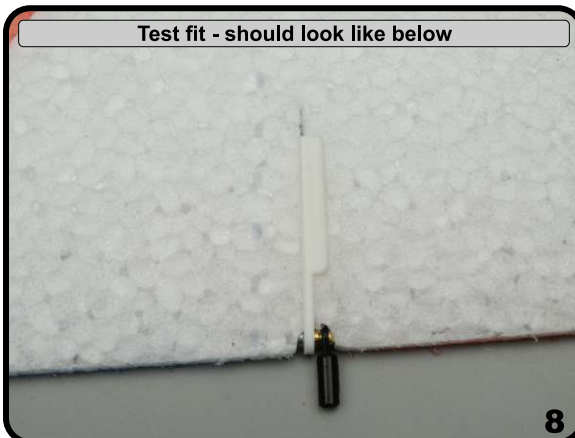
6

Locate the slot you are cutting to one side of the notch, so there is clearance for the ball link



7

Test fit - should look like below



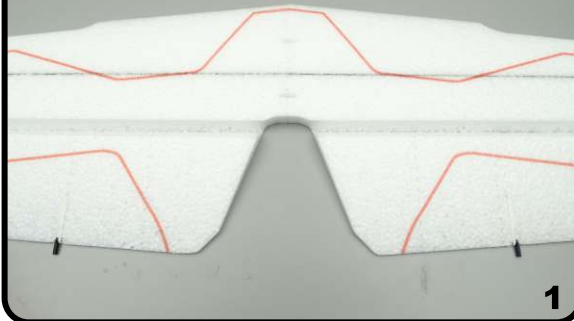
8

Secure with thin CA - Keep the ball link free of glue

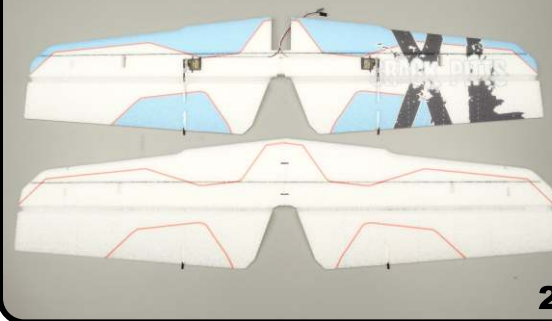


9

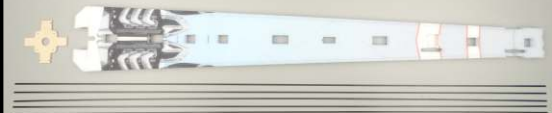
Repeat for the other side



Both wings are now complete and can be set aside



Fuselage is next - Gather up the firewall the horizontal fuselage section and the 5pcs of 3x0.5x1000mm carbon strips



Start with the firewall - Use FoamTac on all the mating surfaces



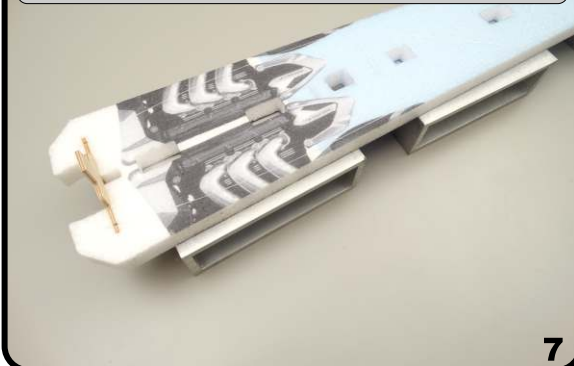
Spread the foam a little and install wet with the glue



Make sure and line up the slots in the firewall with the slit in the fuselage - a spar will lay thru here



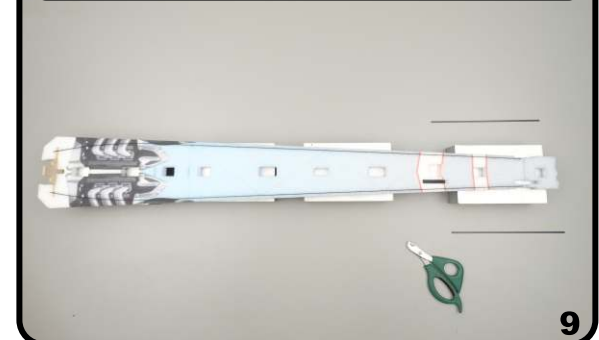
Once the firewall is installed you will have to prop up the fuselage or....



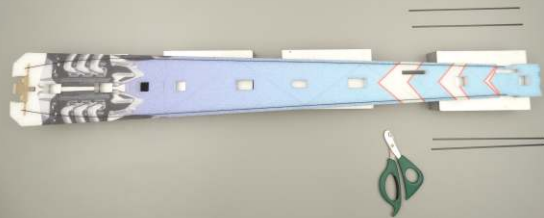
.... work off the end of your work bench



Take two of the spars and lay them the length of the fuselage in the provided slit - cut to length. Do not glue yet, this will be done after all the pieces are cut

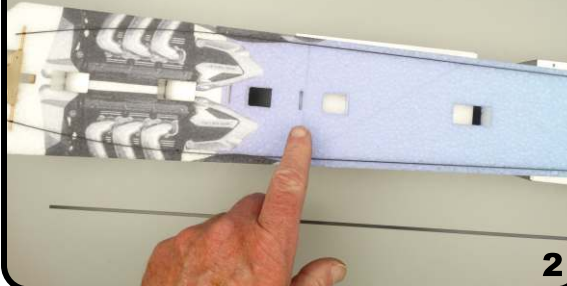


Flip the fuselage over and repeat the last step



1

Take the remaining spar and start cutting to fit the slits on both sides starting from the front and working rearward...



2

Cut to fit, no glue yet



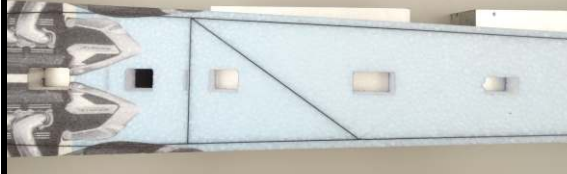
3

Flip over - cut to fit



4

Cut next one



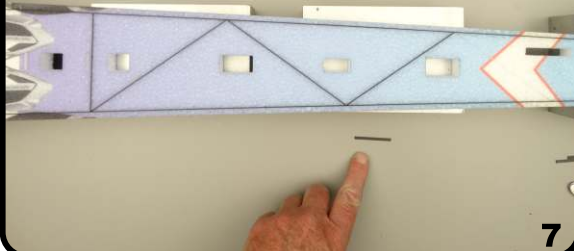
5

Flip and repeat



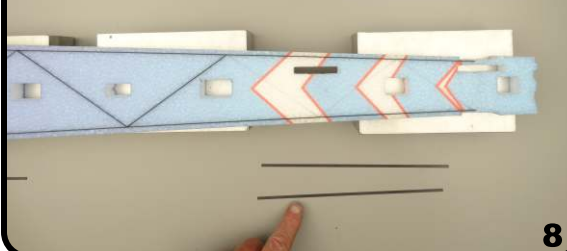
6

Keep doing this until you run out of spar



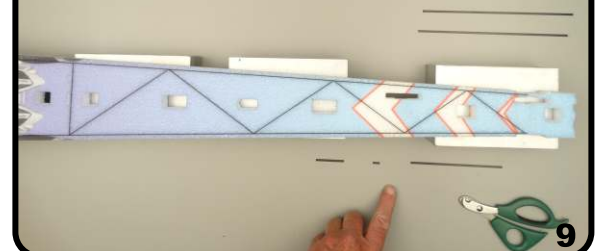
7

Then use the drop from the first 4 spars to complete



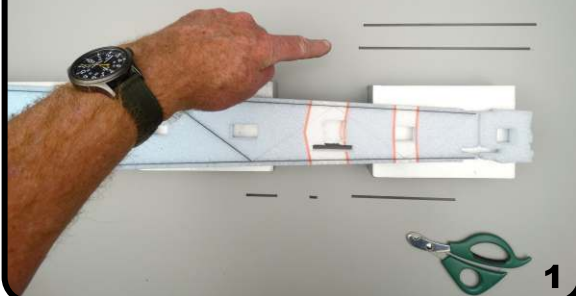
8

One side done

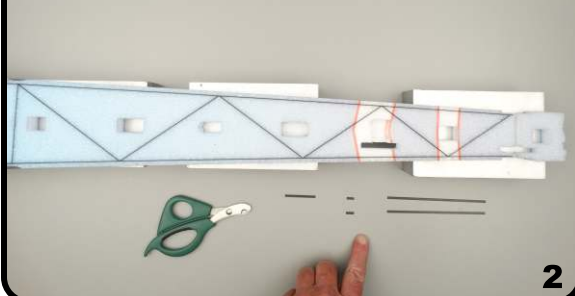


9

Flip over and use the other two pieces of drop



When complete you should have a little extra



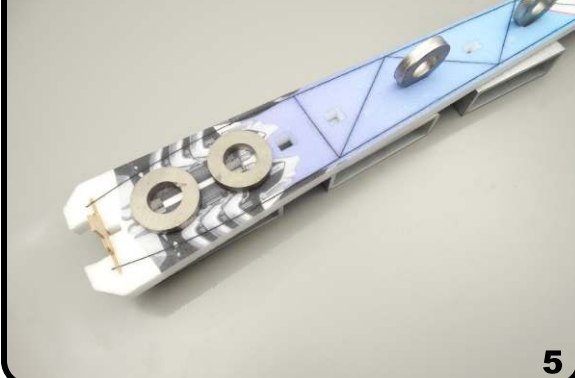
Now you can start gluing with thin CA



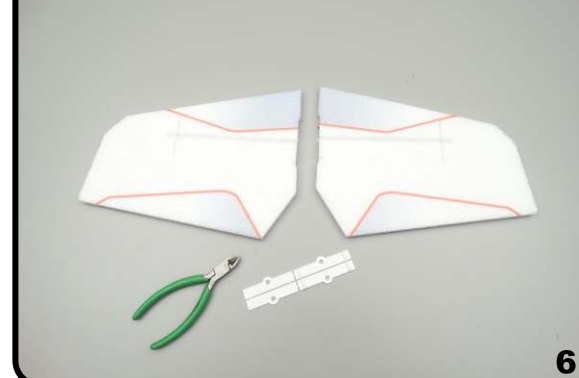
Do both sides



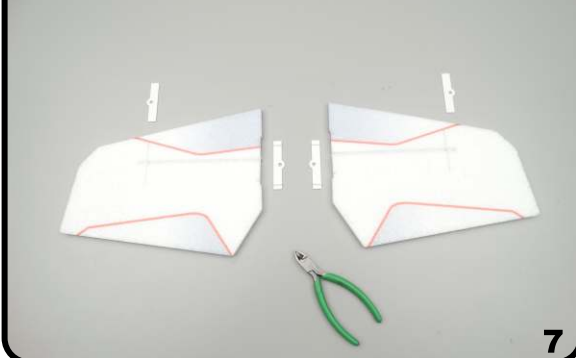
Keep everything flat - make sure the spars are flush



Elevator is next - gather the items shown



Snip the plastic items apart and notice that they not all the same....



The ones with the tabs go on the inside root end



Med/Thick CA will be used to secure the items

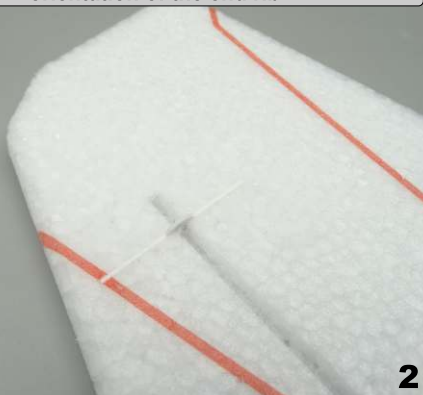


Glue the four pieces in - with orientation shown in the next two pictures....



1

.... orientation of the end rib...



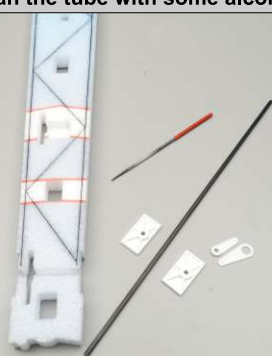
2

... orientation of the root rib. Make sure to keep the round holes in the center free of glue at this time



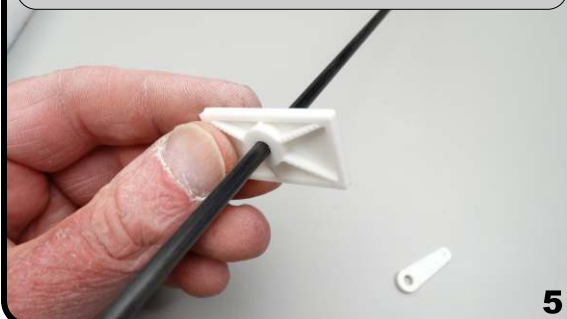
3

Elevator torque tube is next. Gather the times shown and clean the tube with some alcohol



4

Check the fit of the bearing block - It should be slop free & slide smoothly without resistance - If it does not, carefully enlarge the hole with a small round file until it does - DO NOT sand the tube to make it fit.



5

Check the fit of the control arm - this should be a snug fit that still allows you to position it. Size with a small round file to achieve this if needed



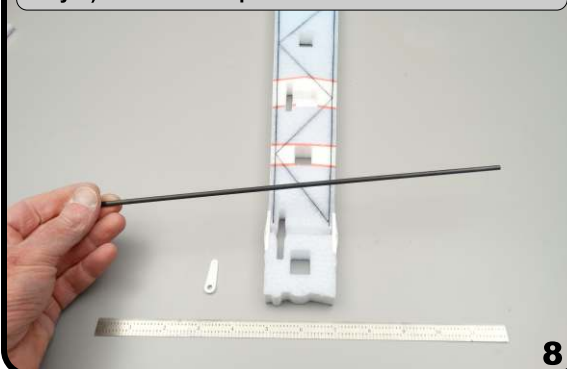
6

With the bottom of the fuselage facing UP, the bearing block will be positioned with the hole closer to the workbench like shown below. Do not glue yet!



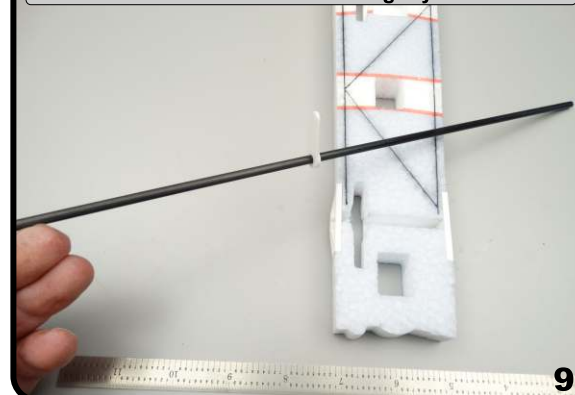
7

Dry fit the bearing blocks into their notches (no glue yet). Grab the torque tube and the control arm



8

Slide the arm on so that it is slightly off center

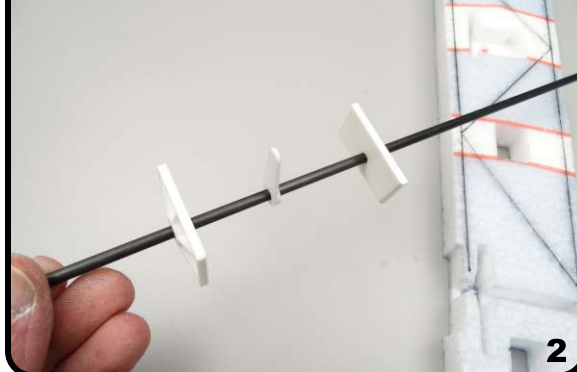


9

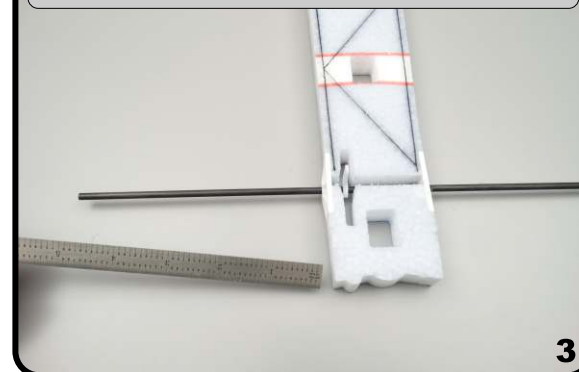
Position it so that it is inline with the slot and equal ends of the rod are on each side



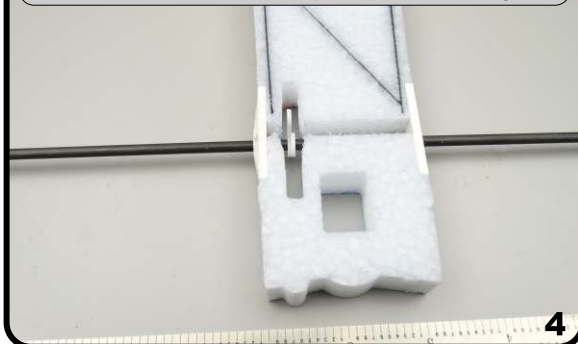
Slide the bear blocks on like shown



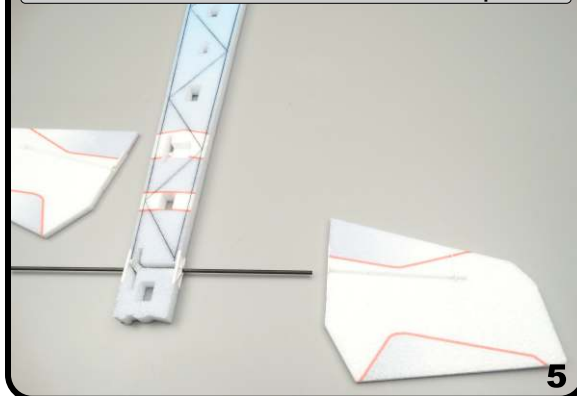
Test fit to ensure the rods are still equal on each side and that the arm is centered in the slot like shown



When you are happy with the fit glue the bearing blocks to the fuselage like shown with Med/Thick CA. Make sure to keep the pivot point free of glue!



