

TWISTED HOBBYS



CRACK PITTS

*SHOWN WITH OPTIONAL LANDING GEAR

MOTOR: 1x 24-26g/1450kv Outrunner
ESC: 1x 10-12 amp
SERVOS: 2x 5g - 1x 9g
PROP: 1x 9x4.7sf - 2s / 8x4.3sf - 3s
BATTERY: 2s or 3s / 450mAh

USA Distributor

Twisted Hobbys

www.twistedhobbys.com

RADIO: 4 channel
WINGSPAN: 30"
LENGTH: 32"
AUW: 180 to 200 grams

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

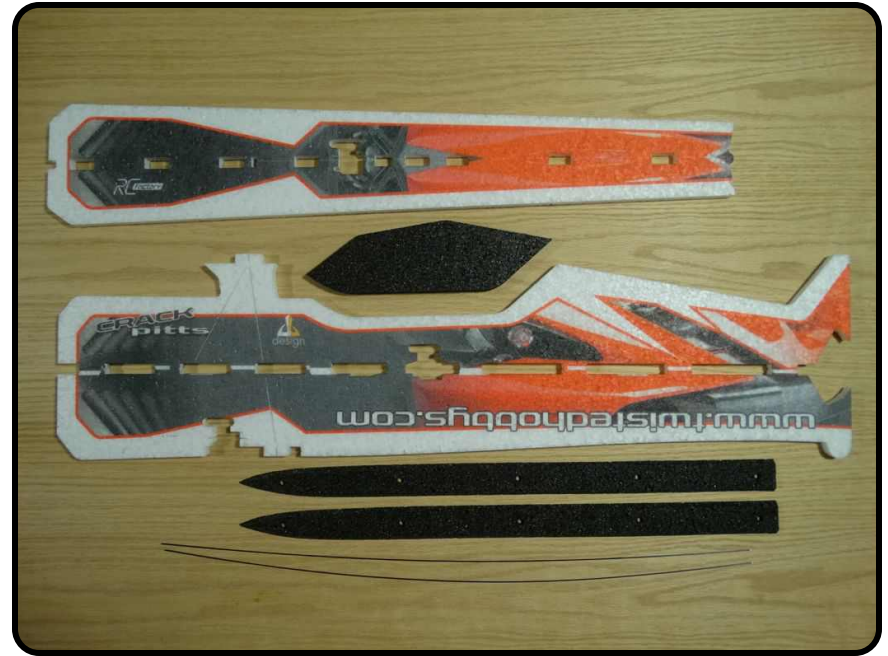
To provide the best products and service to our customers at the lowest prices possible. We take great pride in our company, our commitment to customer service and in the products we sell. Our online store is designed to provide you with a safe and secure environment to browse our product catalog.

Thank you for shopping with Twisted Hobbys!

KIT CONTENTS



Wing Parts



Fuselage Parts

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

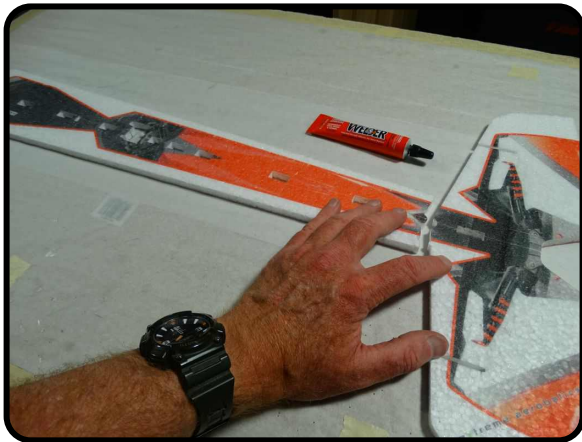
TOOL AND ADHESIVES NEEDED



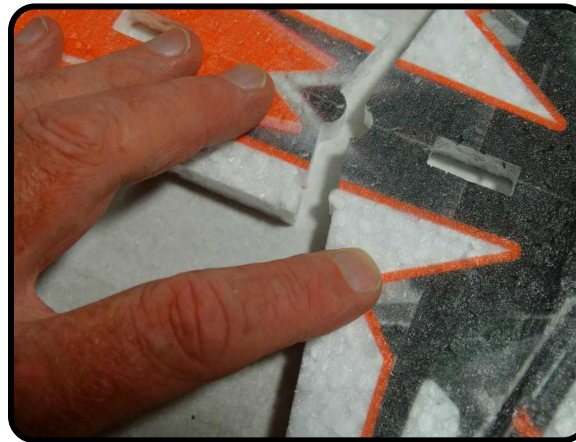
Tools shown and listed are suggestions only. Depending on your building technique you may not need everything indicated – and/or – you may find that other tools available to yourself may be of benefit to your Build.

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

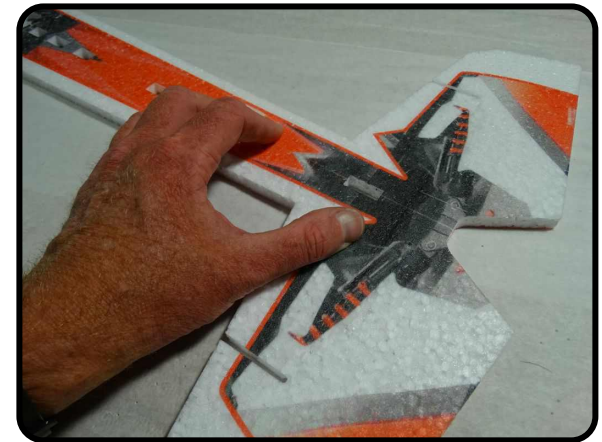
- **Lighter**
- **Small Drill Bits**
- **Tape Measure and Ruler**
- **Black Sewing Thread**
- **Welders Glue**
- **Hobby Knife w/new Blade**
- **Needle Nose Pliers**
- **Wire Cutters**
- **Low Temp Hot Glue Gun**
- **Course Sand Paper**
- **Scissors**
- **Small Phillips Screw Driver**
- **Thin and Medium CA**
- **CA Applicator Tips**
- **Activator**



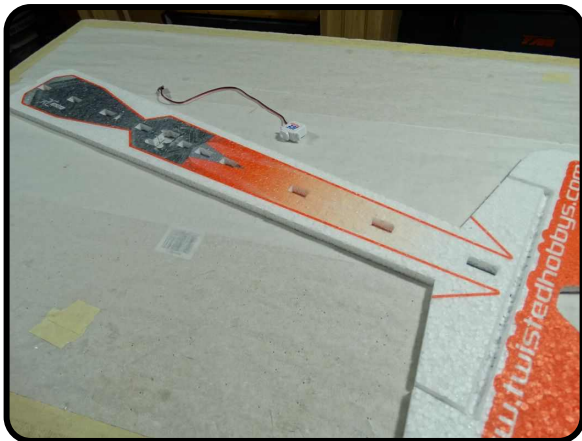
Find the horizontal fuselage piece and the elevator. Join them together using the Tack Up Method.



Notice that the two parts are "keyed" to insure proper orientation.



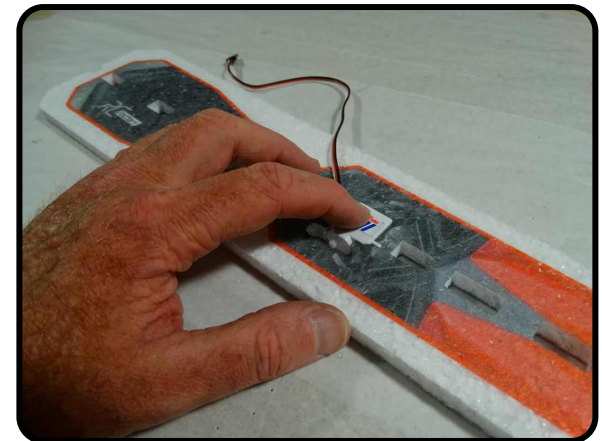
Once the glue has tacked up, bring the two pieces together, press firmly to get a good bond.



Flip the assembly over and locate your elevator servo. If using the power combo servos, the cut out will match perfectly, if using other servos, some trimming may be necessary.



Install the servo as shown, from the underside/bottom of the horizontal fuselage piece. Note - no glue at this time, gluing the servos in will be done towards the end of the build.



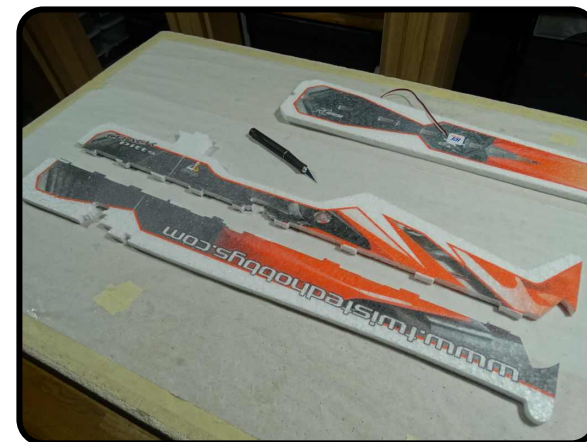
Press the servo into the cut out. It will stick up a little on the near side. Servo arms will be install later. They would just get in the way at this time.



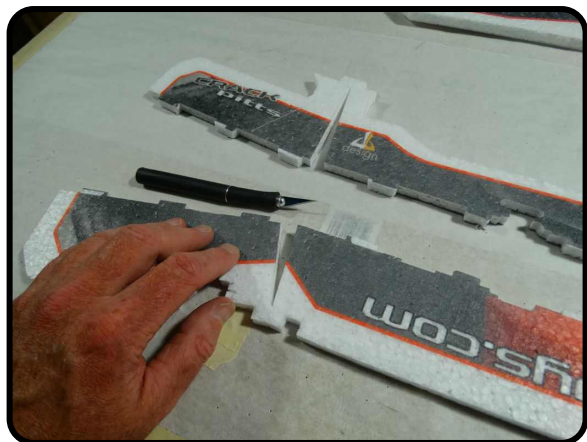
Locate the vertical fuselage section, and put a fresh blade in your hobby knife.



Split the vertical fuselage section down the center of the tabs. Note, the tabs have small "V"s cut in them to help locate the exact center.



Once all the tabs are split, you should have something like pictured above.



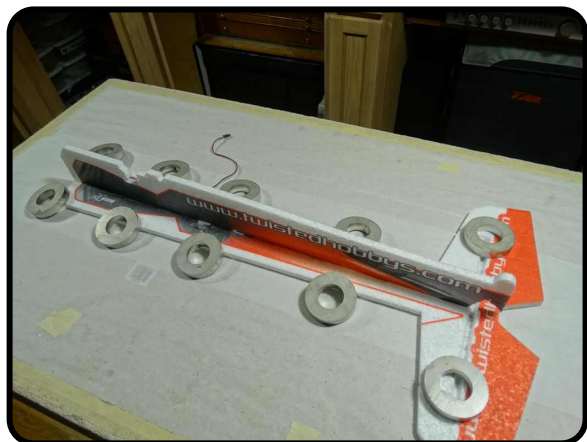
Split/Separate the small tab for the slot shown above so that it is free as pictured.



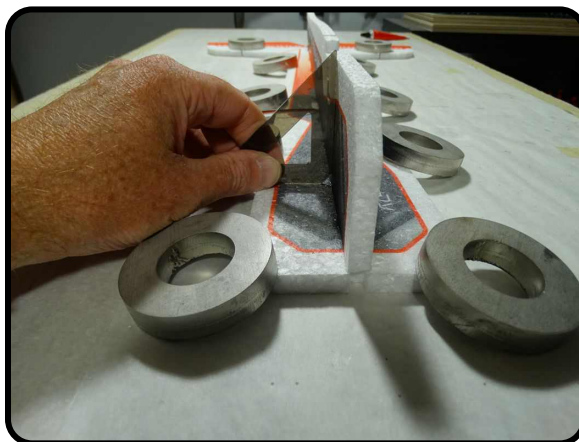
Test fit the lower vertical fuselage to the horizontal assembly as shown. All tabs should fully engage, and the two pieces should be square to each other.



Once you are satisfied with the test fit, separate the two pieces and re-assembly using the Wet Method. Make sure and apply glue to all the mating surfaces and tabs.



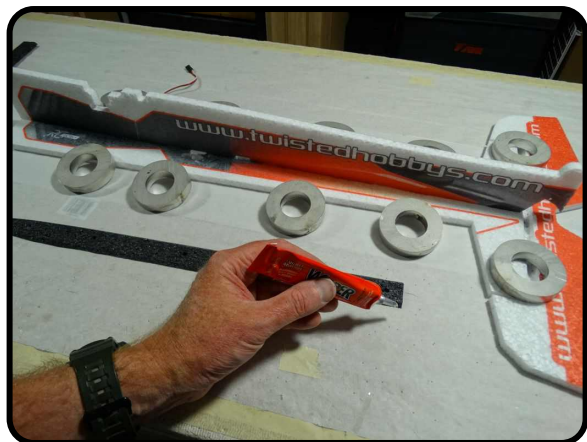
Make sure all the tabs are fully seated as was done with the test fit, wipe away any extra glue and weigh down so that everything will dry flat.



While the glue is still wet, check for squareness and tweak a little as needed.



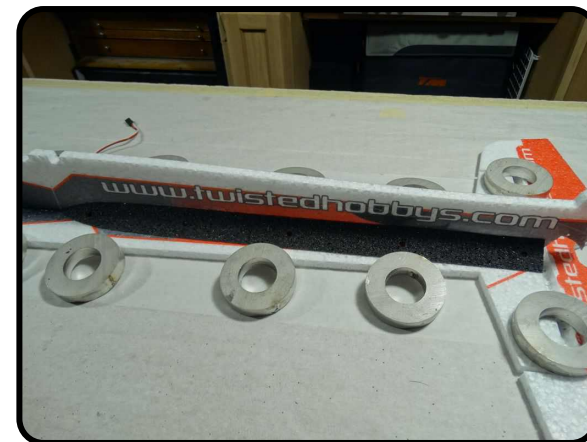
Locate the beveled foam trusses as shown above.



Starting with the side shown, apply a medium bead of Welders the entire length of the beveled area.



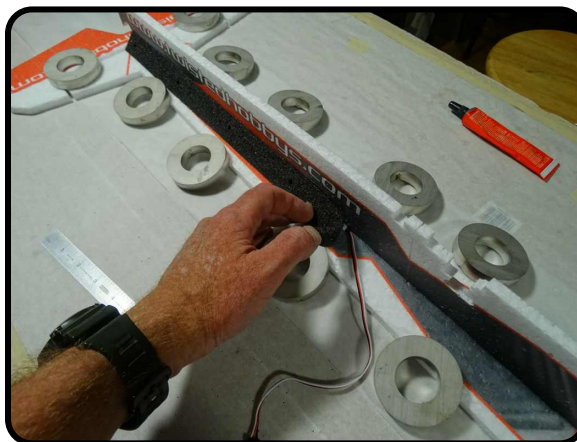
Align the square end up with the edge of the hinge relief as pictured above, and attach the truss at 45 degrees to the two fuselage members.



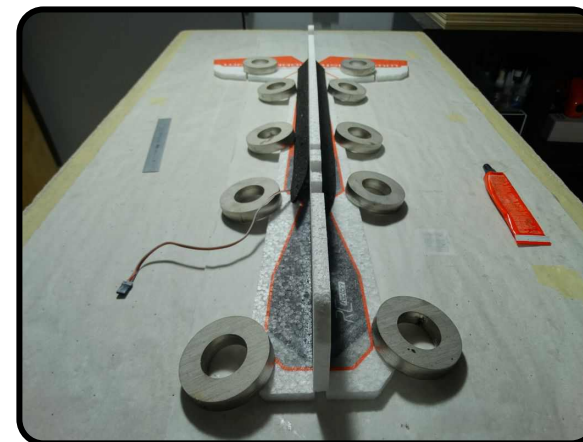
Make sure there is a good bond. Use a gentle touch when pressing the truss to the fuselage. Pressing too hard will cause the fuselage member to be out of square.



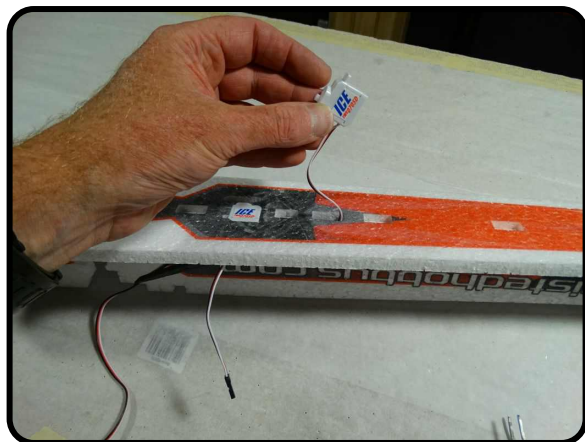
Next is the far side, apply a medium bead of Welders as with the other side, but leave approx 4in free of glue on the pointed end.



Attach the truss like was done on the other side and note that there is approx 4in free of glue. This will allow access to all the wires and will be secured to the fuselage in a later step.



Make sure the two fuselage pieces are still square to each other, allow the glue to dry before moving on to the next step.



Locate the rudder servo. If using the Twisted Hobbys power combo servos, no trimming will be need. Fish the wire thru on the same side as the elevator wire, and press the servo into it's slot.



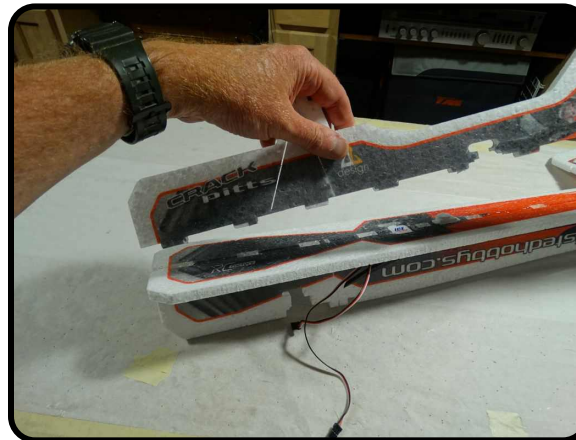
Make sure the wire does not get bunched up under the servo in the hole and that the servo is fully installed and sitting firmly on it's flanges as pictured above. Do Not Glue at this time.



Locate the top vertical half of the fuselage. Test fit, make sure that all the tabs and slots are able to fully engage.



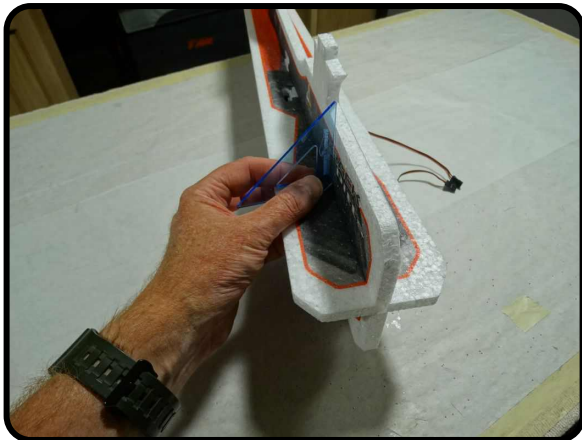
Once happy with the fit up, remove it and apply a medium bead of Welders to the mating surfaces. Avoid the servos and areas around where the slits are in the vertical fuselage pieces.



Starting from the front... align the nose surfaces and work towards the tail engaging the slots along the way. Press and wiggle to make sure the tabs are full seated into their respective slots.



The nose surfaces should all be flush as pictured above. In a later step, this is where the motor mount will attach to, and it is important that they are even to create a flat surface.



While the Welders is still wet, check for squareness along the length of the fuselage. Tweak as needed for a nice and true assembly.



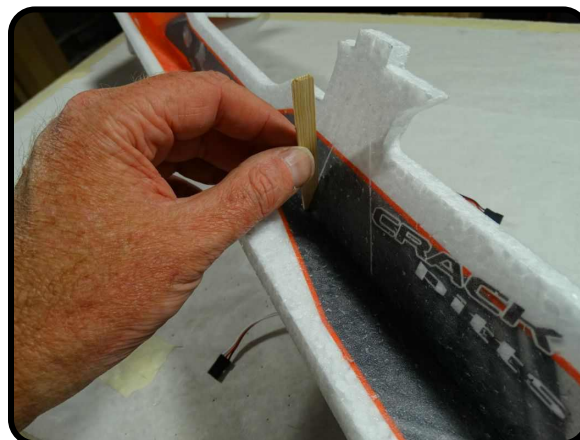
Once happy with the squareness. Set the assembly aside to dry. Stand the assembly up as shown, this will avoid any awkward stress to the airframe while the glue is drying.



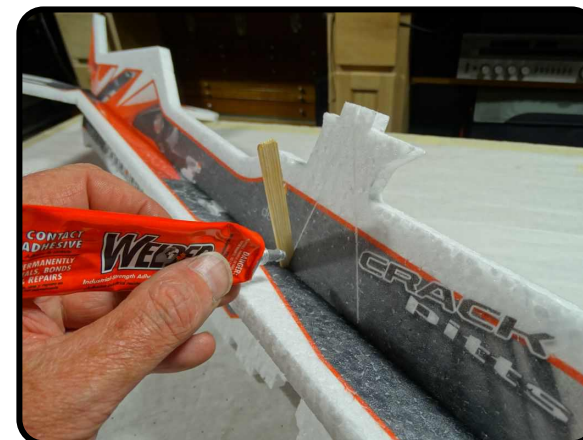
Locate the two wood fuselage stiffeners as pictured above. They should be approx 2x9x90 and 2x9x150 millimeters.



Stick the longer of the two pieces of wood thru the reward slot in a diagonal fashion, right at the intersection of the two fuselage pieces.