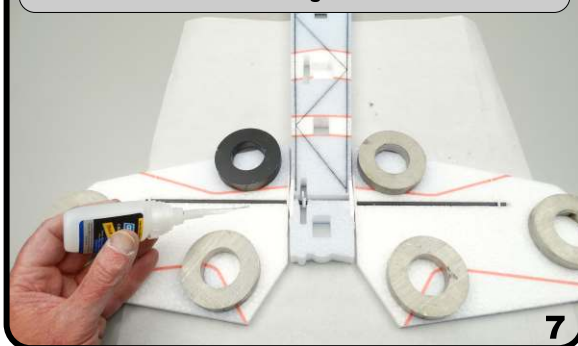
Next the elevators will be attached to the torque tube



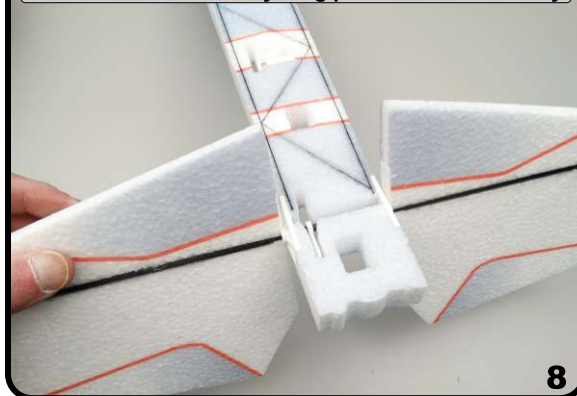
Slide the tube through the rib holes leaving a tiny gap between the inside root rib & the bearing block



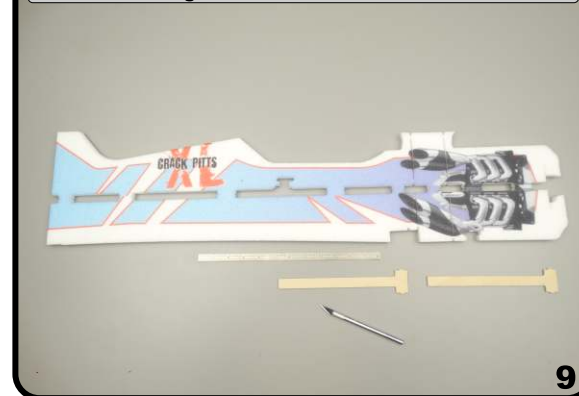
Repeat for the other side - constrain flat and glue the torque tube to the elevators. Keep the pivot points free of glue



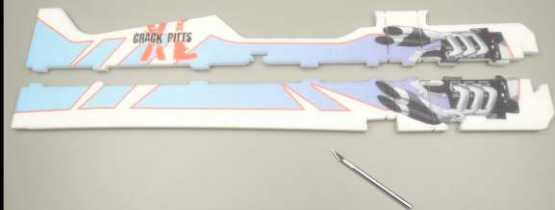
Double check that everything pivots smooth & freely



Vertical fuselage sections are next. Gather the items

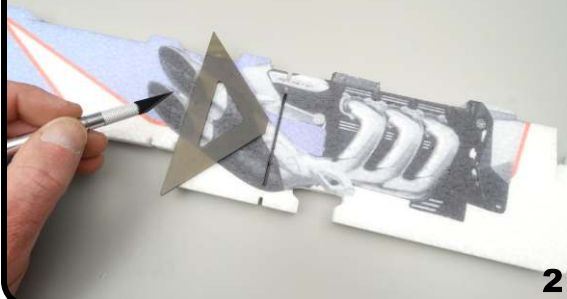


Split apart down the center of the tabs like shown



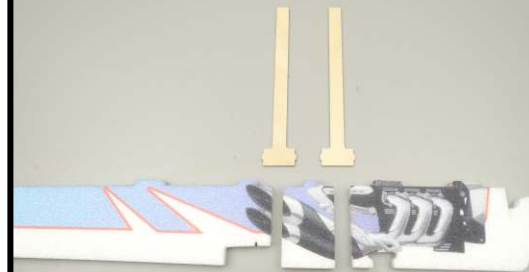
1

Cut the bottom section apart. Make sure to cut the tabs flush



2

The wood pieces will go inbetween



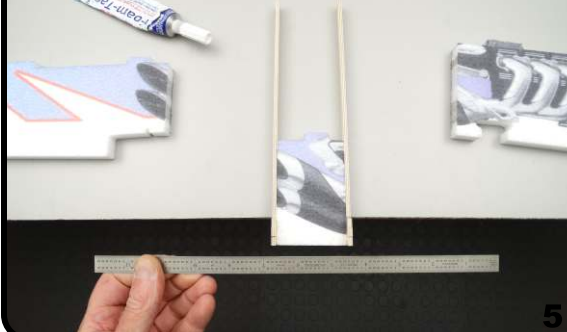
3

FoamTac and tackup method will be used



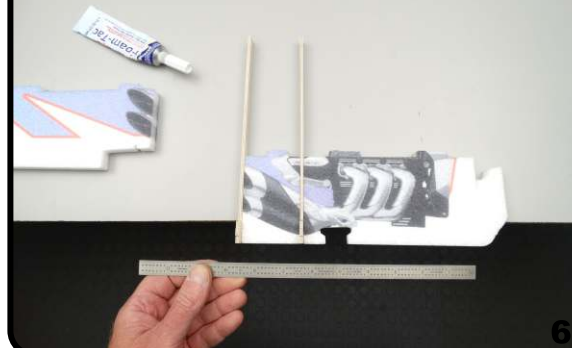
4

Glue the wood pieces to the foam center section with the wide part hanging off the workbench and the bottoms of the wood and foam flush to one another



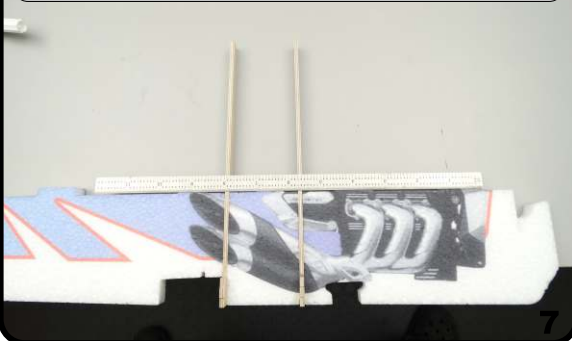
5

Glue the front section one - keep bottoms flush



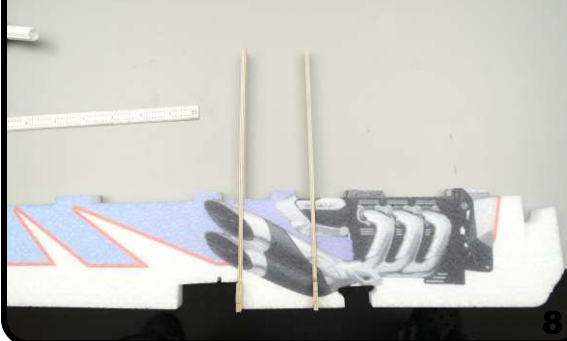
6

Next the rear section. On this piece keep it flush with the top surface like shown below with the straight edge.



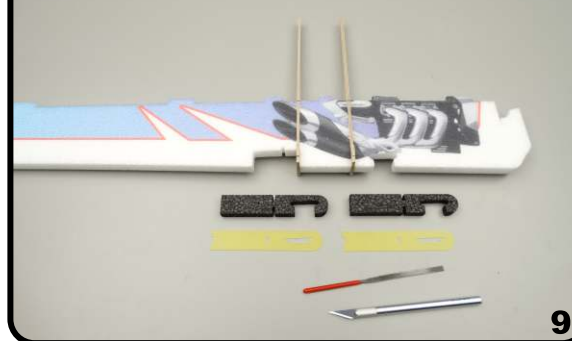
7

Completed assembly - let dry for a little bit



8

Next is the landing gear mount - gather the items



9

Cut the black pieces apart



1

Check their fit - if they are a little too thick to be flush with the edge of the main wood part....



2

.... carefully slice off a thin amount ...



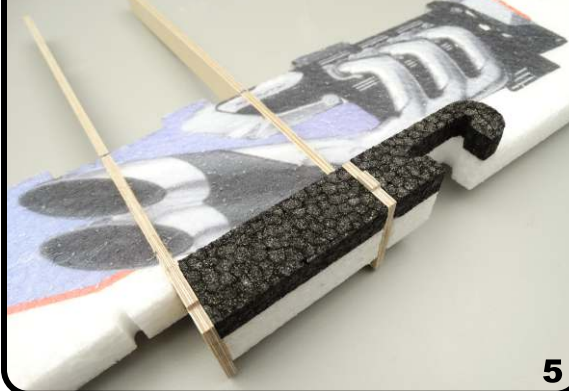
3

... so that they are flush like shown below



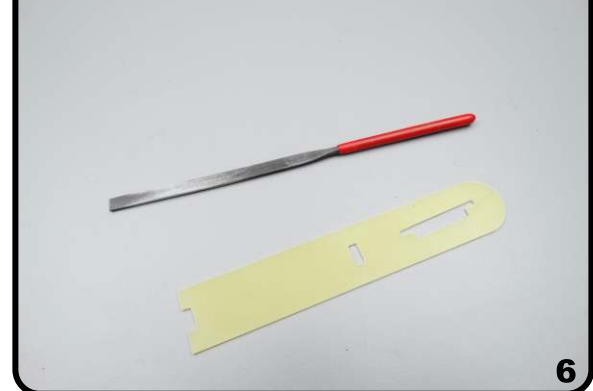
4

Set in place - no glue yet



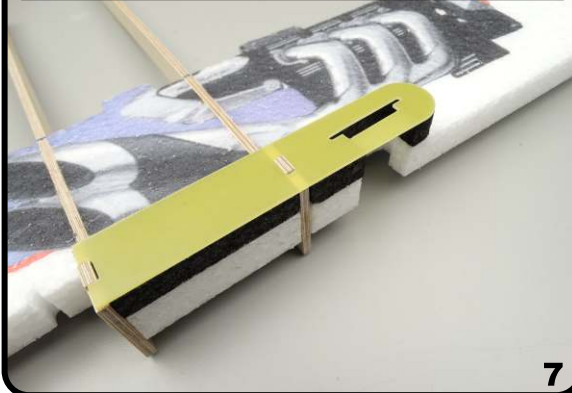
5

With a small flat file....



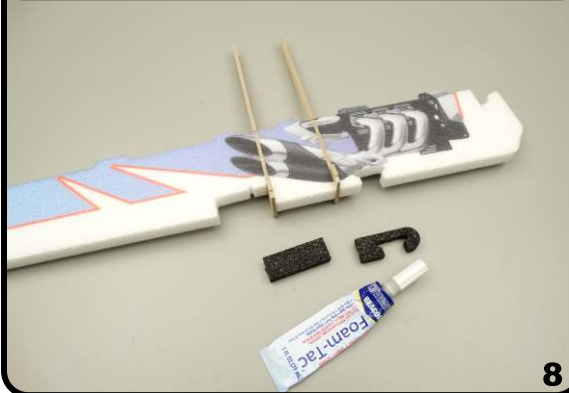
6

.... size the cutouts to fit the tabs of the wood parts



7

Wet method will be used to attach the parts...



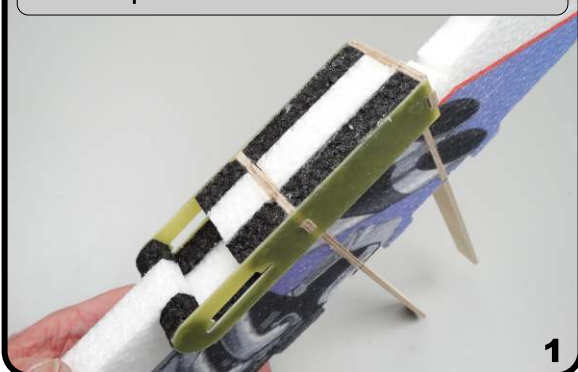
8

... glue and assemble as shown



9

Do both sides so that it looks like below. Make sure that the parts are all firm and flush to each other



1

While the previous step is drying - prepare the elevator servo - gather up the parts



2

With a .062" dia drill, match drill one of the servo horn holes to the extension



3

Next enlarge the hole in the extension horn with a larger drill bit to provide clearance for the screw



4

Insert the screw from the extension horn side...



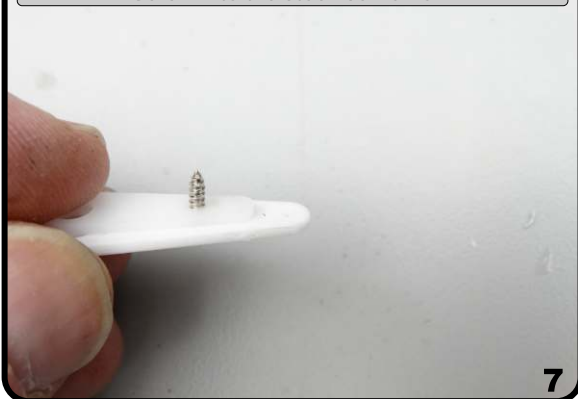
5

... and snug up - Do not over tighten



6

Screw into the stock servo horn



7

Clip off the extra with some side cutters



8

Touch up with a file to remove any burrs



9

Add a little Med/Thick CA to secure the two parts



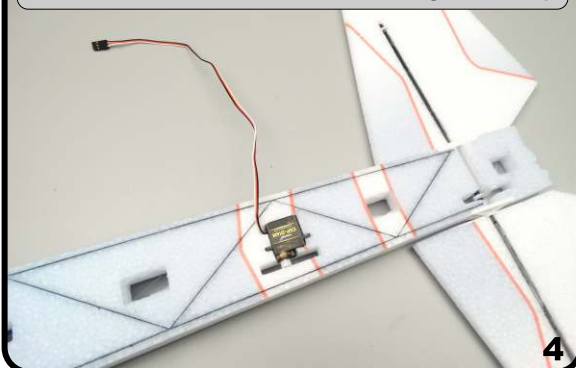
Electronically center the servo and attach horn as shown below - the orientation is important



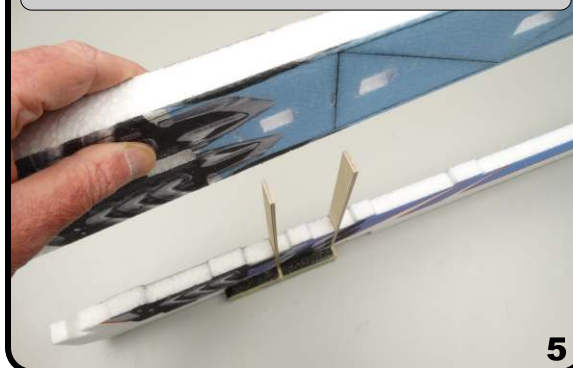
Time to join these two pieces together



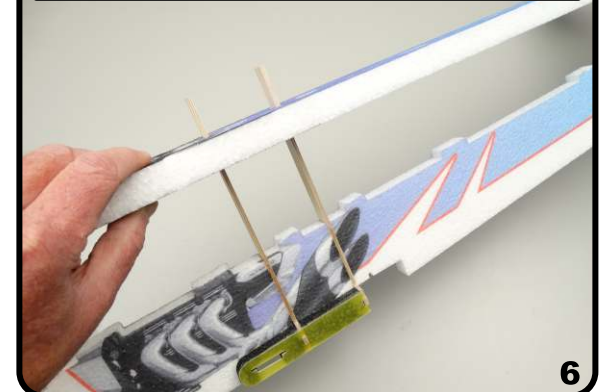
Install the servo you just built. It installs from the bottom side with the servo horn sticking out the top