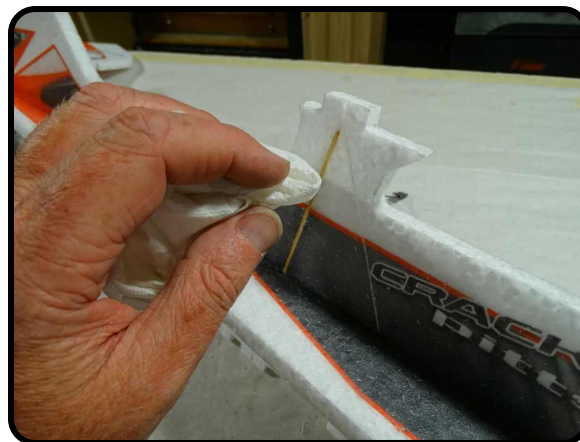
Position so that the length of wood matches the approx length of the slot in the foam.



Apply a thin coat of Welders to both sides of the exposed wood stiffener. Also squeeze some Welders into the slots.



Press the wood stiffener into position as shown, adjusting its position up or down as needed to match the exact length of the slot in the foam.



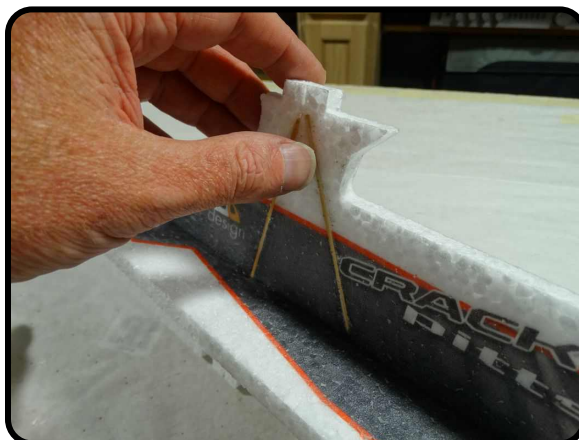
Make sure the stiffener is centered in the foam and wipe away any extra glue that is left on the surface of the fuselage pieces. Use a paper towel and only make one pass.



Apply a thin coat of Welders to both sides of the shorter fuselage stiffener.



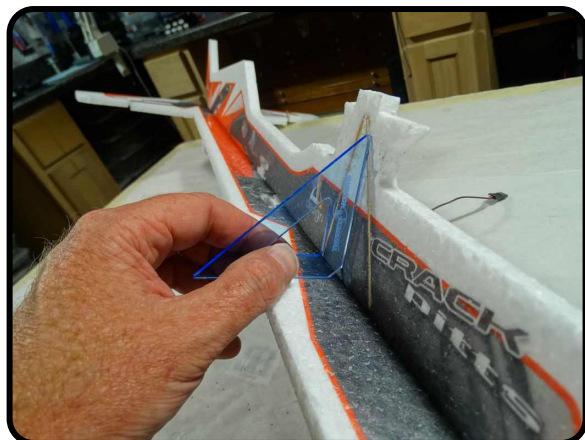
Also squeeze some Welder into the slot in the fuselage.



Install the stiffener into the fuselage from the same side that you applied the glue from.



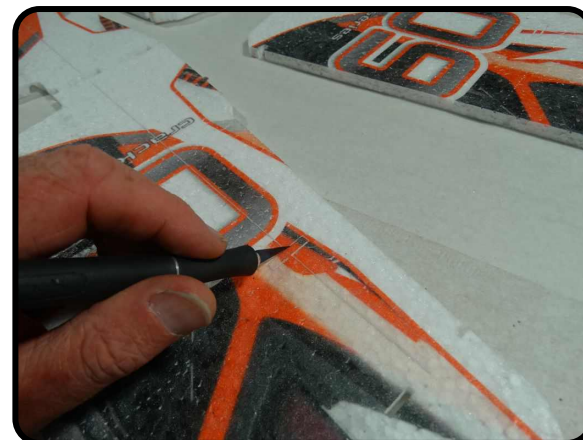
Wipe away any extra glue with a paper towel, and again, only one pass. Multiple passes will ruin the printed graphics.



Check for squareness in the area of the stiffeners and adjust if necessary. Set the assembly aside some where safe to dry... stand it on it's nose like what was done previously.



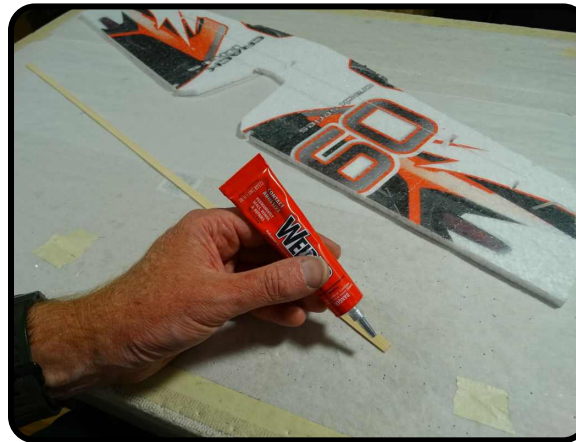
Locate the two wings, wing struts and wood spars as shown. Wing spars are approx 23.6 inches long and the spars for the struts are approx 5.9 inches long.



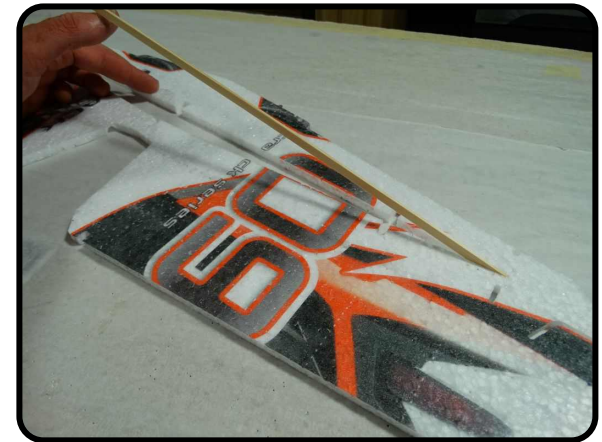
With your hobby knife remove the tabs and scrap material from the slot cutouts of each of the wing.



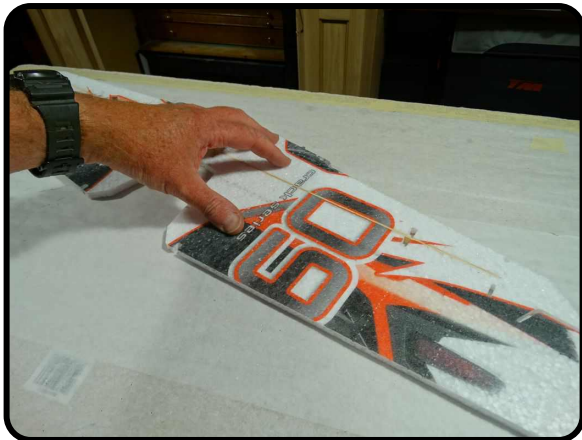
Once all the tabs and scrap material is removed, you should be able to spread the wing as shown above.



Apply a medium bead of Welders to each side of the wing spar.



Spread the wing, and while keeping the wing slot spread, lower the spar into position, and then allow the foam to relax.



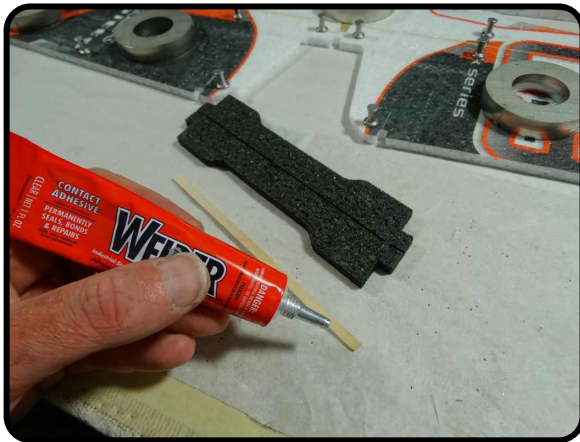
Make sure the spar is flush with the surface of the wing. Press together along the length of the wing to ensure that there is a good bond between the wing and the spar.



Wipe away any glue the squishes out. Make sure and only do a single pass, multiple passes will wreck the printed graphics.



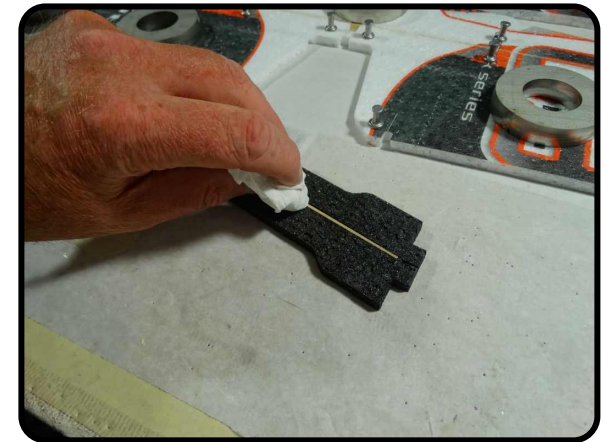
Repeat with the other wing and then set aside with weights and/or stick pins and allow them to dry completely before handling.



As with the wing spars, apply a bead of Welders to both sides of the strut spar.



Spread the strut as shown and insert the spar.



Push it in all the way, making sure that it is flush with both sides and wipe away any extra glue.



Set aside with weights and/or stick pins and allow to dry.



Repeat the process with the other side. Note there is a left and right, but they are symmetrical so it does not matter how you build them.



While all that is drying, locate the horn kits from your servos, the plastic horn set that came with the kit, and the adjustable links as shown above.



If using the power combo servos you should have stock horns like pictured above, if using other servos, find the horns that came with them that are similar.



From the under side of the stock horn, apply some Welders to each of the arms.



Install the differential horn as shown, if the center hole is a little big, just center it in the opening, if is not super critical, just get it as close as you can.



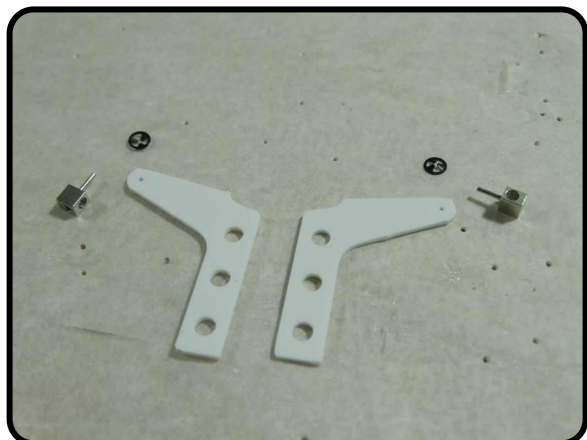
Same basic process for the tail servo horns... apply some Welders to the under side of the stock horn and attach the extension.



Above picture shows the extension attached to the horn from the under side and butted all the way up against the center part of the stock horn.



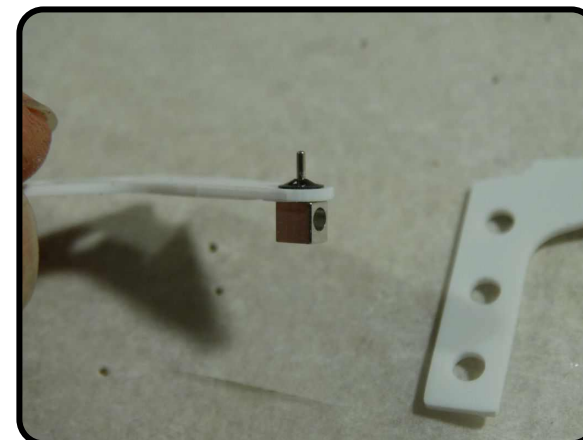
Repeat the previous two steps with the other tail servo horn and set all the items aside to dry.



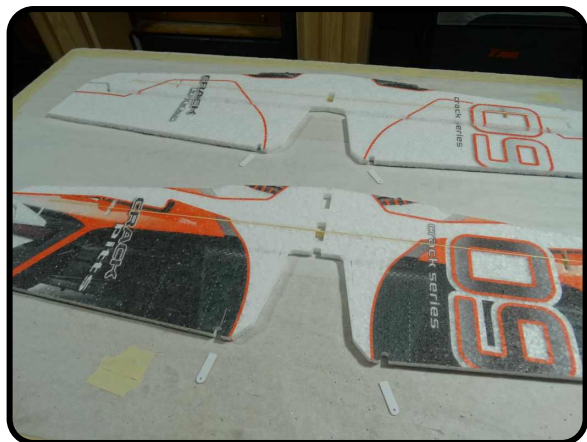
Locate the two aileron control surface horns and adjustable link pieces as shown above. Note that the aileron horns are the ones like pictured above with the lightening holes.



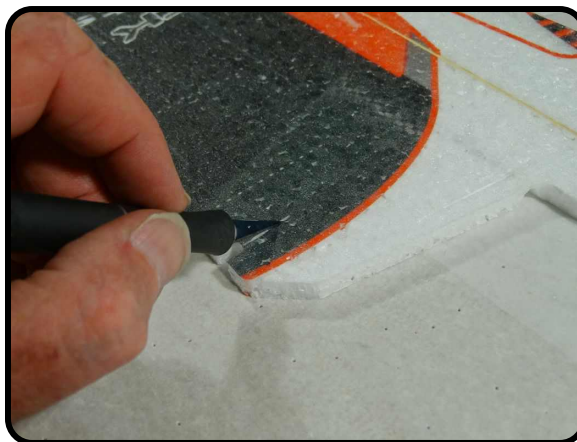
Install the main adjustable link part into the hole as shown. Note - it is important to make a LEFT and RIGHT version.



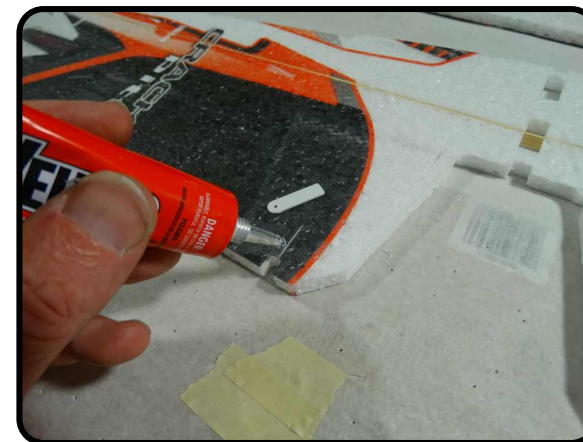
Press on the keeper clips with the cupped side installed as pictured above, repeat this for both horns, again remembering that there is a left and right.



Next the gang horns will be installed on the trailing edges of both wings. There are pre-cut slots on the sides pictured above, but they need to be finish cut all the way thru.



With a sharp hobby knife, finish cutting the slot all the way thru.



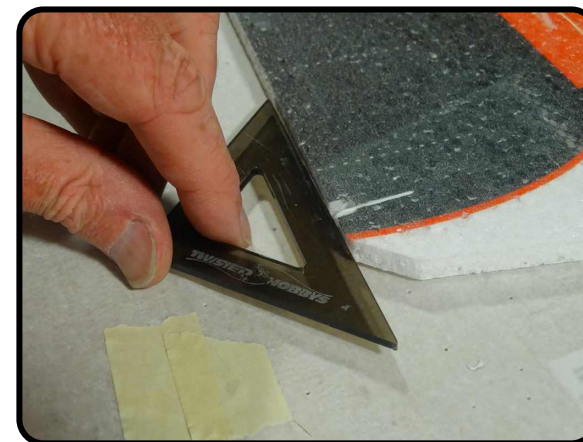
Squeeze some Welders into the slit.



Put a medium skim coat on to both sides of the gang horn.



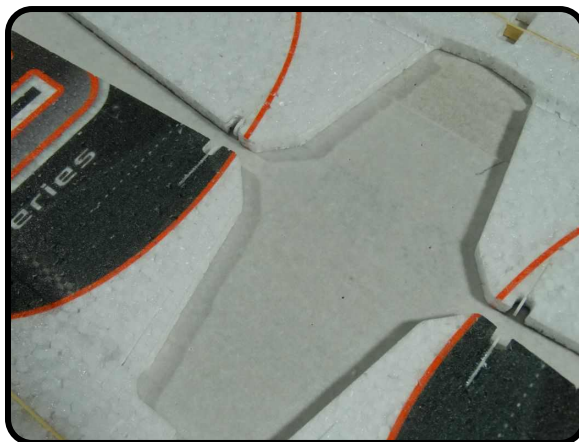
Slide the gang horn into the slot. Make sure that it is flush with both the upper and lower surface of the wing.



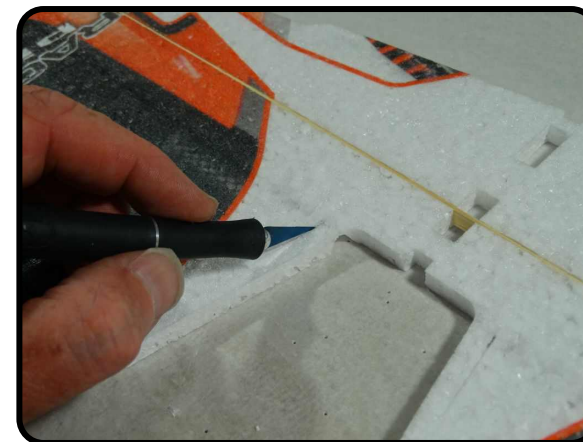
Position the gang horn far enough in so that it is flush with the trailing edge of the wing as pictured above.



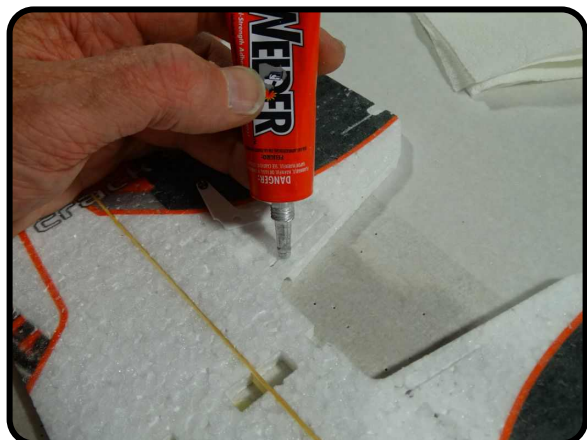
Wipe away any extra glue.



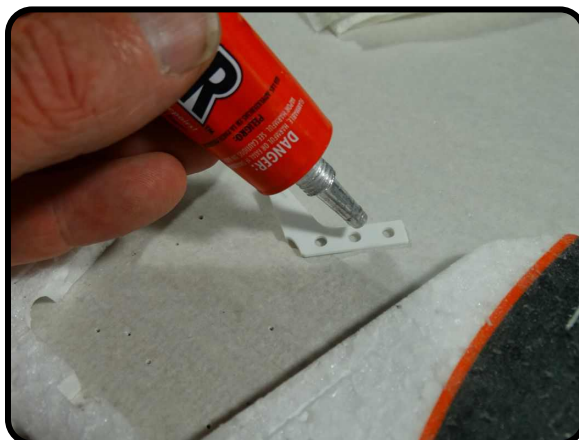
Repeat with the remain three positions. Note that the precut slots are on the top of the bottom wing, and the bottom of the top wing, as pictured above.



Aileron control horns are to be installed next. These install into the top surface of the bottom wing. there are pre-cut slots, just cut all the way through like was done on the gang horns.



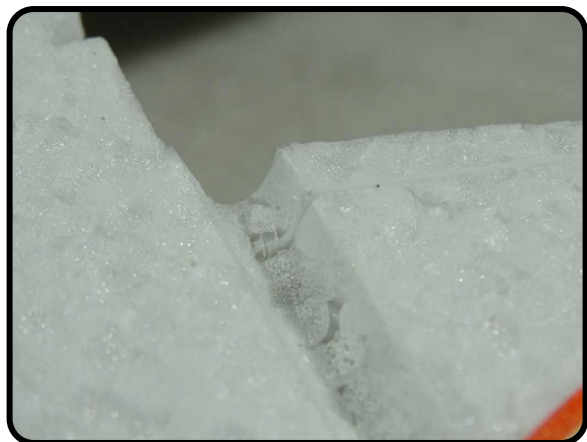
Squeeze some Welders into the slot.



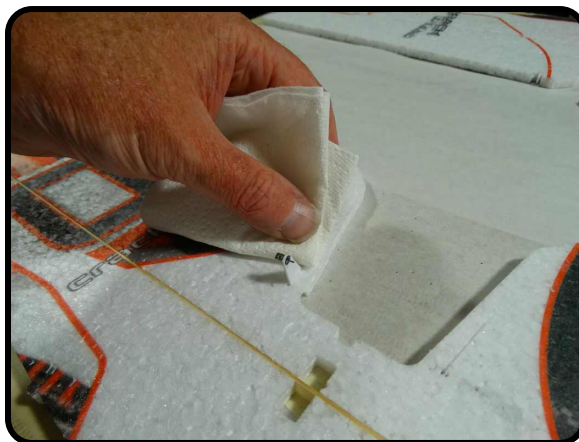
Put a medium skim coat on both sides of the horn in the area that gets buried into the wing.