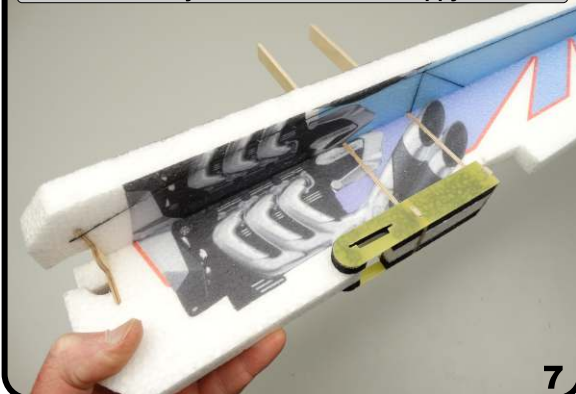
Slide the horizontal fuselage section onto the wood tabs from the bottom side



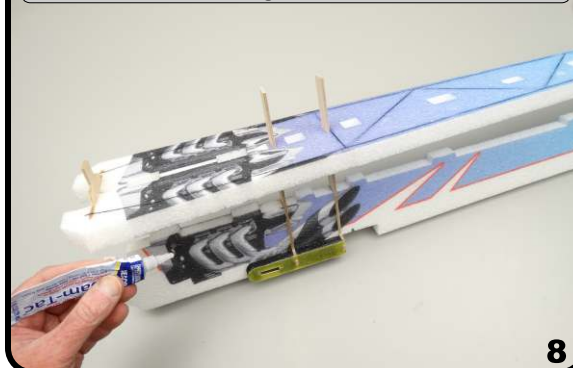
Gently work the wood pieces thru the slots



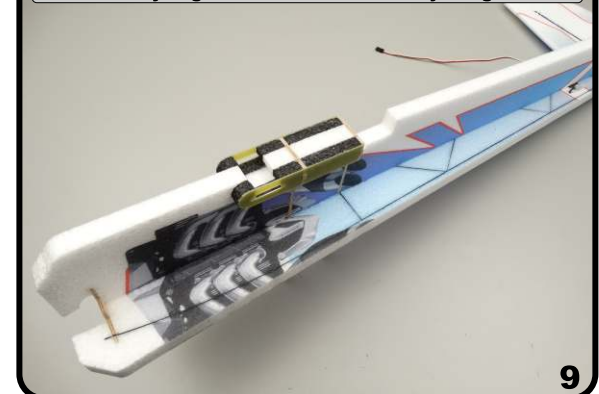
Slide all the way on to test fit - once happy with fit...



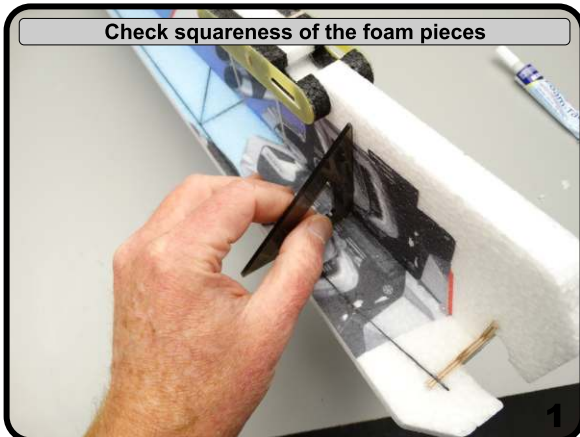
... separate enough to add glue to all the mating surfaces. Don't forget the motor mount area



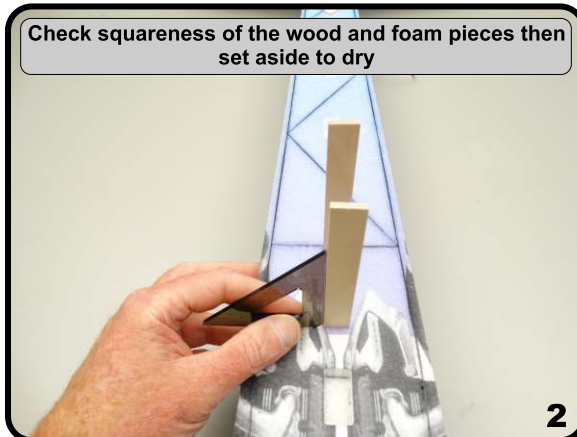
Press firmly together - make sure everything is flush



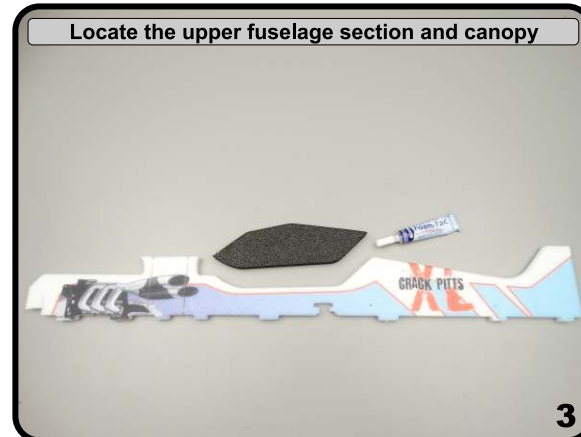
Check squareness of the foam pieces



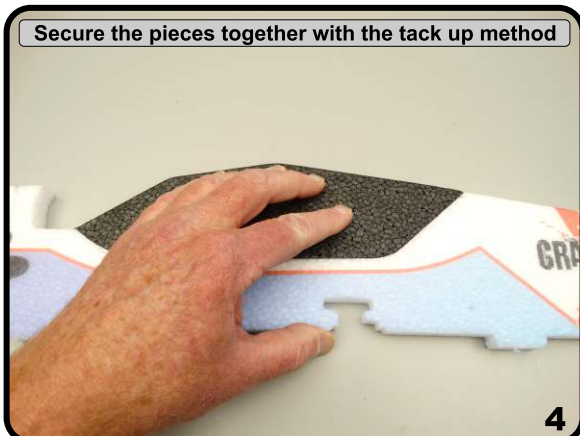
Check squareness of the wood and foam pieces then set aside to dry



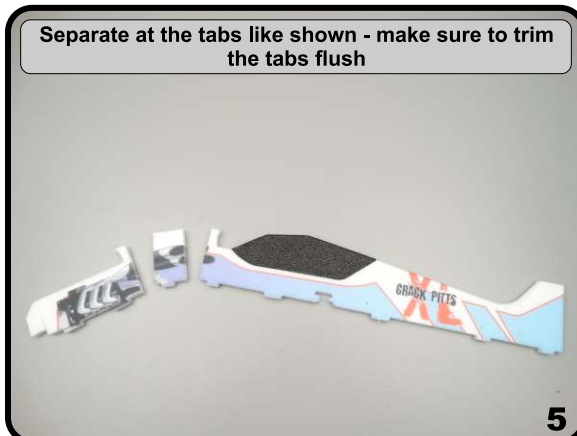
Locate the upper fuselage section and canopy



Secure the pieces together with the tack up method



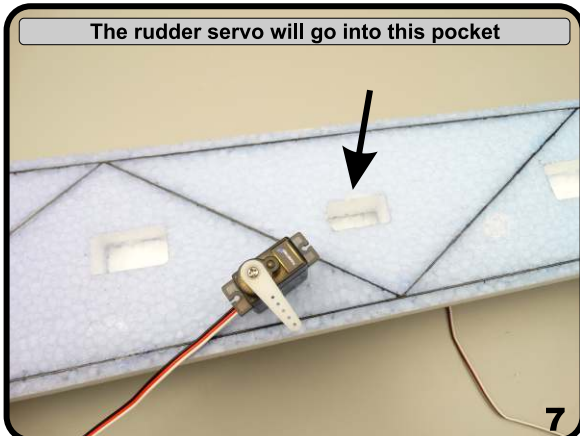
Separate at the tabs like shown - make sure to trim the tabs flush



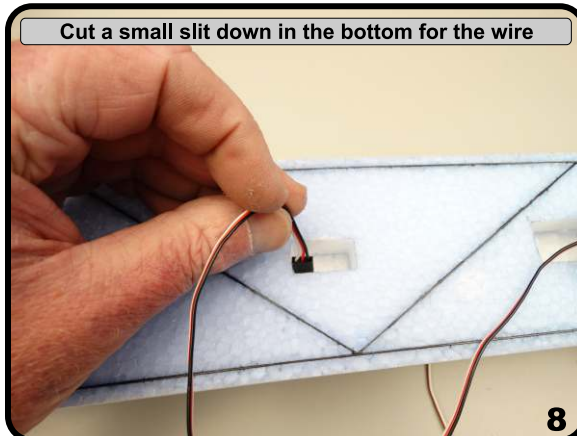
Locate your rudder servo - electronically center it and attach the horn as shown



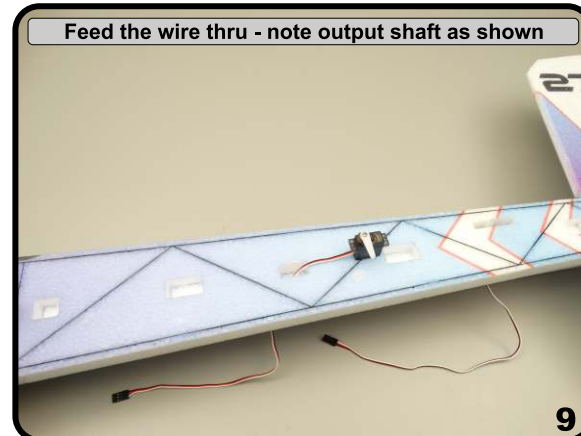
The rudder servo will go into this pocket



Cut a small slit down in the bottom for the wire



Feed the wire thru - note output shaft as shown



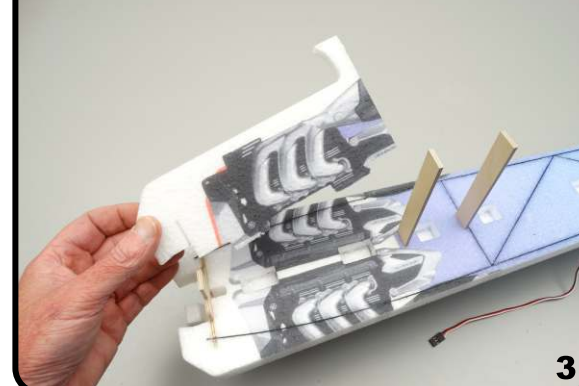
Fully seat the servo in the pocket flush with tabs



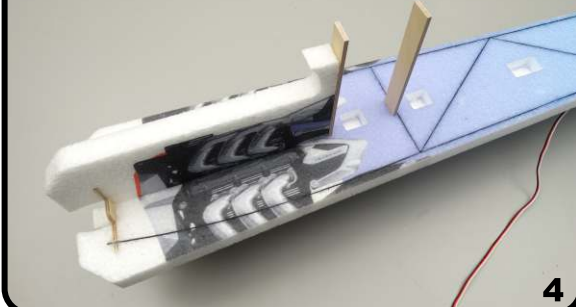
Now you can attach the upper fuselage sections



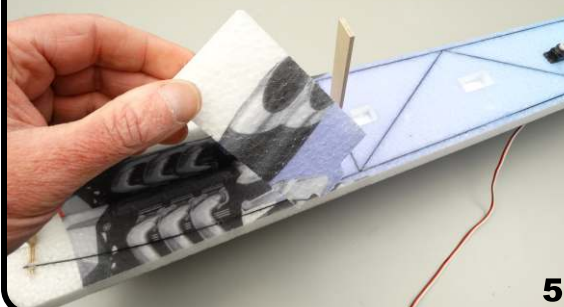
Start at the front and use the Wet Method



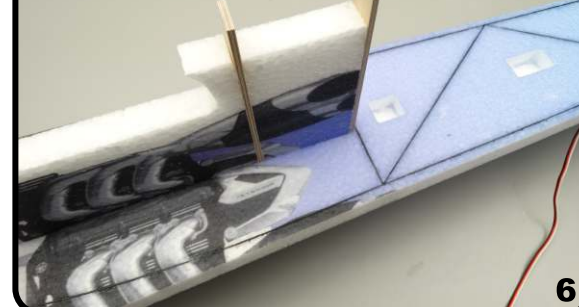
Press together firm and flush



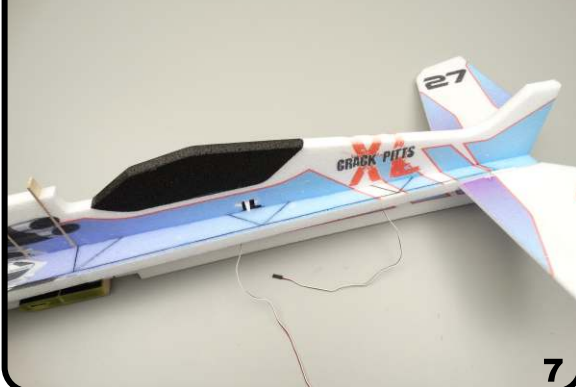
Next do the middle section



Press together firm and flush



Repeat for the rear section



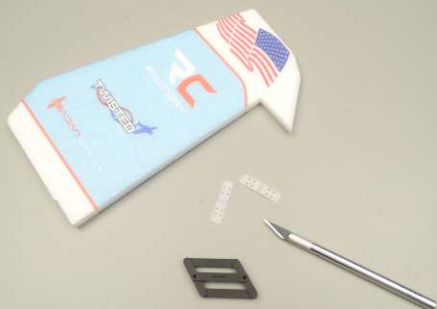
Check that everything is nice and square



Set aside for a little bit to dry



Hinging the rudder is next. Locate the items shown, if you have a hinge slot locator jig it will be helpful



1

Hinges will want to be located approx where shown



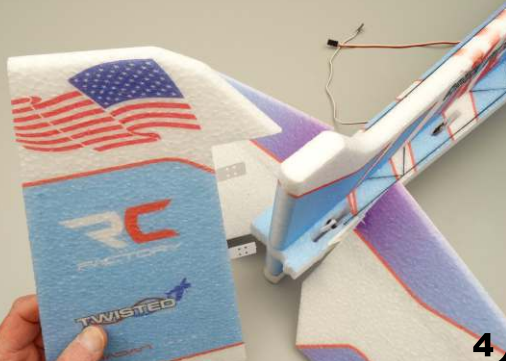
2

Cut the slots - stay free of the control horn slit - glue in making sure that the pivot point is not buried



3

Cut matching slits into the fuselage section



4

Line up and leave a fair amount of gap with the pivot point of the hinge right in the center of the gap



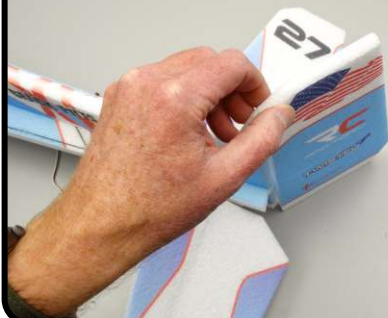
5

Test for full deflection to the left....