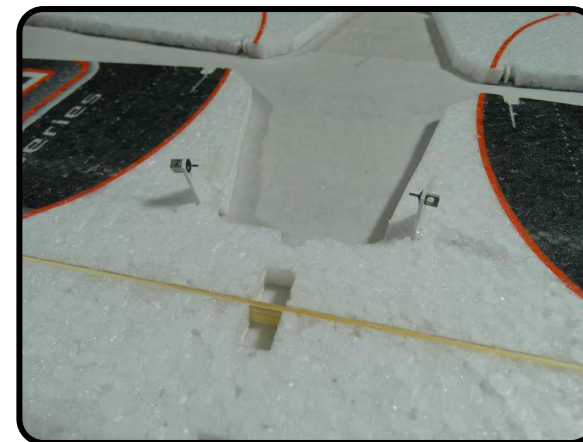
Install the horn into the wing. Note that the main part of the adjustable link should be facing outward



Flip the wing over and check to see that the profile of the horn matches the profile of the hinge cut out. This indicates that the horn is in the proper position.



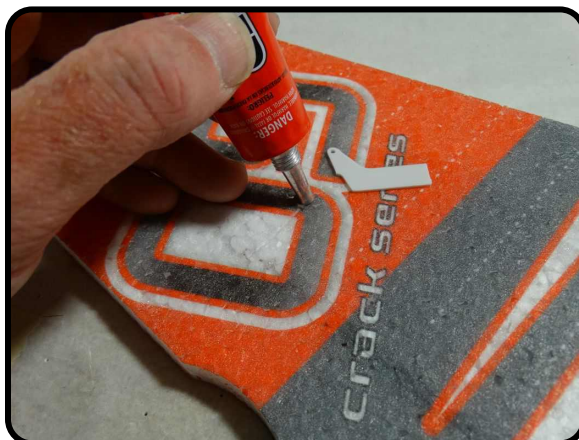
Wipe away any extra glue.



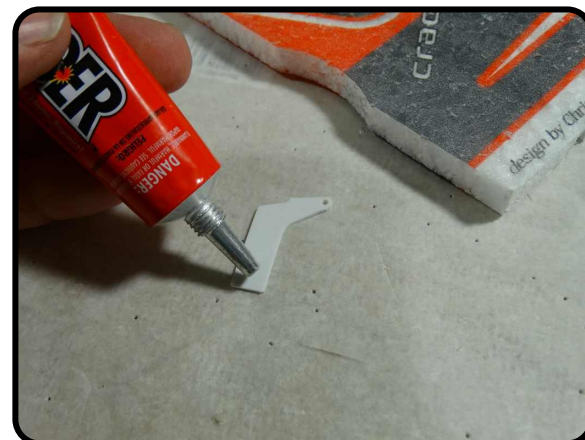
Repeat with the other side. Again notice the orientation of the adjustable links.



Install the rudder control horn. Again, as with the ailerons there is a precut slot on the side shown that needs to be cut all the way through.



Squeeze some Welders into the slot. Note that the horns to be used on the rudder and elevator are the same, and they are the ones without the lightening holes.



Apply a medium skim coat of Welders to both side of the horn base.



Slide the horn into the slot as shown.



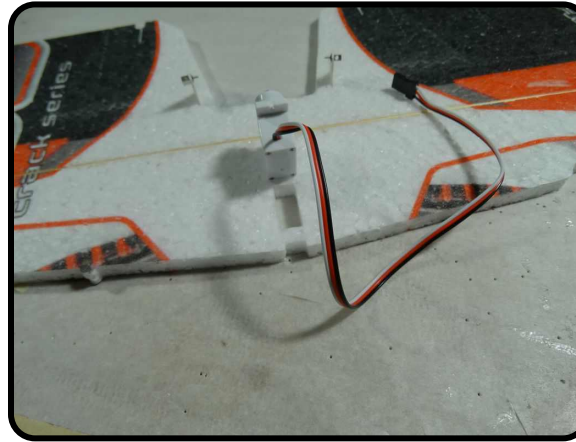
Check on the back side like was done on the ailerons to make sure the profile of the horn matches the profile of the hinge cut.



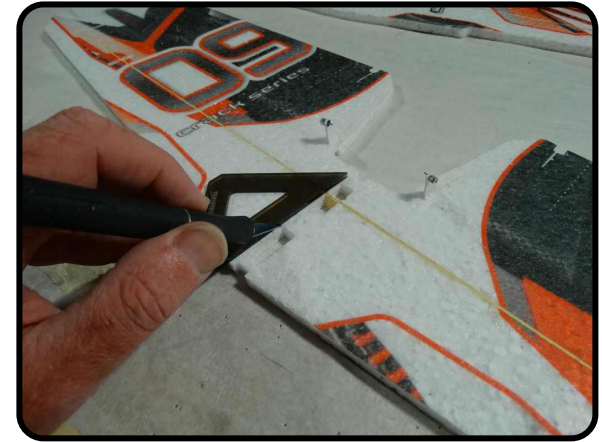
Wipe away any extra glue that might have pushed out.



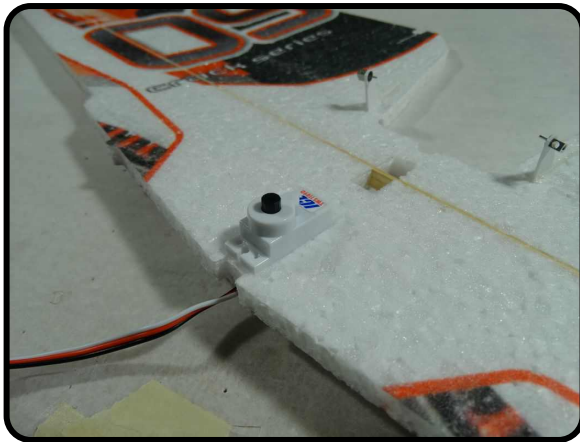
Repeat the last six steps for the installation of the elevator horn.



Locate your aileron servo, and judge whether or not the cut out in the lower wing needs to be enlarged. In the case of the power combo servos, the cutout will need to be widened slightly.



Use a straight edge to modify the size of the cut out.



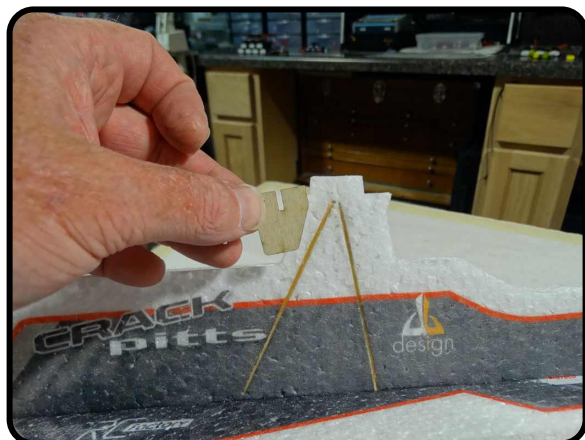
Test fit. Ideally the servo should fit snug. Not too tight and not loose. Once happy with the fit, remove the servo it will be installed in a later step.



Locate the small wood fuselage doublers as pictured above. Note that there are two different kinds.



The pointed one is installed on the lower part of the fuselage.



And the one with the blunt end installs on the upper part of the fuselage.



Apply a medium coat of glue to each of the parts and install them into their appropriate positions as just mentioned.



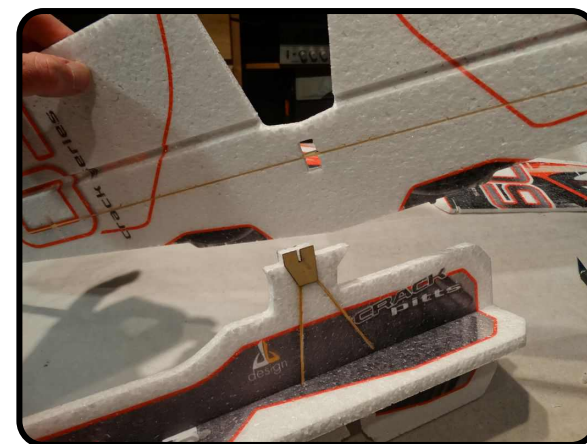
Correct position is such that the edges of the wood match the edges of the foam and that the slots are aligned.



Correct position for the lower doubler. As with the upper doubler, the edges of the wood should match the edges of the foam and the slots should be aligned. Let these dry before proceeding.



Once the glue has dried on the doublers, test fit into the cut out in the wing. The slot will need to be widened a little to account for the thickness of the doublers. Do not remove too much.



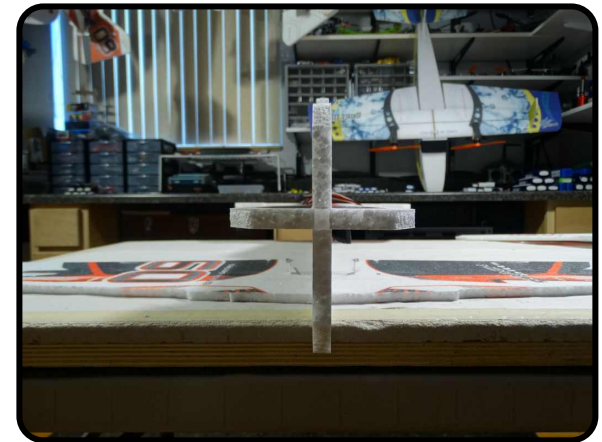
Size the cut out in the top wing as well. Ideally it should be a snug fit.



Once happy with the fitment of the upper and lower wings, the bottom wing will be attached first. Apply Welders to all the mating surfaces. Note avoid glue in the servo hole.



Slide the piece together. Assembly should be done on a nice flat surface. Note that the tail skid bump helps to position the fuselage at the correct angle, and nose should hang off table.



Sight down the front of the airframe and make sure that every thing is nice and square and level.



Wing struts are next. Note that they lean towards the front of the aircraft.



Put some Welders into the slots and the mating area just behind and in front of the slot.



Install the wing strut. Use a square to position the strut square to the surface of the wing.



Repeat the process on the other wing strut. Put some weights on the wing as shown to keep things nice and flat and let the assembly dry before handling.



Once the glue has dried on the lower wing, the top wing can be attached. Put some glue in the strut slots and other areas where the two pieces meet up.



Lower the fuselage onto the upper wing as shown. Note that the airframe is upside down for this step



Make sure the outer struts and center fuselage strut are all fully engaged.



Check for squareness and tweak a little if needed. Note that the assembly should go together pretty square, if it is not, check to see if there is binding or stress somewhere.



Let the assembly dry before additional handling. Note that the tip of the stab is used like the tail skid bump was used when doing the lower wing. This is by design and positions everything true.



Once the wings and struts have dried the tail and canopy can be attached. Tack up method will be used for both.



Apply a medium skim coat to the rudder and mating surface of the stab, and let dry for approx 10 minutes.



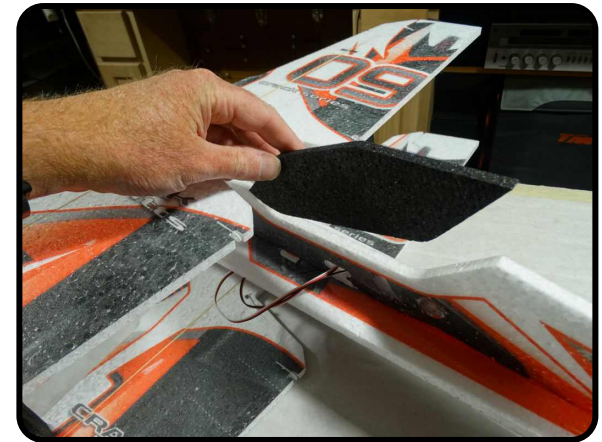
Bring the two parts together. Take care to get the alignment of the two pieces just right. The bond will be instant and there will be no opportunity for adjustment.



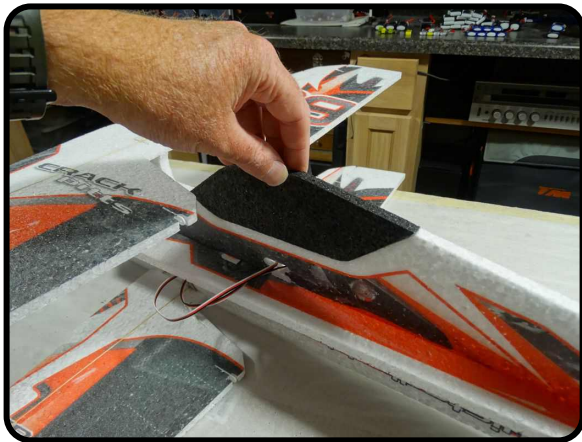
Press the two pieces firmly together to ensure a good bond for the length of the joint.



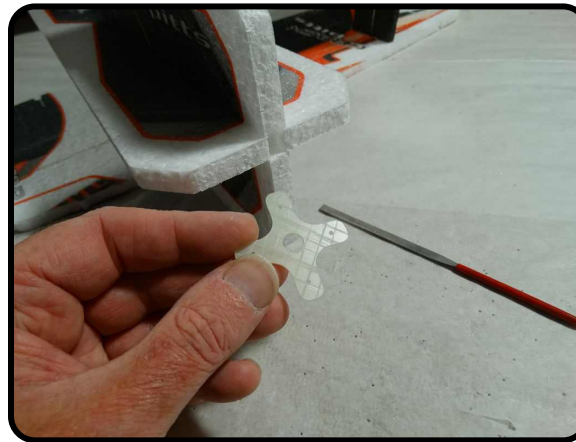
Repeat the process for the Canopy. A medium skim coat on both mating surfaces. Let tack up for approx 10 minutes.



Bring the two pieces together, and again use care to get the proper alignment as the two pieces come into contact with one another.



Press the two pieces together, and double check that the bond is good for the length of the joint.



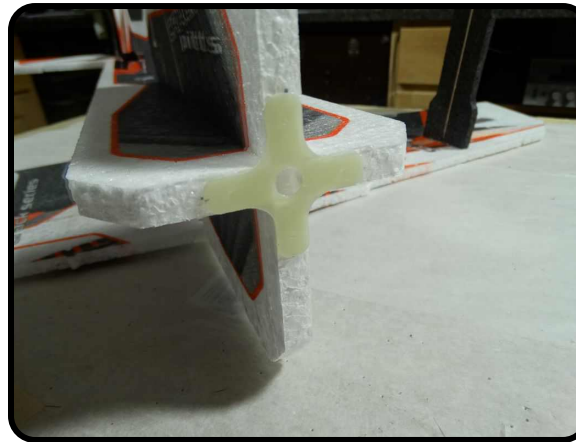
Locate the motor mount as shown above and with a file or some coarse sandpaper, roughen up one side.



Tack up method will be used to attach the motor mount, so apply a medium skim coat to the roughened side of the motor mount and the matching area of the aircraft nose.



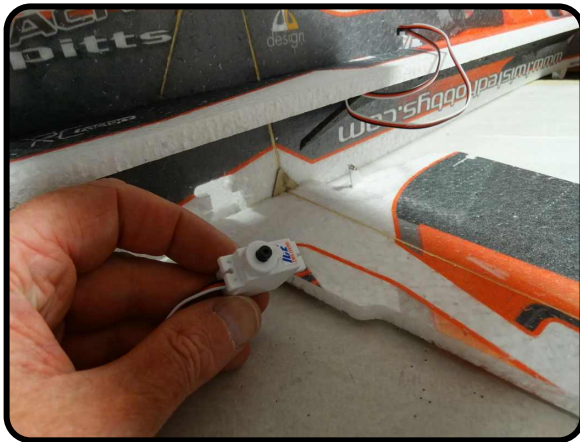
Once the glue has tacked up, bring the two pieces together.



Firmly press the two pieces together and check that the bond is secure.



Installation of the aileron servo is next. If you are not sure whether the servo is centered, plug it all in as shown to find the center.



Remove the servo horn if it was installed and angle the servo into its pre-cut slot. Power combo servos should fit perfectly. others may need some trimming.



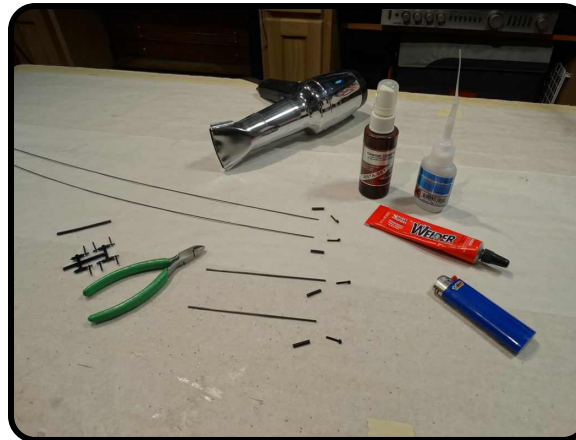
It will take a little pressure and finesse to get the servo to pop in. Once in position it should look something like pictured above.



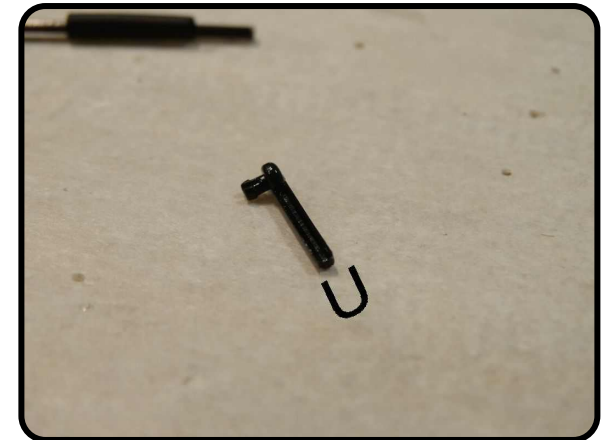
Without disturbing the center position of the servo's output shaft, install the horn so that it is perpendicular to the fuselage, with the tip pointing towards the nose of the aircraft



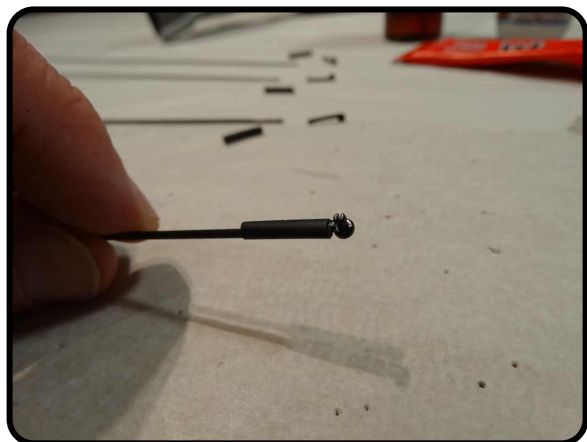
Install the servo horn screw and return the servo to it's operational position.



Locate the two long thin rods, the two shorter thick rods, plastic snap links and tubing. Cut the tubing into 1/2" long pieces. Welders or CA can be used. CA used in this manual.



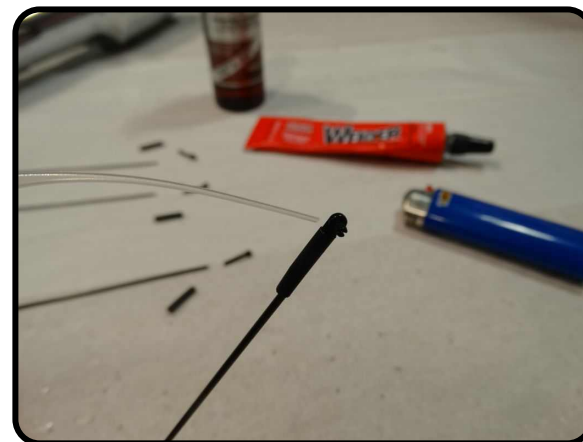
Note that the snap links have a "U" shaped cross section that will saddle the control during attachment. Also, it should be noted that these are very soft plastic and will melt easy if over heated.



Starting with the aileron control rod (shorter thick rods), position the snap link and a piece of tubing as shown.



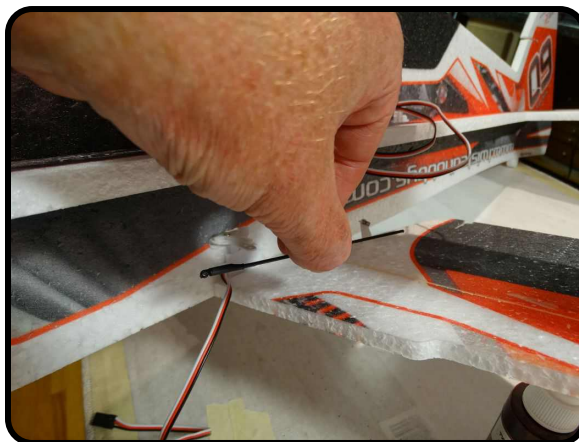
With a heat gun, hair dryer or lighter, shrink the tubing. Use caution, the snap links are easily damaged from too much heat.



Apply a drop of CA to each end of the shrink tubing and let it wick in.



Spray with Kicker. Repeat for the other aileron control rod as well as the two long thin tail control push rods.



Slide the free end of the control rod thru the hole of the adjustable link on the aileron control surface.



Snap the plastic link into the outer hole of the aileron servos horn. In this case snap in from underneath in the view above. Don't worry about the extra rod length or set screw at the moment.



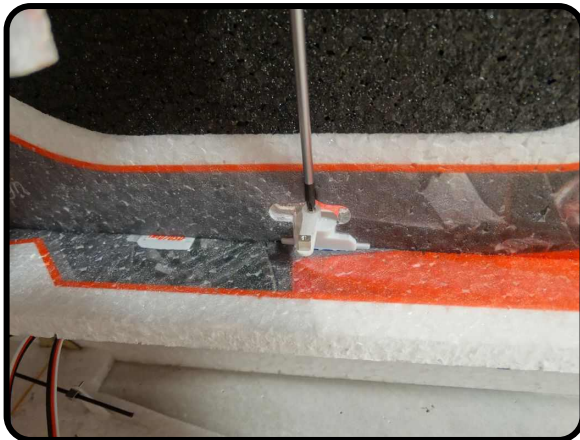
Repeat the process with the other side.