6

... and to the right - then glue the other side of the hinges with some thin CA



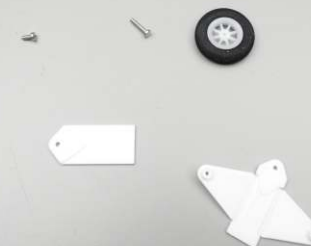
7

Gather up the items below to assemble the tail wheel



8

Cut the plastic pieces apart

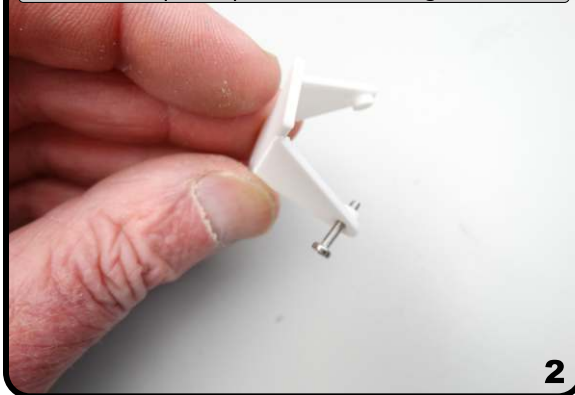


9

Enlarge the tail wheel center hole to .078"/2mm dia



Put the (M2x10) screw thru the larger hole



Install the wheel on to the screw



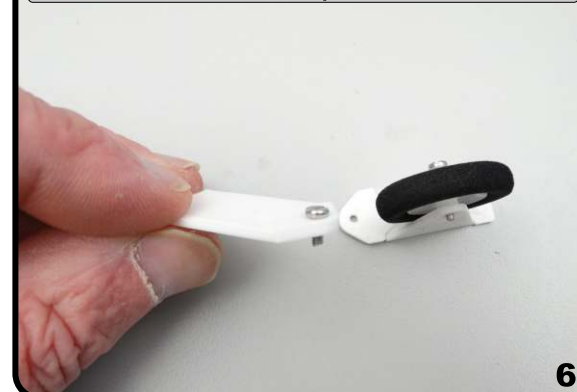
Tighten the screw into the hole on the other side just enough so the wheel can still spin freely



The small screw M2x5 will be the hinge point



Insert thru the part shown



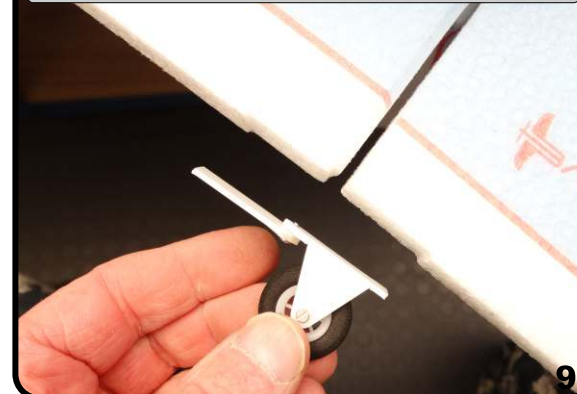
... and thread into the part with the wheel



Do not make tight, parts need to move freely



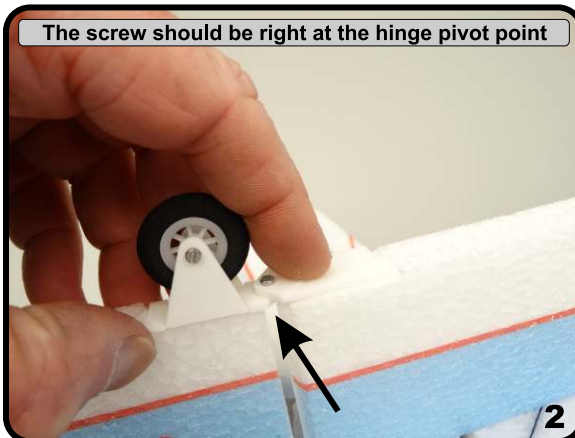
Attach as show - bracket to fuse - wheel to rudder



Test fit - trim a little foam away if needed to get flush



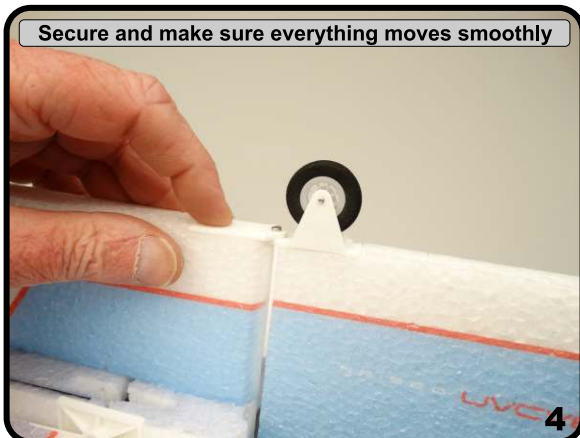
The screw should be right at the hinge pivot point



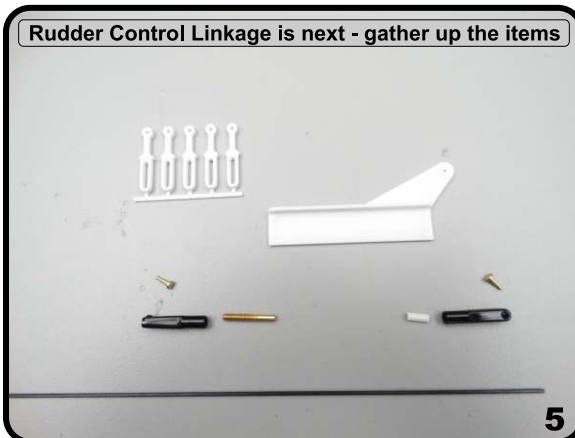
Use the TackUp Method



Secure and make sure everything moves smoothly



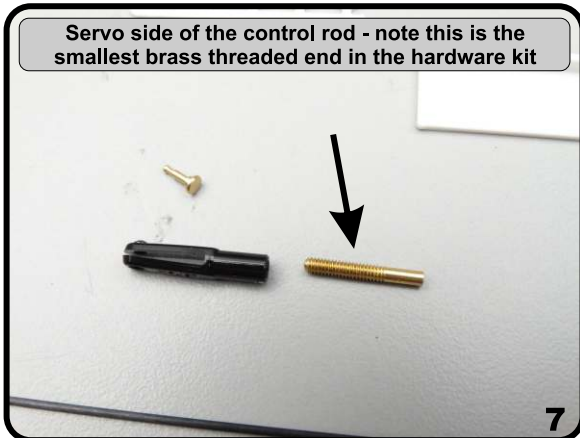
Rudder Control Linkage is next - gather up the items



Link for the rudder side of the push rod



Servo side of the control rod - note this is the smallest brass threaded end in the hardware kit



Start with the control horn - it installs into this slot



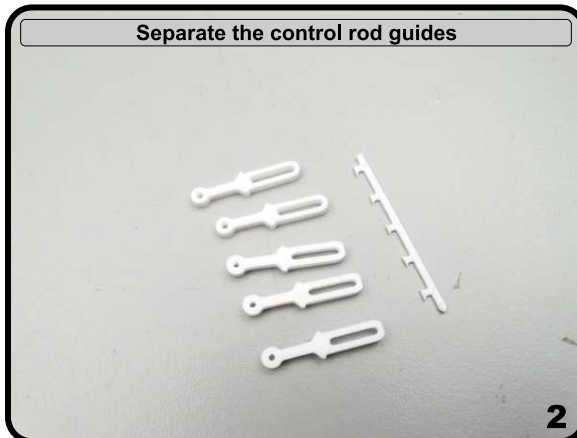
Use Med/Thick CA put some in the slot & on the horn



Put in the slot and hit with Kicker



Separate the control rod guides



Stick them in the pre-cut holes - Do Not Glue Yet



Locate a link and the small white spacer



Push the spacer into the back of the link



Push the spacer in until it is flush, then check that the control rod slides in nicely



Slide the control rod all the way in...



... and glue with thin CA



Next get the bass fitting and the other link



Thread the fitting into the link - leave a little adjustment for both in and out if needed



1

Attach this to the outer hole of the rudder servo horn



2

Make sure the pin is fully seated and snapped in



3

Head of the Pin is flush when it is fully seated



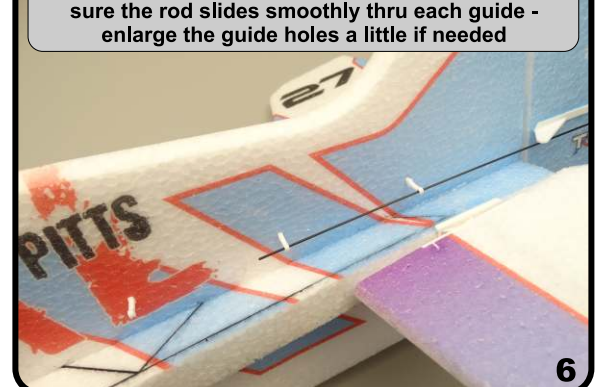
4

Grab the control rod and....



5

... stick the raw end thru the guides like shown. Make sure the rod slides smoothly thru each guide - enlarge the guide holes a little if needed



6

Stick the rod all the way thru



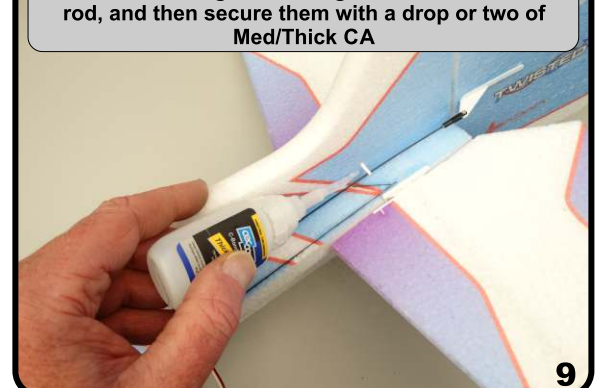
7

Install the pin thru the rudder side of the clevis and horn - make sure the pin is all the way flush



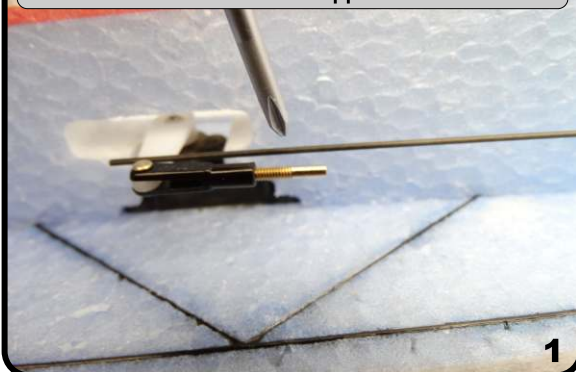
8

Position all the guides straight and even with the rod, and then secure them with a drop or two of Med/Thick CA



9

With the servo and rudder in neutral - you will want to trim the rod at this approx. location



1

Mark the location and trim



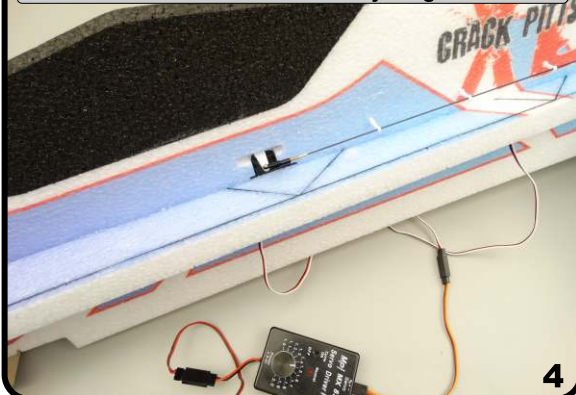
2

Trimmed - dress up the end a little so that it slides into the brass fitting all the way



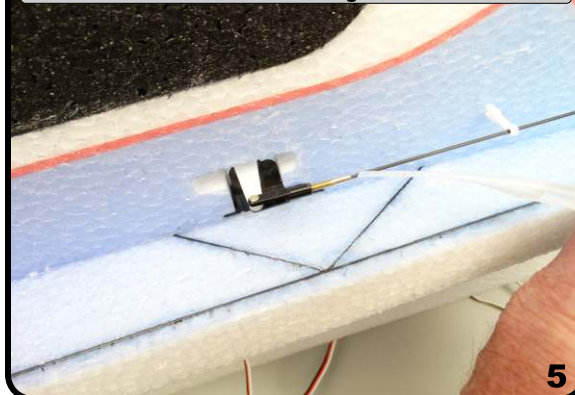
3

Insert and double check that everything is centered



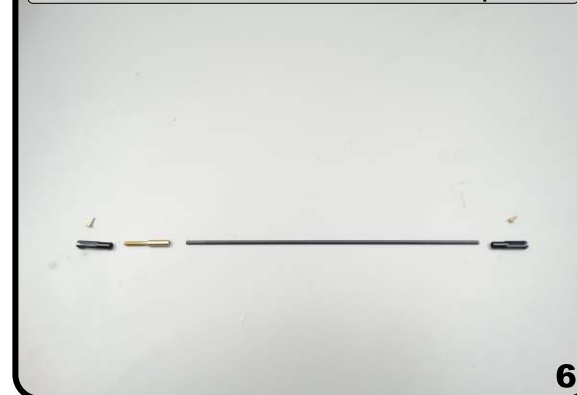
4

Glue the rod to the fitting with thin CA



5

Elevator control rod is next - Gather the parts



6

This will be the parts for the elevator end



7

... and these, the parts for the servo end



8

Start by threading these two parts together....



9

... about that far



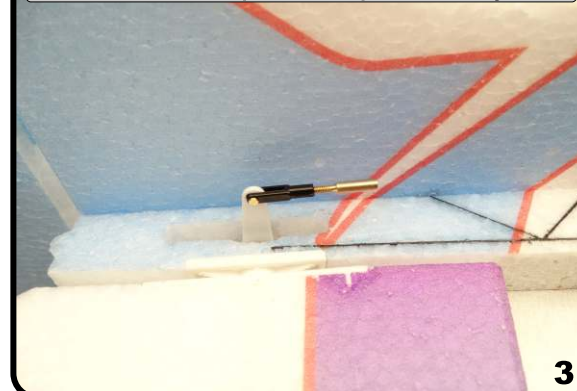
1

Now it will get attached to the control horn



2

Install the brass pin and snap it all the way in



3

Next do the servo end - sand the end a little for a good fit, and slide the rod all the way in



4

Secure with some thin CA



5

Attach to the servo horn



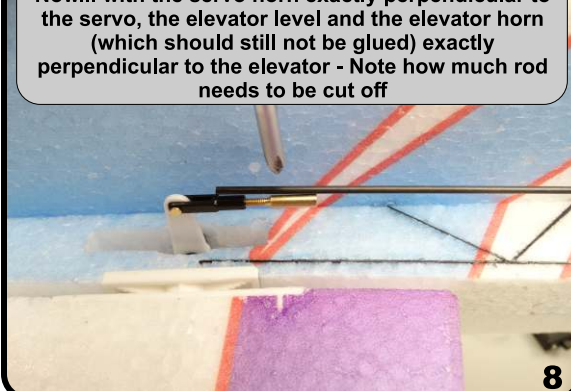
6

Install the brass pin and snap it all the way in



7

Now... with the servo horn exactly perpendicular to the servo, the elevator level and the elevator horn (which should still not be glued) exactly perpendicular to the elevator - Note how much rod needs to be cut off



8

Snip off the extra

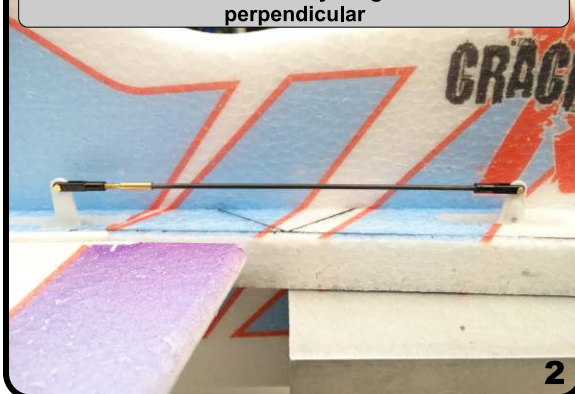


9

Dress up the end a little so it slides into the fitting



Double check that everything is level and perpendicular



... then secure the two item together with thin CA



NOW - the torque tube elevator horn can be glued to the torque with thin CA - Do not get glue on the bearing surfaces



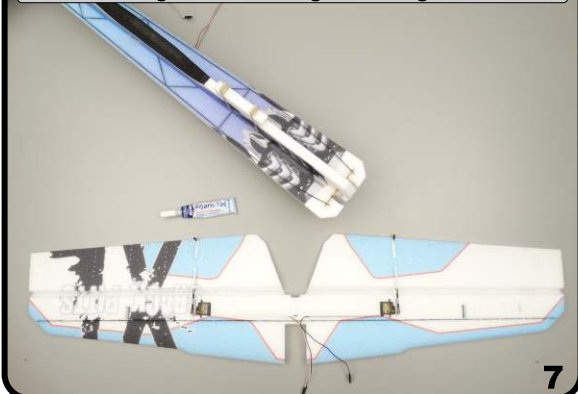
Make sure that you have full movement both down...



... and up



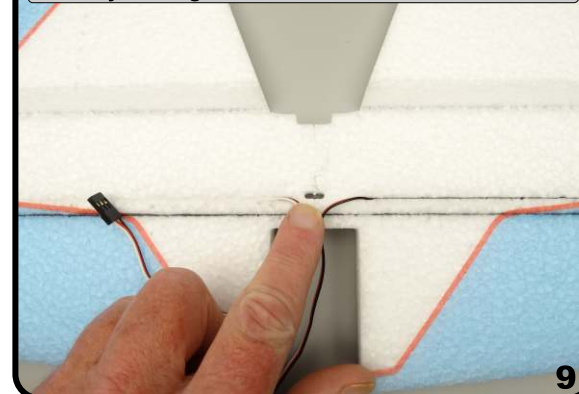
Mounting the lower wing to fuselage is next



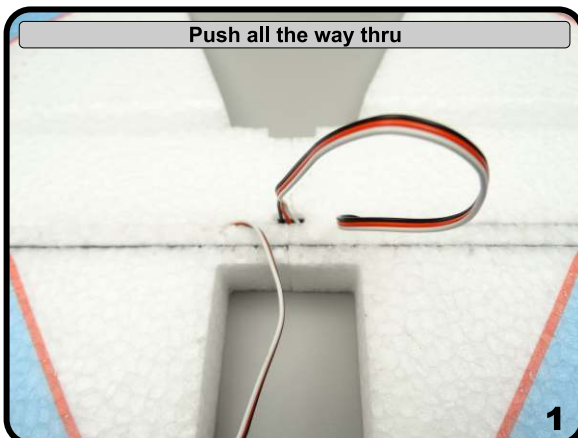
Wet Method will be used



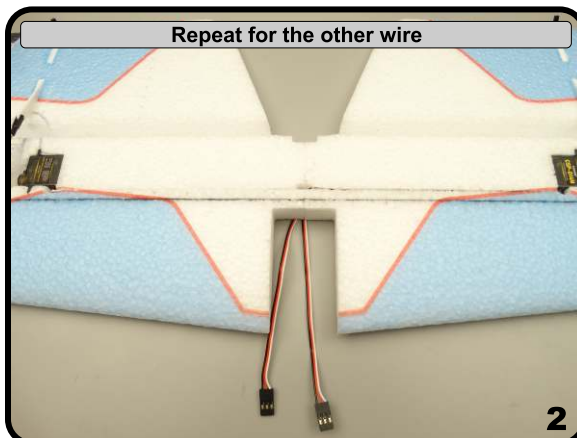
Start by feeding the servo wires thru the center hole



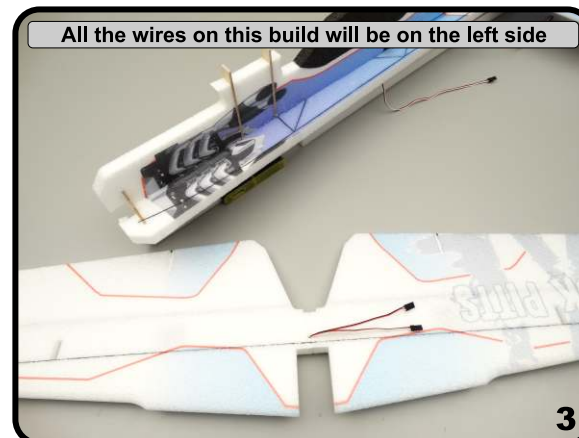
Push all the way thru



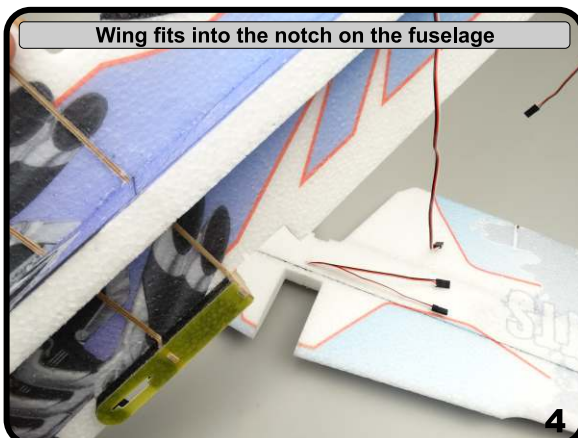
Repeat for the other wire



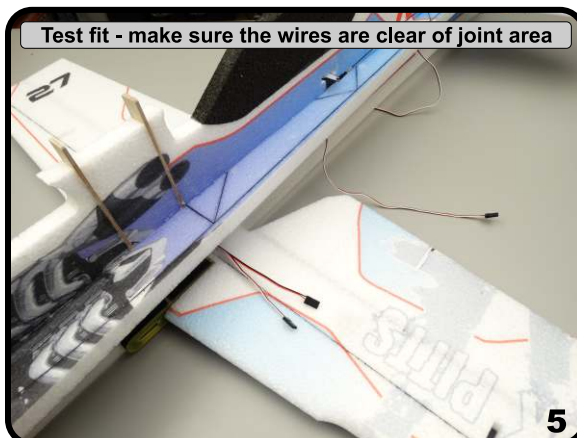
All the wires on this build will be on the left side



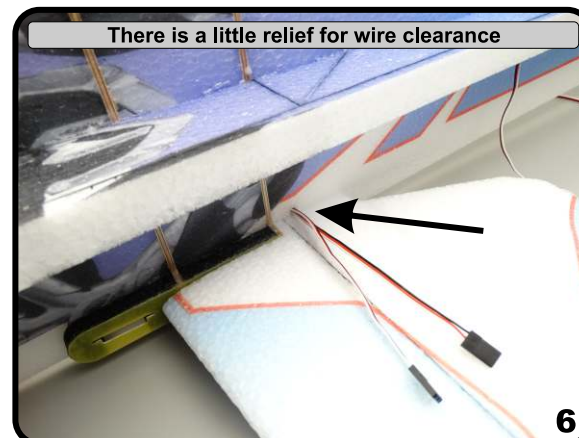
Wing fits into the notch on the fuselage



Test fit - make sure the wires are clear of joint area



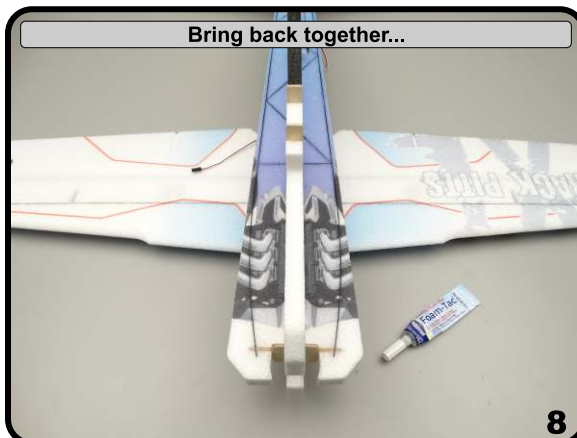
There is a little relief for wire clearance



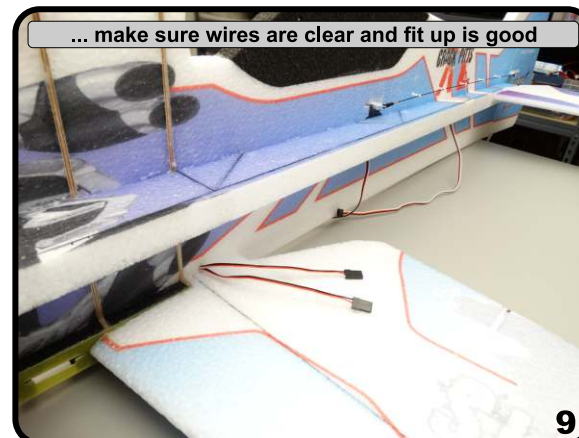
Once you are happy separate and apply glue



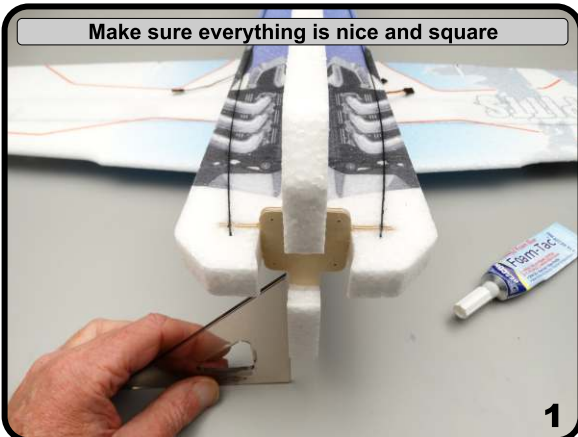
Bring back together...



... make sure wires are clear and fit up is good



Make sure everything is nice and square



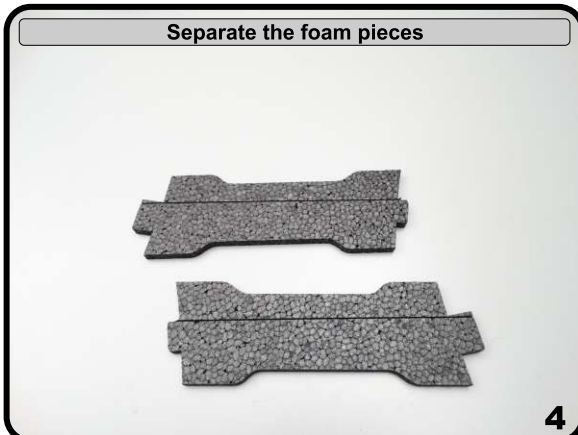
Set this aside to dry for a little while



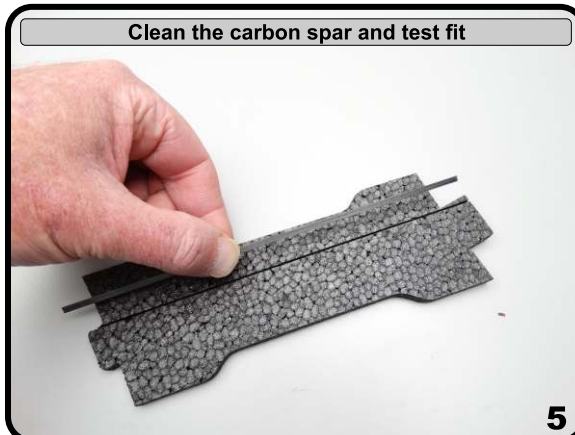
Cabane struts are next - gather up the items. The carbon spar is 3x0.5x200mm



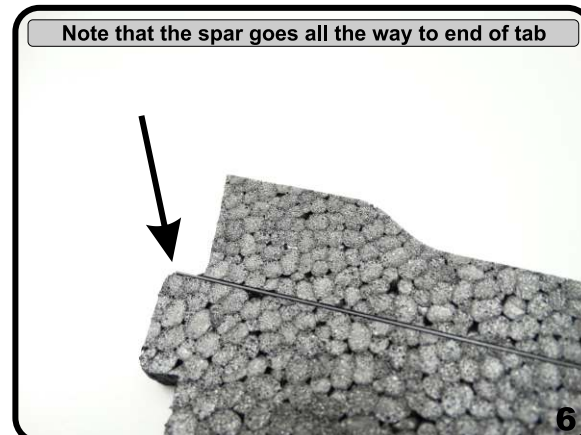
Separate the foam pieces



Clean the carbon spar and test fit



Note that the spar goes all the way to end of tab



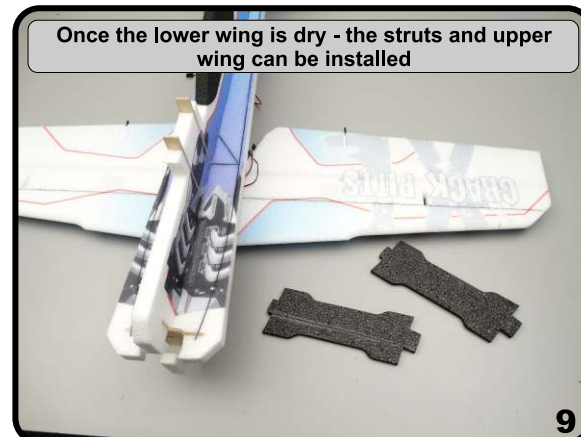
Lay some Med/Thick CA into the groove



Put the spar in - hit with kicker - repeat for other side



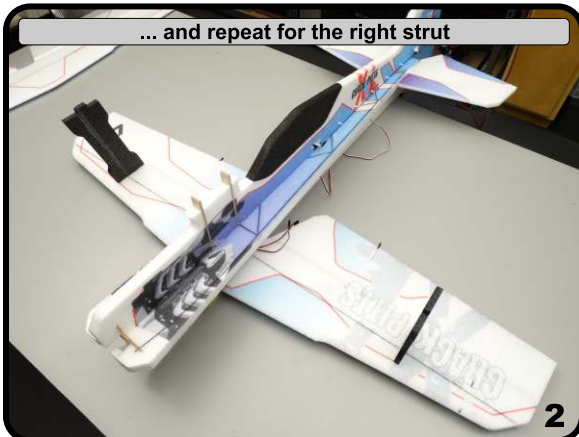
Once the lower wing is dry - the struts and upper wing can be installed



Test fit everything before gluing - dry fit left strut...



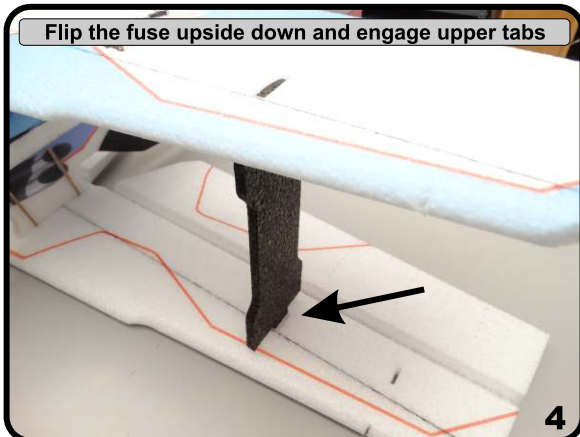
... and repeat for the right strut



Dry fit the wing - make sure all the tabs fully engage



Flip the fuse upside down and engage upper tabs



Double and triple check that it all looks good



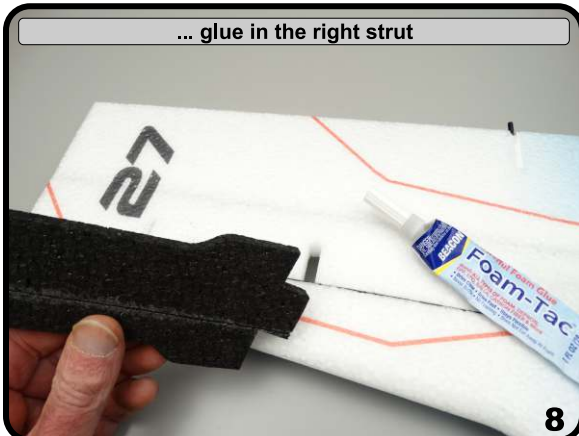
Take everything apart - Wet Method for assembly



Glue in the left strut...



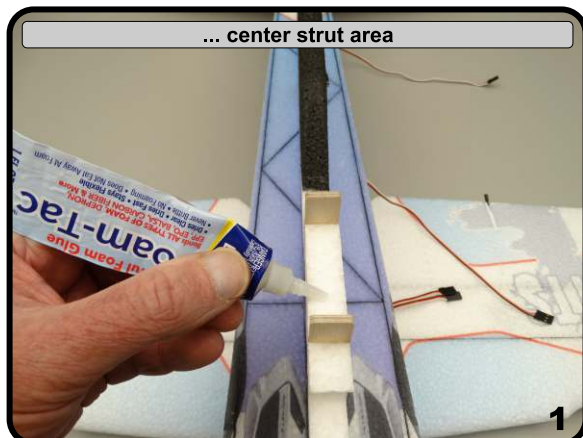
... glue in the right strut



Put some glue on all the upper wing mating areas



... center strut area



... and right strut area



Now... carefully lower the upper wing onto the tabs



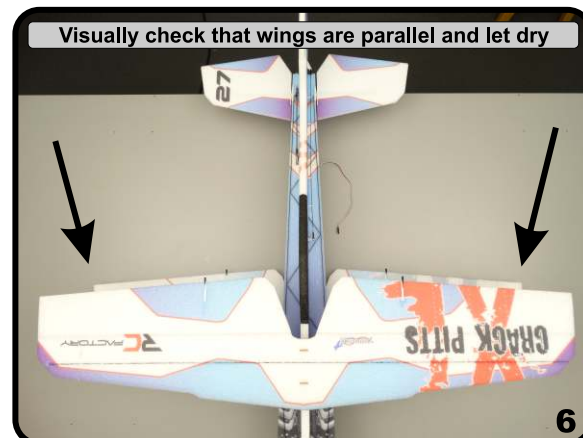
Engage all the tabs and press everything together



Check all the joints - make sure they are tight



Visually check that wings are parallel and let dry



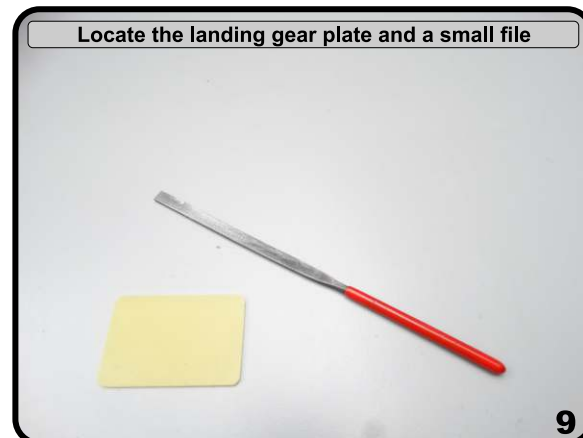
Landing gear struts & wheels are next - gather items



Drill a 3mm hole - centered and about 7mm from end.
Do this for both ends



Locate the landing gear plate and a small file



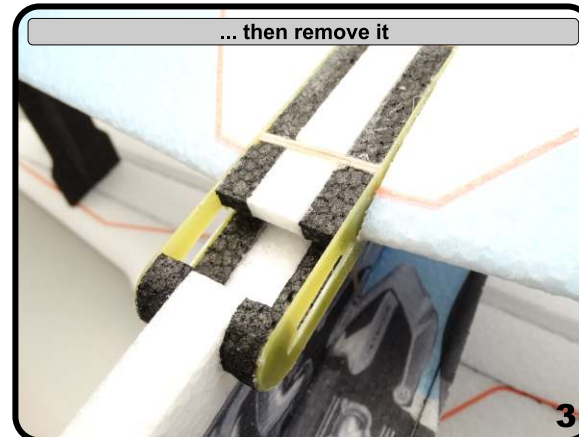
The plate should slide in with a little resistance



File the slot to achieve this if needed...