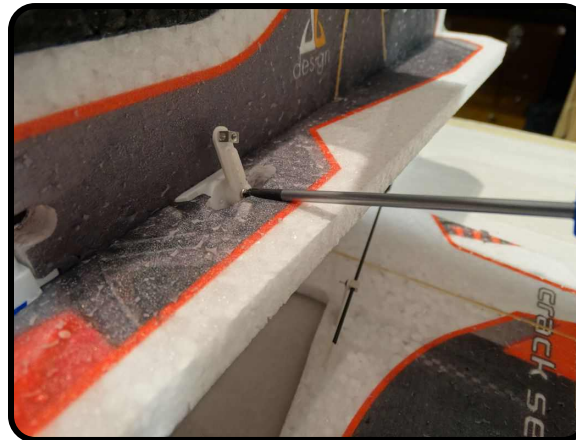
Locate the tail servo arms and adjustable link pieces.



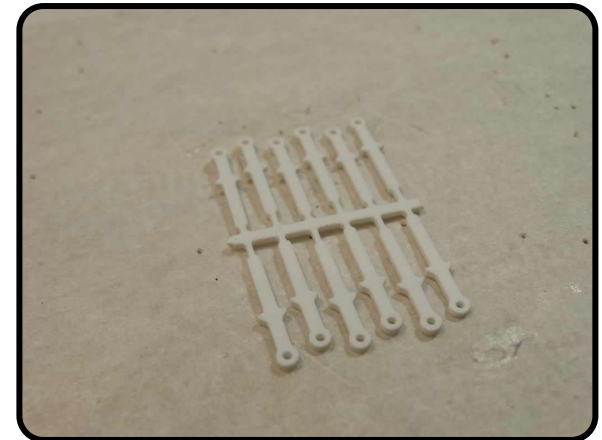
Attach the adjustable links as pictured above. Notice the orientation of the links and keepers. This is important, make sure it is right, these can not be dis-assembled.



Starting with the rudder servo, make sure it is centered and attach the horn as near perpendicular as possible. Install the servo horn screw.



Repeat with the elevator servo. Again, make sure the servo is electronically centered. Install the servo horn screw.



Locate the push rod guide tree and snip all the parts free.



Starting with the elevator side, install all the guides into the precut holes. A flashlight can be used to find the holes. Make sure they are in line and put a drop of CA at the base of each.



Repeat with the rudder side.



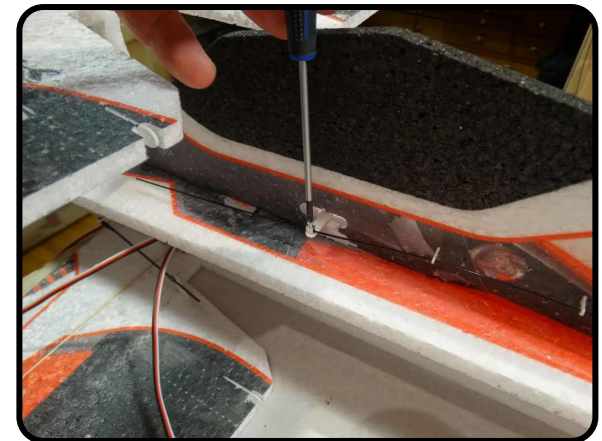
Install the elevator control rod as shown with the snap link end attached to the elevator surface horn, and the free end thru all the guides and also thru the hole of the adjustable link.



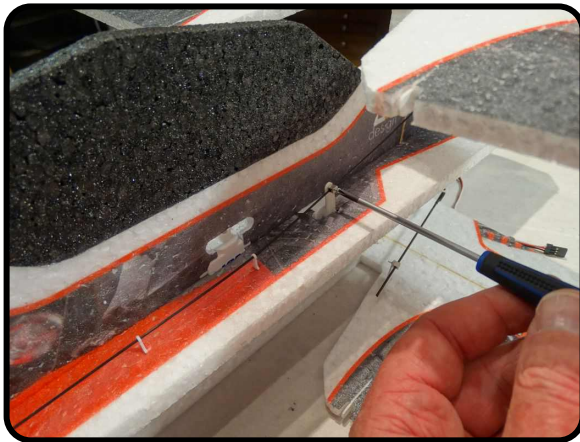
Close up of the free end sticking thru the hole in the adjustable link. Don't worry about the set screw or trimming at this time.



Repeat with the other side.



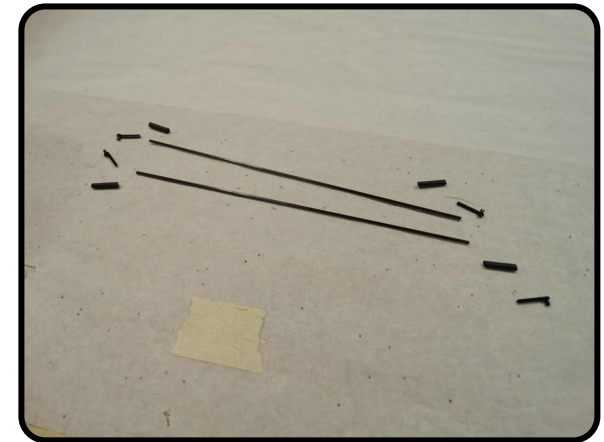
With the servo still centered, also center the control surface and install the adjustable link's set screw. Do not over tighten, doing so will crush the carbon and make it weak.



Repeat the process with the other side, again making sure that the servo and control surface are centered.



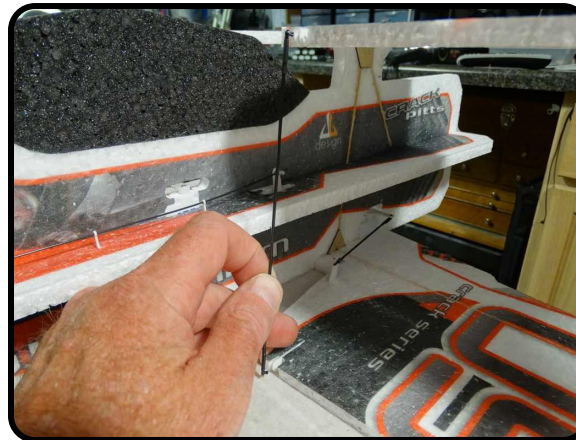
Snip off any extra length of the control rod. Leave about 1/4" past the end of the adjustable link.



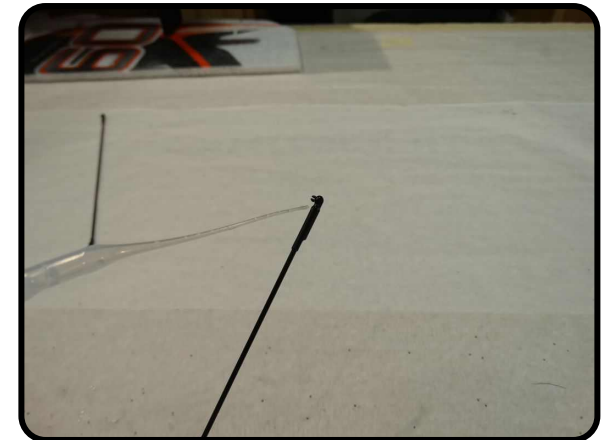
Aileron gang control rod will be next. Locate the longer thick rods, four snap links and four 1/2" long pieces of shrink tubing. Heat shrink the ends on like before, but NO GLUE at this time.



With tape or other means, make sure the upper wing's ailerons are level.



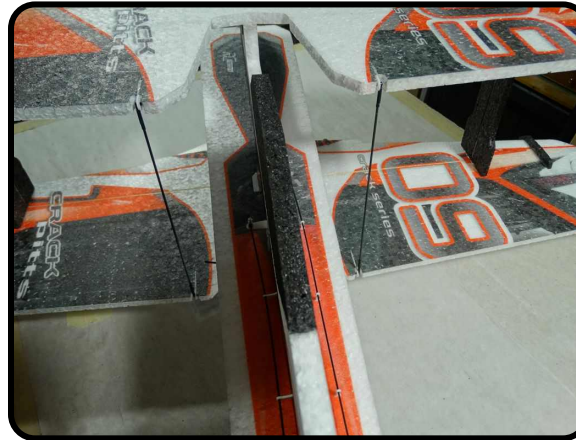
With the nose of the airframe over the edge of a table to clear the aileron's servo, make sure the bottom ailerons are flush to the table and check that the snap links link up with the holes.



It may be necessary to trim the rods a little to get the exact length, just slide the link and tubing off, snip, and slide back on. Once happy with the length, wick some CA into the tubing ends.



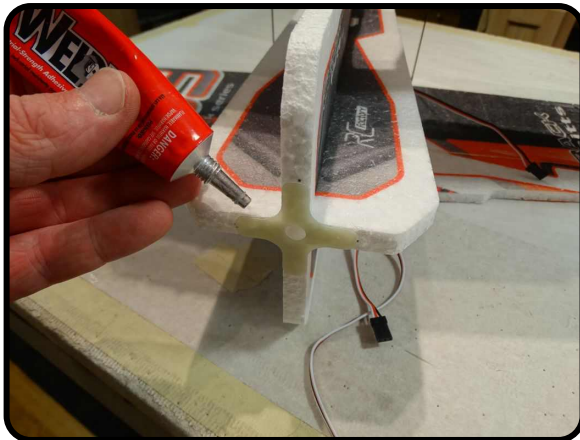
Double check the length, and orientation of the bosses, adjust as needed and wick CA into the other end. Snap the links into the gang horns.



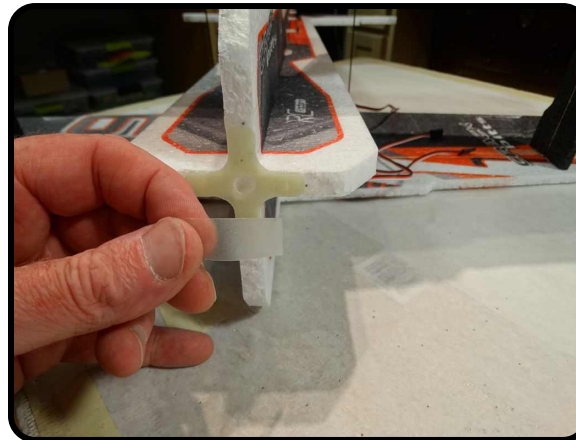
Repeat for the other side.



The next step will require Blenderm and Welders. Although not required, it is highly recommended. Cut 4 strips that are approx 1.50" long.