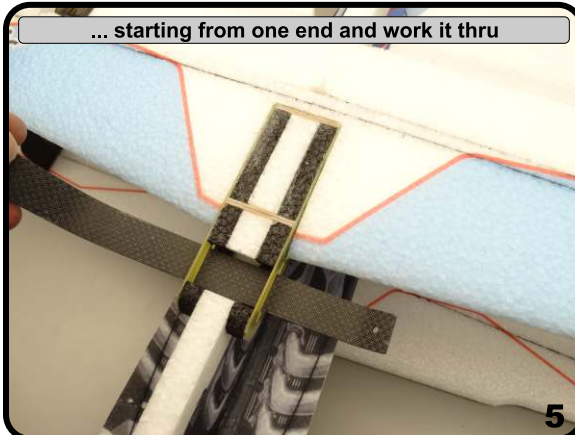
... then remove it



Now you can slide the landing gear strut in...



... starting from one end and work it thru



It should go all the way thru to center



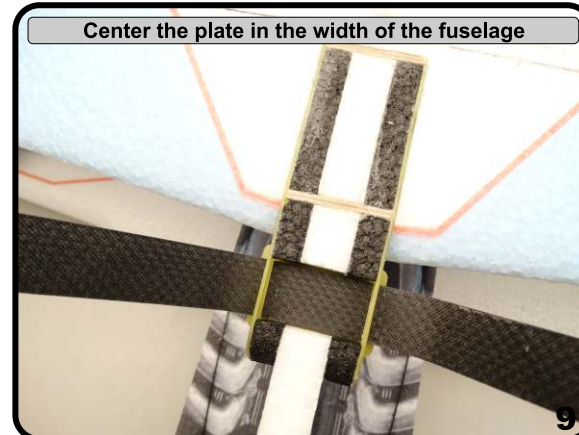
Now hold the land gear up into the area that is notched a little deeper/wider...



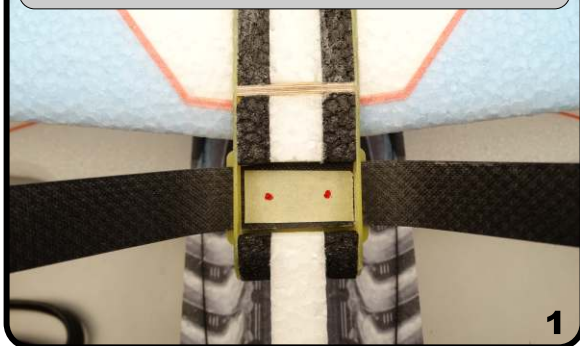
... then slide the plate back in under the strut



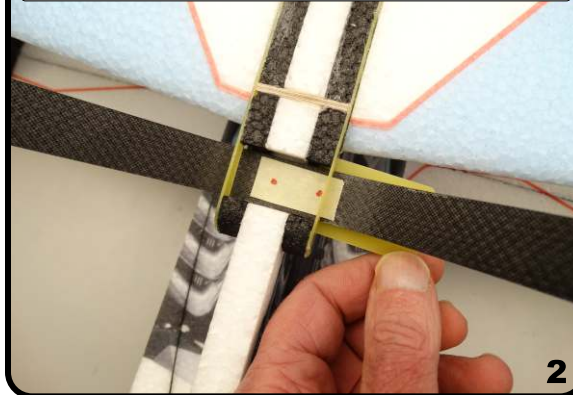
Center the plate in the width of the fuselage



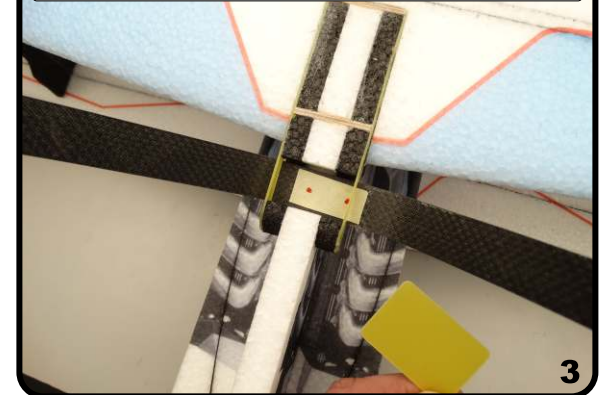
Once the strut and plate are centered, add a small piece of masking tape and mark two spots approx. were shown below



Remove the plate...



... all the way out



Then remove the strut...



3mm drill bit is used to make the holes



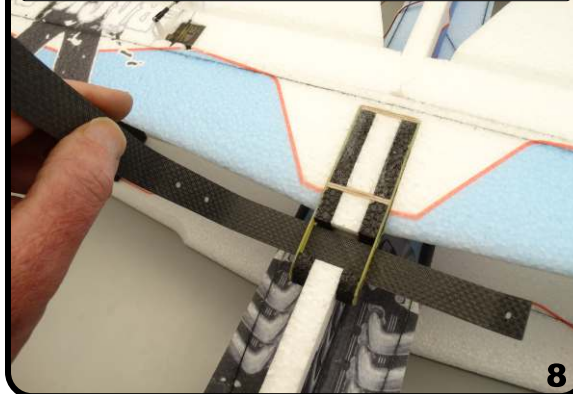
Drill all the way thru - Location is not super critical



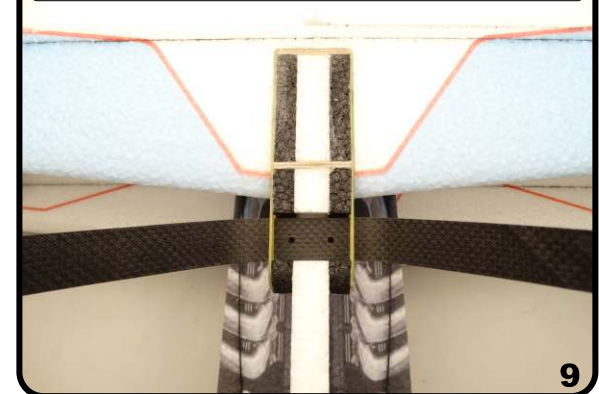
Remove the tape and...



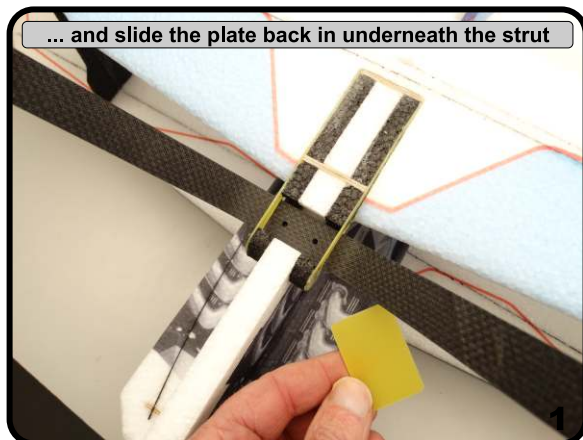
... slide the strut back into position



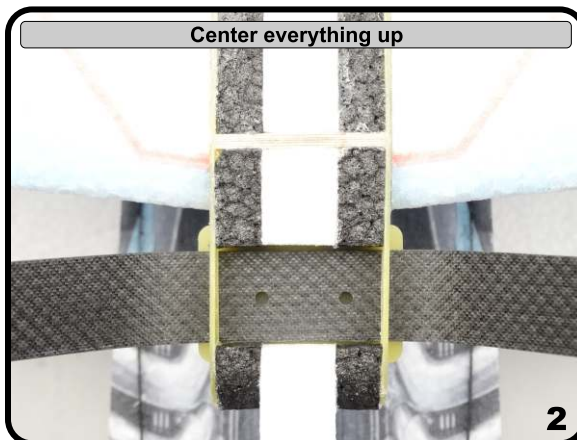
Center it up



... and slide the plate back in underneath the strut



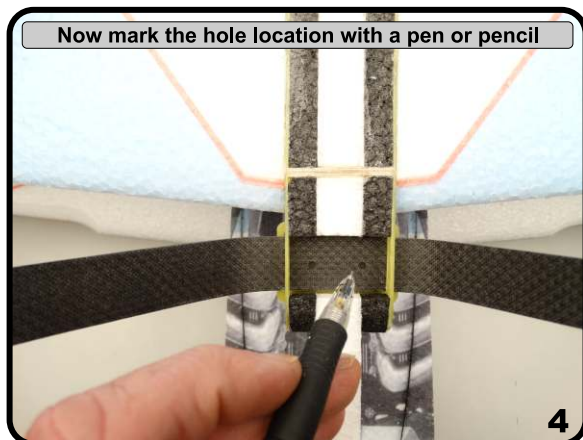
Center everything up



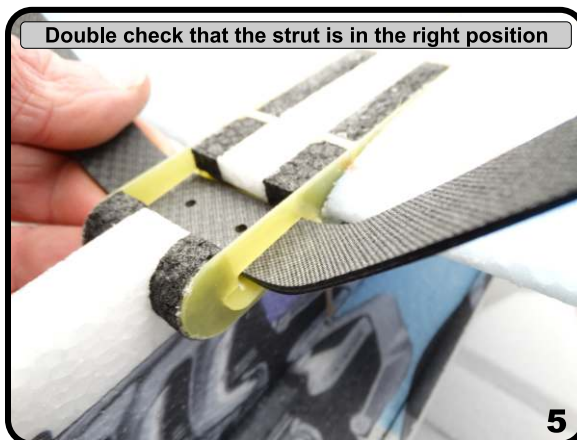
Make sure the strut is in the wider area



Now mark the hole location with a pen or pencil



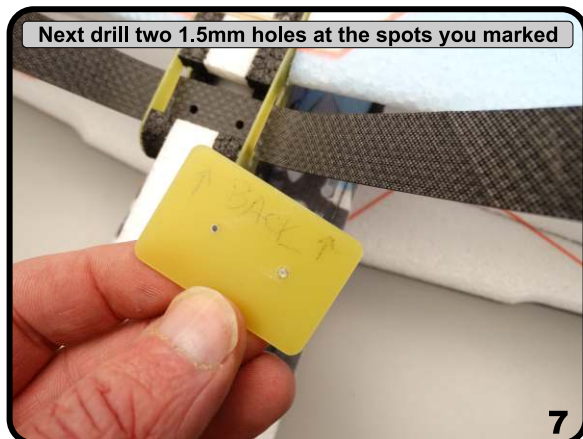
Double check that the strut is in the right position



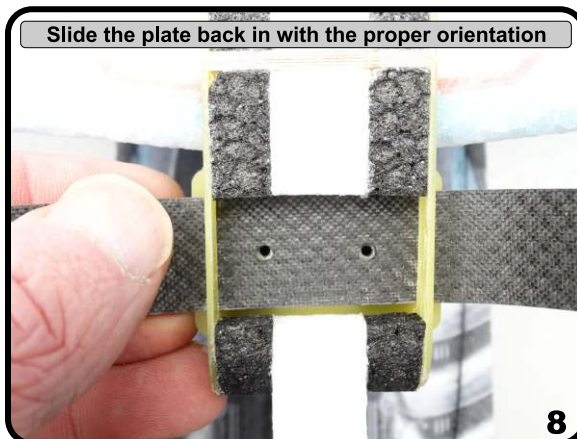
Remove the plate and mark how it came out



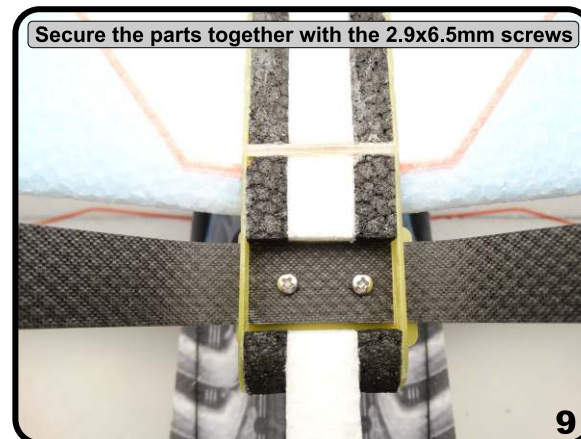
Next drill two 1.5mm holes at the spots you marked



Slide the plate back in with the proper orientation



Secure the parts together with the 2.9x6.5mm screws



If there is a little side to side movement secure with a couple spots of med/thick CA or FoamTac like shown



1

Drill the center hole of the wheels out to 3mm dia



2

Clip the pant supports apart from one another



3

Parts separated and ready to install



4

Take the M3x16 cap screw



5

and stick it thru the hole in the wheel



6

Next take the M3 plain nut



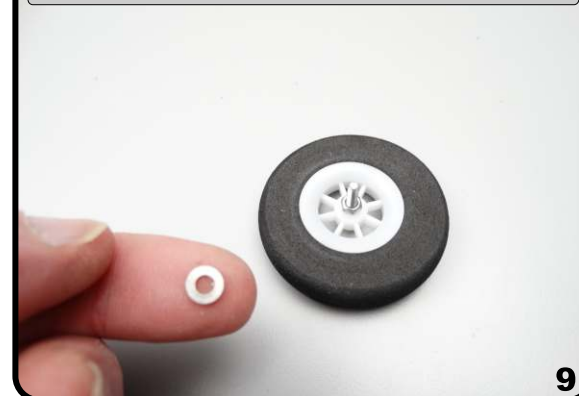
7

... and thread it onto the screw, just shy of tight.
Make sure the wheel still spins freely



8

Flat washer is next



9

Place it on like shown



1

The pant support is next



2

Locate it like shown



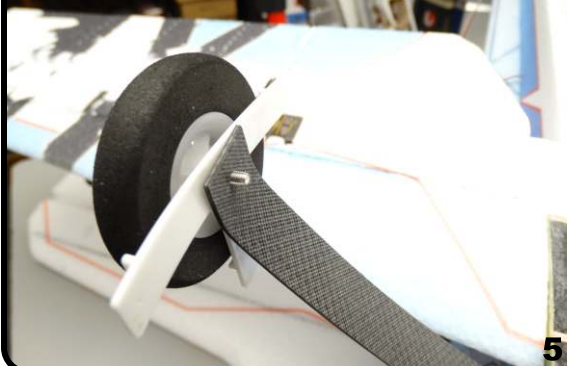
3

Install onto the strut. Note that the little hole in the pant support goes towards the nose of the aircraft



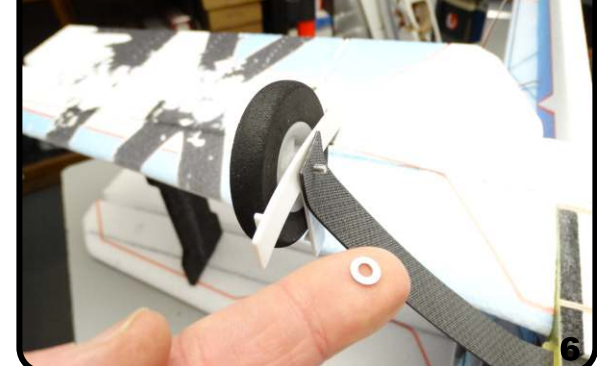
4

Locate it onto the strut like shown



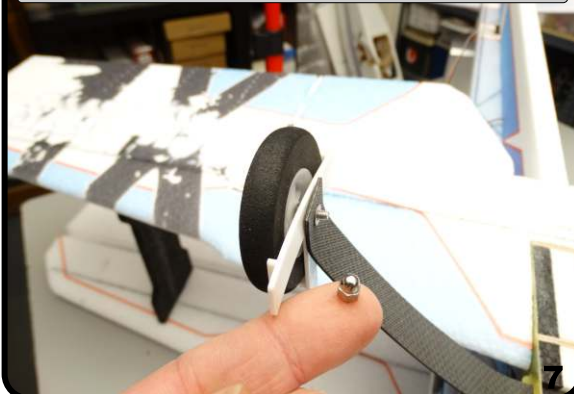
5

Grab another flat washer and put it onto the screws



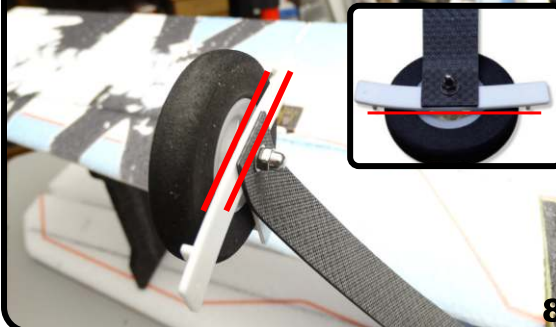
6

Last is the acorn nut



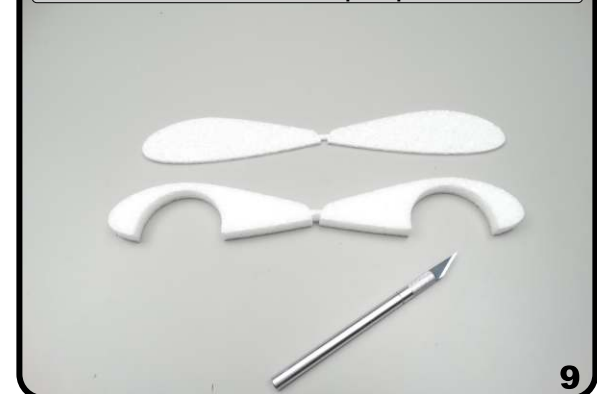
7

Align the pant bracket and edge of strut even with each other. Tighten everything up - Make sure the wheel spins.



8

Locate the wheel pant parts



9

Cut them apart. FoamTac Wet Method will be used



1

Coat the part shown with a thin film of FoamTac



2

Attach the side piece and locate so the edges match



3

Press the parts firmly together



4

Make a LEFT and RIGHT



5

Let sit for a little while under some weights



6

Put a generous drop of Med/Thick CA on the three mounting pads of the bracket



7

Spray kicker on the wheel pant



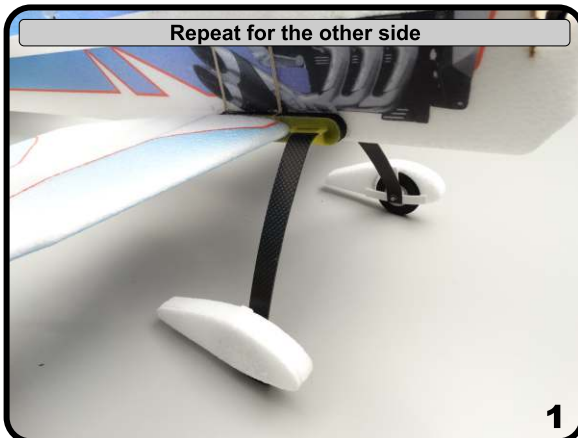
8

Carefully bring the parts together, get the position right, this method will attach the parts instantly



9

Repeat for the other side



1

The aileron gang rod are next - Gather the items



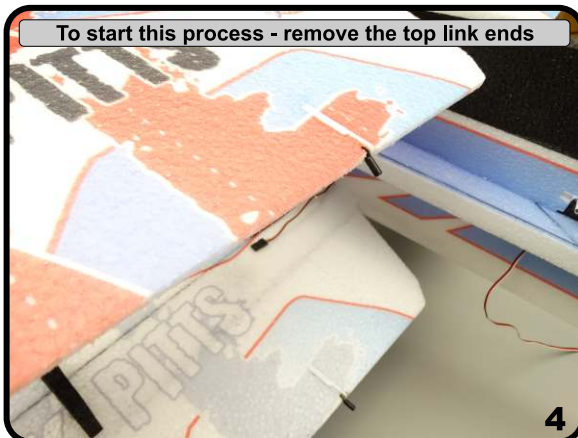
2

Matching brass ends & 1.5x200mm carbon rounds



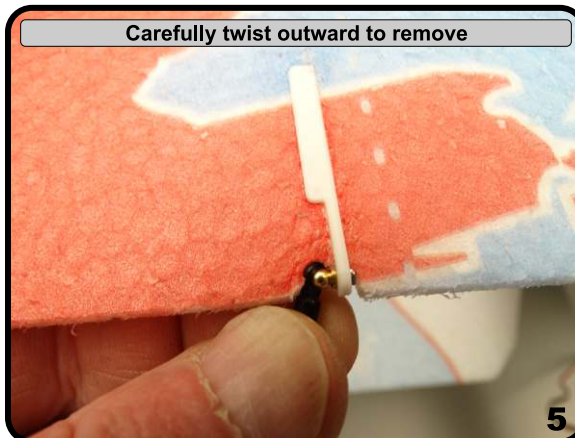
3

To start this process - remove the top link ends



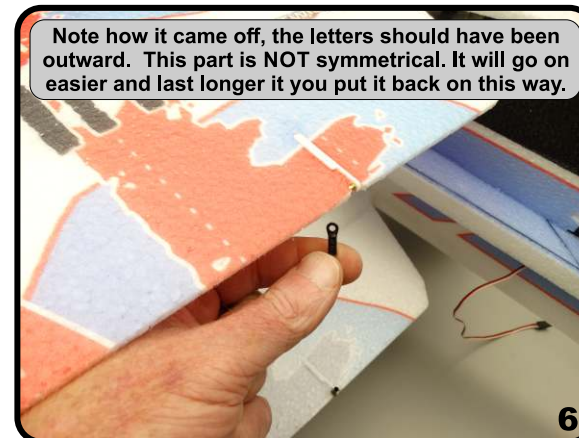
4

Carefully twist outward to remove



5

Note how it came off, the letters should have been outward. This part is NOT symmetrical. It will go on easier and last longer if you put it back on this way.



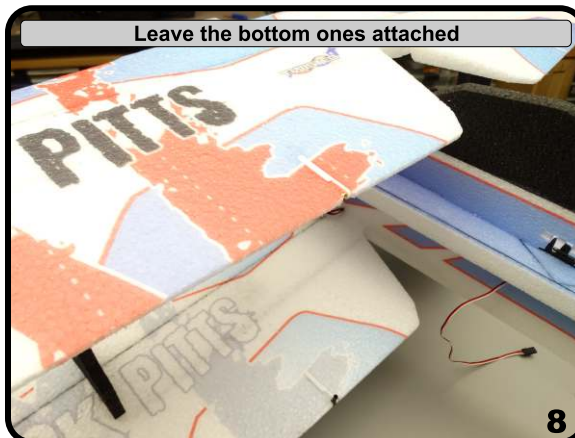
6

Close up of the lettering - faces outward



7

Leave the bottom ones attached



8

The top two links will be assembled to the rod next



9

Thread them on about as far as shown



1

Clean the rod end and test fit the brass part



2

Gently crimp the brass fitting to the rod



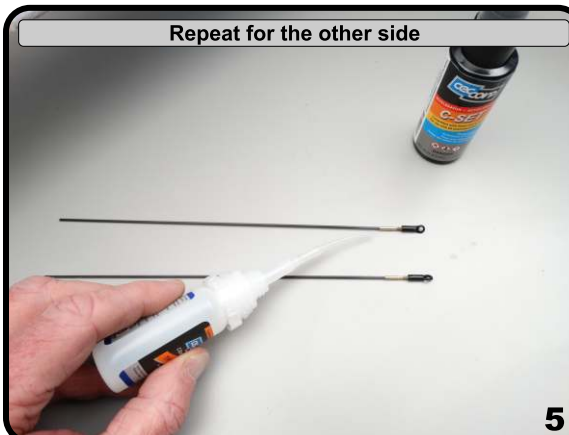
3

Secure with thin CA and kicker



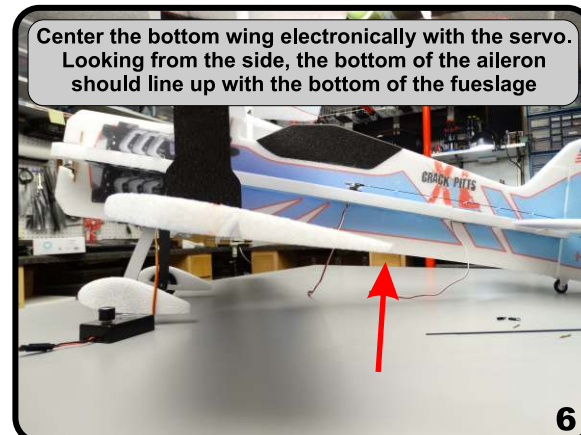
4

Repeat for the other side



5

Center the bottom wing electronically with the servo.
Looking from the side, the bottom of the aileron
should line up with the bottom of the fuselage



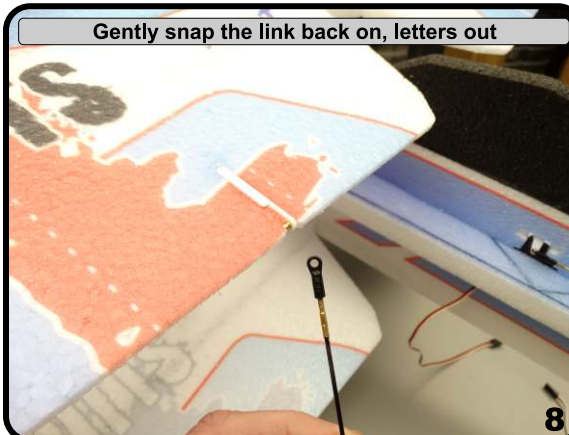
6

Center the top with clips like shown below



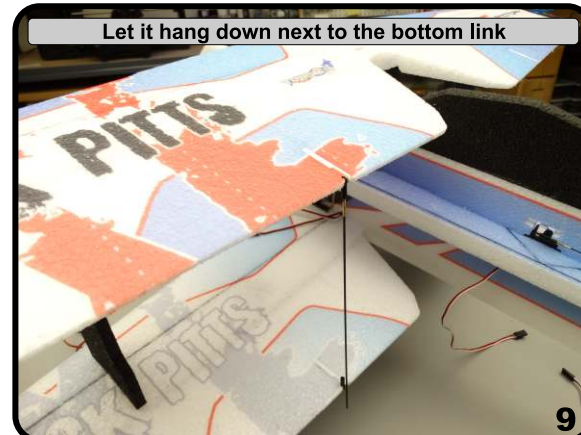
7

Gently snap the link back on, letters out



8

Let it hang down next to the bottom link

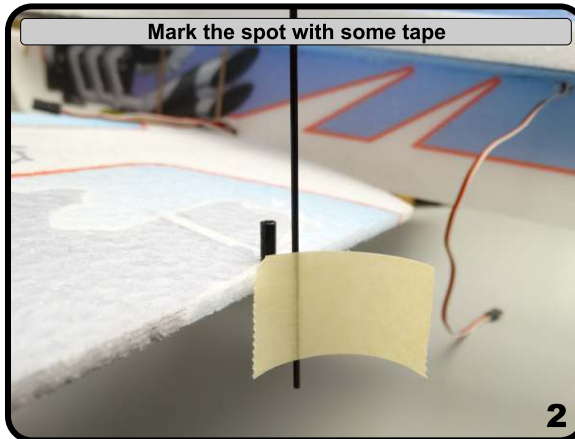


9

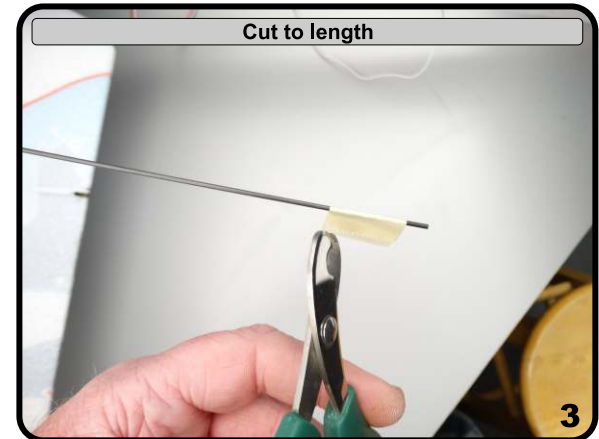
There should be a little extra to trim off



Mark the spot with some tape



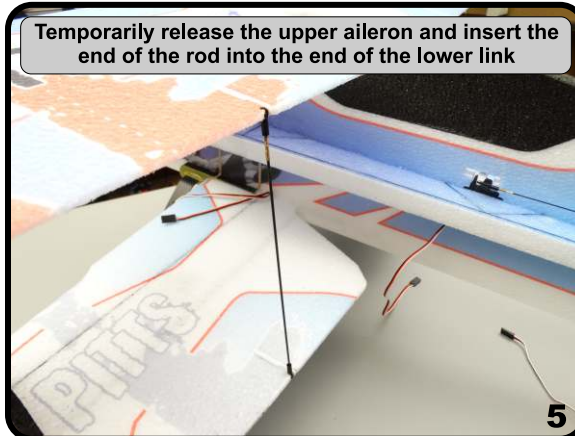
Cut to length



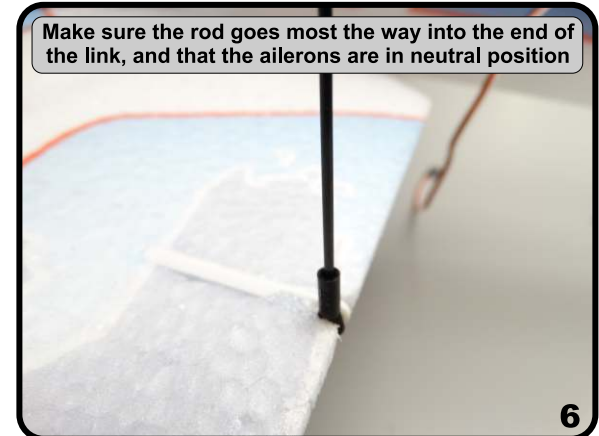
Clean up the end with some alcohol



Temporarily release the upper aileron and insert the end of the rod into the end of the lower link



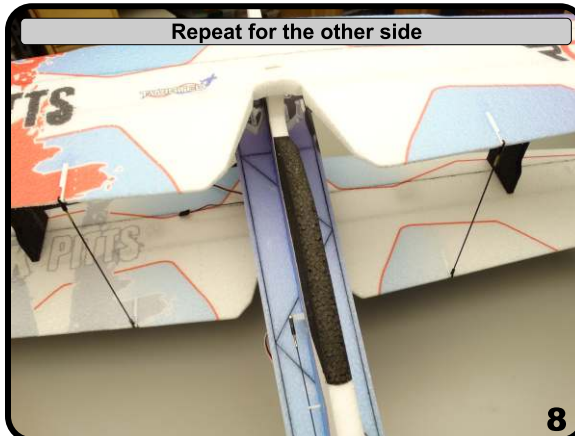
Make sure the rod goes most the way into the end of the link, and that the ailerons are in neutral position



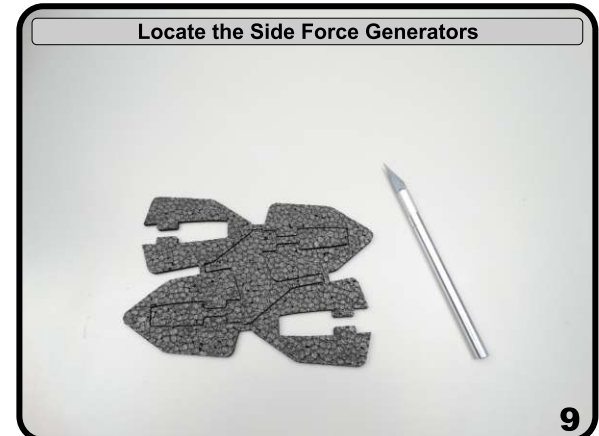
Secure with thin CA - don't let the glue run into the area of the ball link



Repeat for the other side



Locate the Side Force Generators



.... and separate them from the webbing



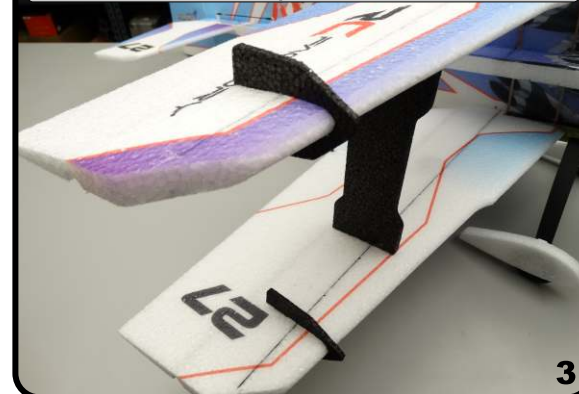
1

These are 100% symmetrical



2

Install them into the pre-cut slots with thin CA



3

Repeat for the other side



4

Prepare the motor to be mounted



5

Attach the rear plate - use blue thread locker



6

Attach the front prop hub - if the nut is too tight cut away a little of the nylon material (inset picture)



7

Locate the four firewall mounting screws



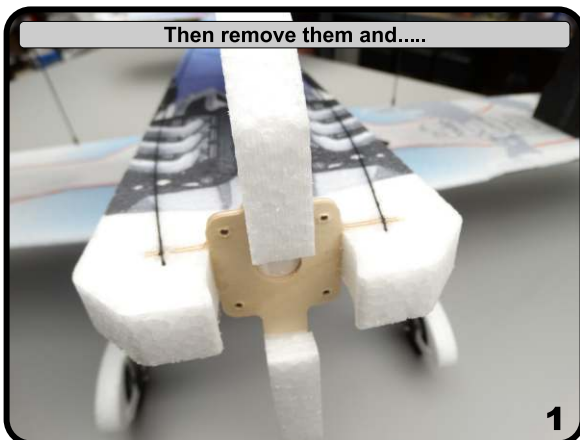
8

Gently pre-thread them into the firewall



9

Then remove them and.....