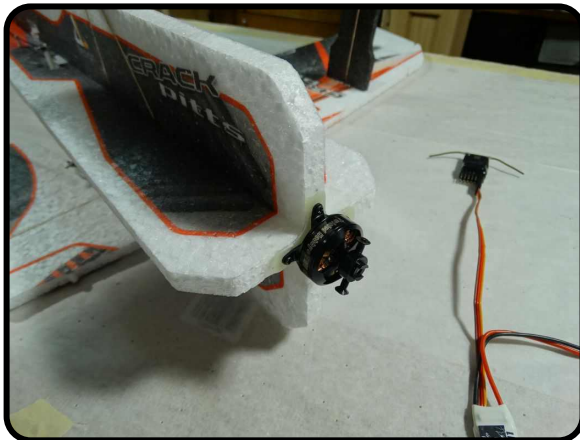
The Blenderm tape will wrap around each leg of the motor mount and attach to the fuselage. Apply a skim coat of Welders where the tape will contact, this gives a much stronger bond.



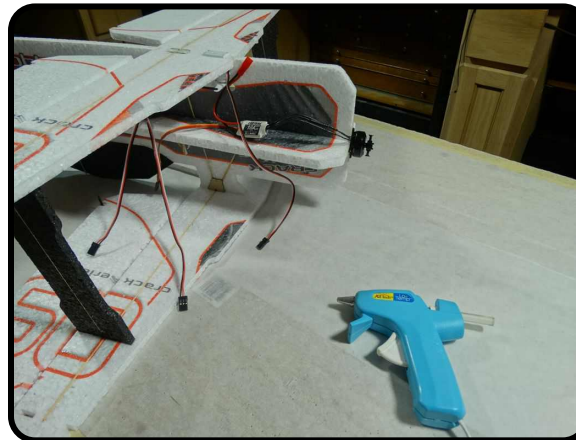
Let the glue tack up for about 5 minutes then apply the tape tabs. Again, one tab for each motor mount leg.



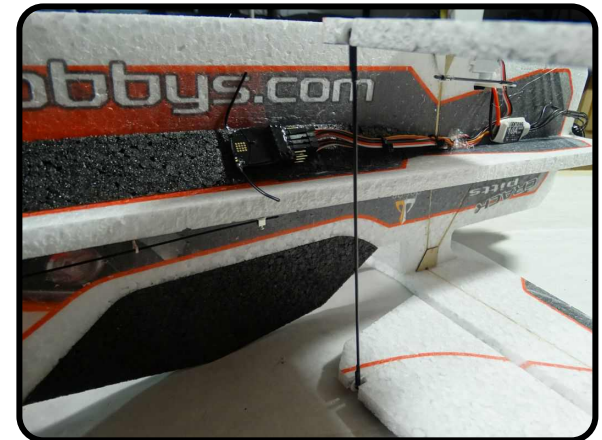
Locate the motor you will use and it's associated hardware.



Mount the motor as shown, make sure the leads are on the side of the airframe that you want to install the ESC onto, in this case, far side - bottom.



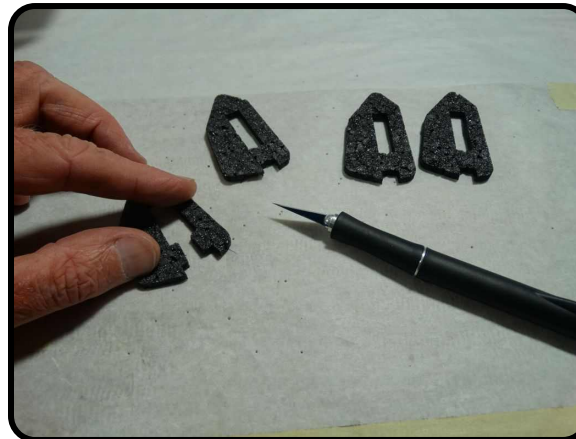
Welders or low temp hot glue can be used to attach the ESC where desired.



Decide how you want to tidy up all the wires, use a little hot glue and/or zip ties. Now is also a good time to put a bead of Welders around all the areas you can reach of the servos.



Locate the Side Force Generators. Note that they are NOT symmetrical. The smaller surfaces will go to the insides of the wings.



Cut the SFG's from the tree and split all of them as pictured above.



Welders or CA can be used to attach them. If using Welders lay down a small bead and install the SFG, if CA'ing install the SFG and then CA and hit with Kicker.



Repeat the process for the other three side force generators. Make sure they are square to the wing and parallel to the direction of flight.



Picture above shows how the small surface of the SFG's is installed towards the insides of the wings.



Finish up the program in your radio, ie, set the subtrims so all surfaces are neutral. Set the Servo End Points, Dual Rats and Expo to suit. See the Control Throws Section for guidelines.

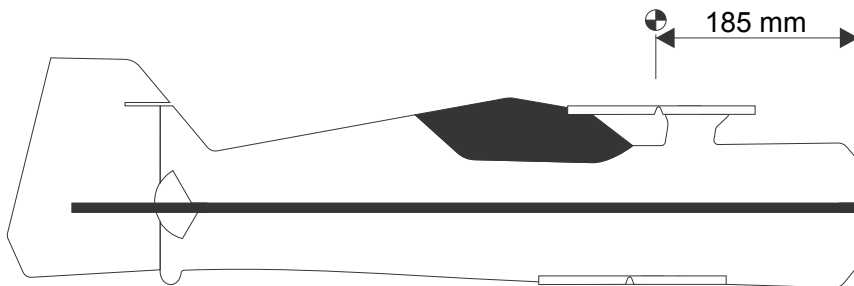
This completes the build of the airframe with the included kit items. There is an optional Landing Gear set, the directions of which can be found near the end of this manual.

Please visit www.TwistedHobbys.com for other accessories and aircraft.

There are several online resources and forums for this model as well. It is suggested that you visit the RC Groups Thread for this model for additional information, it is a great resource for questions and insight to this aircraft.

CENTER OF GRAVITY

C.G. - 185mm from nose of aircraft



Locate all the electronic 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. For best 3D performance, balance for level flight upright and inverted with little to no elevator input. Also power off down line should be straight down without any pull or tuck.

CONTROL THROWS

Extreme & 3D

Ailerons: +/- 40 deg
Rudder: +/- 45 deg
Elevator: +/- 45 deg
Expo to suit (40% to 60%)

Beginner & Sport

Ailerons: +/- 20 deg
Rudder: +/- 20 deg
Elevator: +/- 20 deg
Expo to suit (15% to 30%)

In order to achieve the control throws as described for "Extreme and 3D, it is imperative that the control surfaces, linkages, rod ends, etc, all move freely over the entire range, including range end points.

Failure to do so will result in damage to either the servos or mechanical components



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 Extreme 3D Plane is a full 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 or CA. Many pilots prefer Welders because it remains 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 indoor flying and will be right at home in the local gymnasium or other similar sized venue.

STORAGE

This EPP plane should be stored resting it's landing gear or hung from the prop. Storing in other fashions that 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!

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 -	<input type="text"/>	<input type="text"/>
right aileron down -	<input type="text"/>	<input type="text"/>
left aileron up -	<input type="text"/>	<input type="text"/>
left aileron down -	<input type="text"/>	<input type="text"/>
aileron expo -	<input type="text"/>	<input type="text"/>
rudder right -	<input type="text"/>	<input type="text"/>
rudder left -	<input type="text"/>	<input type="text"/>
rudder expo -	<input type="text"/>	<input type="text"/>
elevator up -	<input type="text"/>	<input type="text"/>
elevator down -	<input type="text"/>	<input type="text"/>
elevator expo -	<input type="text"/>	<input type="text"/>

Electronic Components

Aileron Servo -

Rudder Servo -

Elevator Servo -

Battery -

motor -

ESC -

Propeller -

TIPS AND TRICKS

A good building surface is a “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 assemble 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.

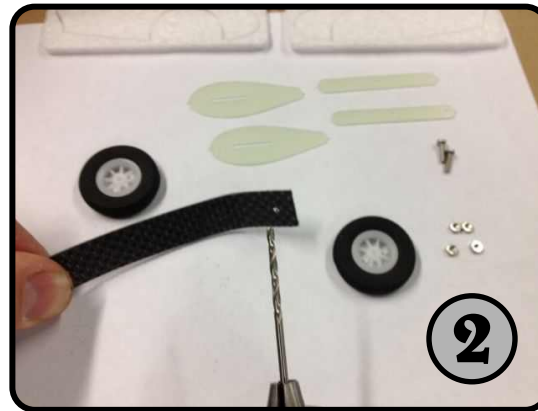
When gluing the rudder to the fuselage, stick pins could be used to hold in position if wanting to handle the airframe before it is completely dry

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.

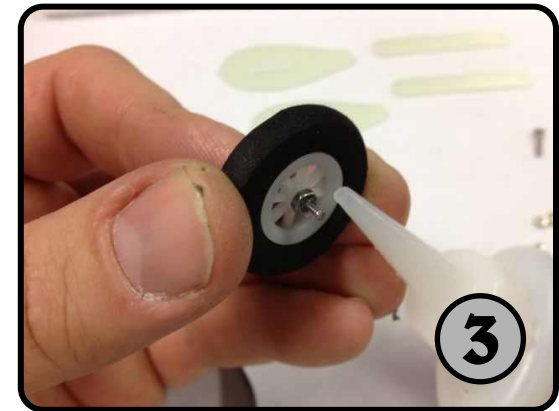
OPTIONAL LANDING GEAR



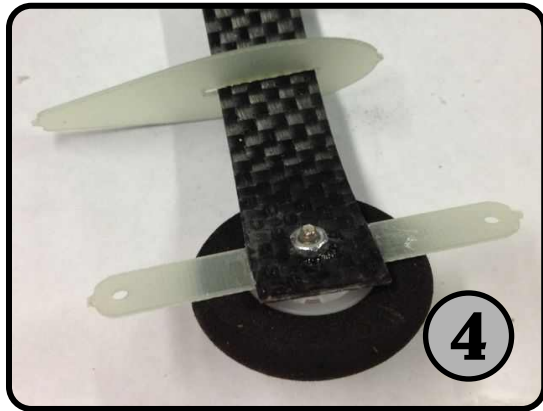
1



2



3



4



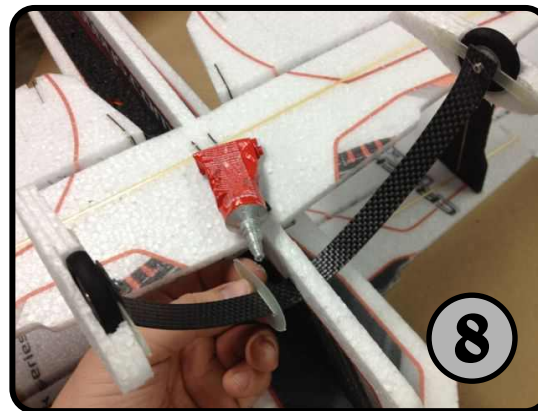
5



6



7



8

1 2 With .076" drill, enlarge wheel axle, carbon fiber LG and wheel pants brace. 3 Install screw through wheel and spin nut over other end, do not tighten nut fully so wheel can spin, secure nut with CA. 4 Then install wheel spat as shown and a fuse support. 5 Install the completed half through the fuselage. 6 Glue the wheel pants as shown. 7 Attach pant to brace as shown. Make sure the wheel can roll freely. 8 Repeat for the other side.