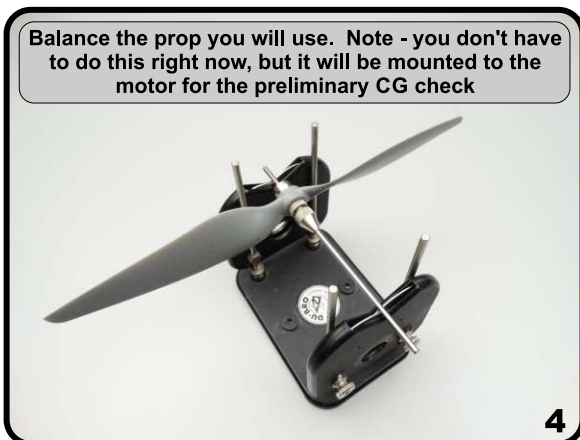
... put a drop of thin CA at each hole - allow to air dry. This process will make the threaded holes a little stronger and they will stay tight longer



Once the CA is dry - mount the motor. Put the wires to the side that you will be mounting the ESC on



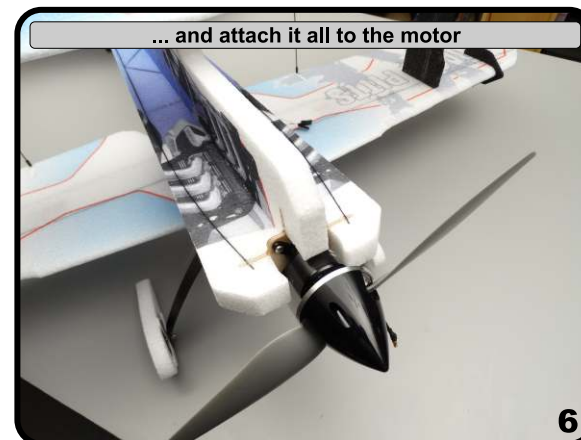
Balance the prop you will use. Note - you don't have to do this right now, but it will be mounted to the motor for the preliminary CG check



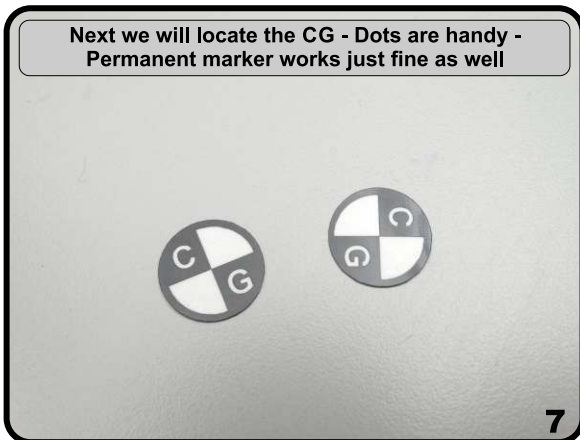
If you are going to use a spinner, locate it now...



... and attach it all to the motor



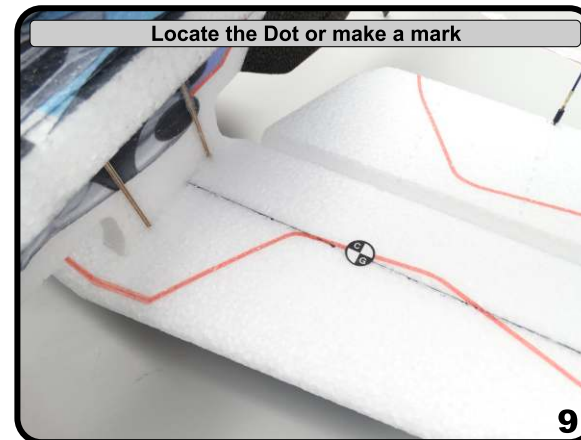
Next we will locate the CG - Dots are handy - Permanent marker works just fine as well



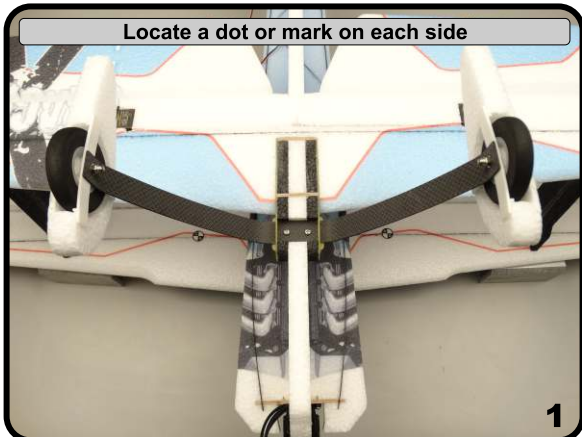
CG point is 85mm back from the center of the leading edge of the UPPER wing. It should be near where the carbon spar is located



Locate the Dot or make a mark

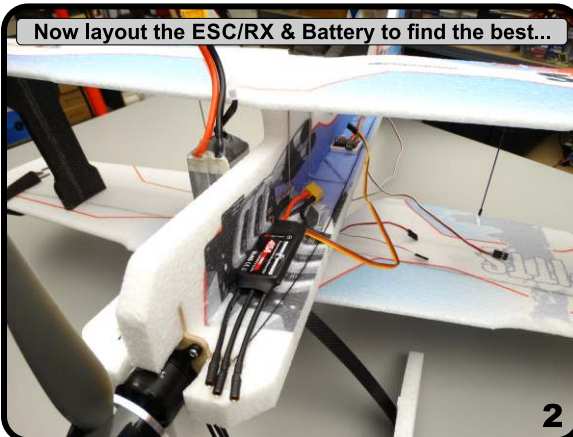


Locate a dot or mark on each side



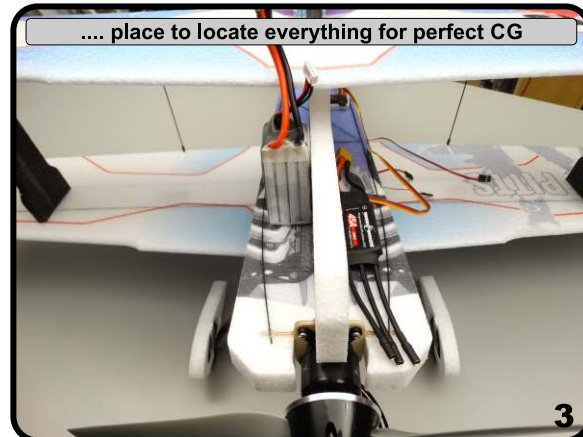
1

Now layout the ESC/RX & Battery to find the best...



2

.... place to locate everything for perfect CG



3

For this build, ESC near the motor and battery approximately where shown. If you are not using a spinner the battery will be more forward



4

ESC mounted with a thin velcro strip thru the fuselage. Hot glue or hook & loop velcro could be used if you prefer



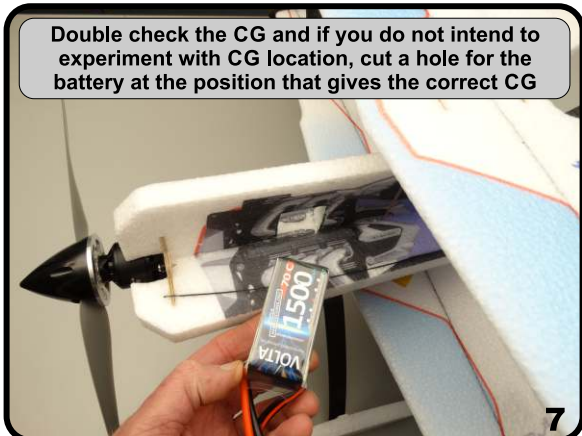
5

Do the final mounting of all the components per the way you had them located on the preliminary CG check and tidy everything up



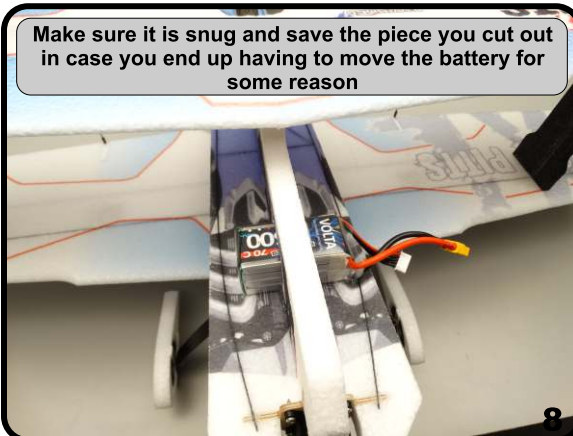
6

Double check the CG and if you do not intend to experiment with CG location, cut a hole for the battery at the position that gives the correct CG



7

Make sure it is snug and save the piece you cut out in case you end up having to move the battery for some reason



8

All up weight with recommended components and a 2 inch spinner should be right around 800 grams

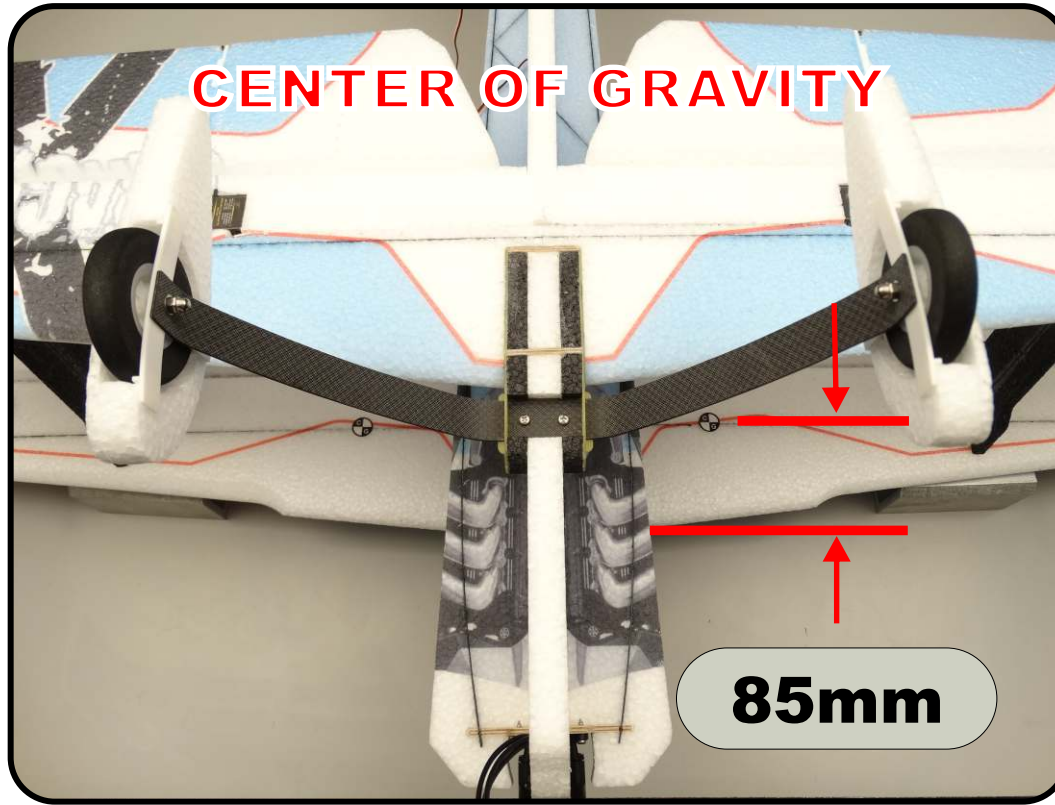


9



This completes the build of the Crack Pitts XL. As with all Twisted Hobbys aircraft, the CPXL is designed to fly extremely well, to be durable and to provide hours and hours of enjoyment at the local park or your favorite flying field. If you are fan of biplanes this is one for your hanger.

center of gravity and control throws



C.G. - 85mm from LE of Upper Wing

Locate all the electronics to achieve indicated CG point. Use Velcro for initial flights for battery mounting and experiment with it's position until you have determined the best spot for your flying style.

Control Throws

Ailerons: +/- 40 deg

Rudder: +/- 50 deg

Elevator: +/- 50 deg

**Expo and
Dual Rates to suit**

Control Throws should be adjusted to flying style and adjusted to work with in the boundaries of the setup. For extreme flying max throws should be used. For sport and novice flying decrease throws by approx half on all surfaces



pre-flight & testing

PREFLIGHT CHECKS

Motor: Should run smoothly at all stick positions, and transition smoothly from low to high RPM. If the motor is turning backwards, reverse two of the three wires between the motor and ESC. Check that the screws holding the motor to the airframe are tight and secure.

Flight Controls: Set all to neutral or level positions with sticks in the neutral positions. Ensure that all controls and linkages move freely. Double check that all hinged areas are free from rips or tears. Verify proper control surface directions. Right Roll is – right aileron up, left aileron down, Left Roll is left aileron up and right aileron down.

Batteries: Should be fully charged prior to each flight. Watch transmitter battery level and follow manufactures recommendations. Motor battery should not be drained any further than recommended by the manufacture, use a timer to prevent an over discharged condition.

Radio: All trims should be set to neutral and throttle in the low position. Check that rate switches and mixes are set properly.

Range Check: With and without the motor running per radio manufactures instructions. If there is insufficient range or significant reduction with the motor running, resolve and re-test before flying.

PREFLIGHT CHECKS

The first flights should be done with the CG at the recommended position, and reduced control rates until comfortable with your handling of the aircraft. As your experience with the aircraft grows experiment with different CG points and control rates. After all flights, check the aircraft over for damage and/or other items that may adversely affect flight performance.

This Foamie Plane is a high performance aircraft and will provide hours of entertainment, including the occasional crash. If, as the result of a crash, the foam tears, simply glue with Welders, FoamTac or CA. Many pilots prefer Welders or FoamTac because they remain flexible after drying. CA however, is more suited for the “quick” repair.

This aircraft can be flown indoors or outdoors. It is however designed specifically for outdoor 3D style flying and will be right at home at the local park, backyard or flying field.

STORAGE

This EPP plane should be stored hanging directly from it's prop. Storing in other fashions, including on it's landing gear, will put stress on the airframe could cause the airframe to distort. Storage in a hot car could also cause damage.

Be safe and enjoy, thank you again for purchasing a Twisted Hobbys' Product!

TIPS AND TRICKS

- A good building surface is “drop ceiling” panel from a local hardware store on a nice flat board
- Use parchment paper between the areas being glued and your work surface
- Heavy flat objects (like books, batteries, etc.) could be used to hold everything flat
- When resetting your radio, start with all the ATV's or throw volumes at 100%.
- Make sure you have set the direction of the servos correctly before attempting to trim for zero position.
- If possible try the servo horns in different locations to determine which position will require the least amount of sub trim.
- Installing the servo horns in their final location and attaching quick links to the servos may make servo installation much easier later.
- On the Orange Rx, the negative pin is the one closest to the flat side of the circuit board.
- Keep a good supply of sharp knife blades handy when building a foamie airplane.
- Use low temp hot glue for gluing electronics, this will allow for easy removal later if necessary. The low temp hot glue can be “released” by painting” the glue bead with an alcohol soaked cotton swab a couple times.
- A business card with the corners clipped off can be used as a small square.
- Allowing the Welders glue to set for five minutes before assembly will shorten the tack up time, just be sure if doing it this way that you get the parts into position quickly, as the glue will start to bond on contact. Any joints that you feel are going to require adjustment, it is best to assembly the pieces while the glue is wet. The Green (high tack) masking tape works the best when used to clamp things together on an EPP foam airplane.
- When gluing the rudder to the fuselage, stick pins could be used to hold in position if wanting to handle the airframe before it is completely dry
- A rotary tool with a cutting wheel could be used to produce grooves in fiber glass parts instead of coarse sand paper. Use a hatch pattern. This creates more bonding area for the glue.

notes and s/u sheet

Setup Sheet

Transmitter -

Receiver -

Model

Weight - g oz

CG Point - mm from wing leading edge

timer - min

Travels and Exponential

	low rate	high / 3D
right aileron up -		
right aileron down -		
left aileron up -		
left aileron down -		
aileron expo -		
rudder right -		
rudder left -		
rudder expo -		
elevator up -		
elevator down -		
elevator expo -		

Electronic Components

Aileron Servo -

Rudder Servo -

Elevator Servo -

Battery -

motor -

ESC -

Propeller -

fancy pants



trim around the thin line and glue
to the foam wheel pant with some
contact glue