TWISTED HOBBYS

Backyard Series

Yak / Slick / Edge / Sbach

MOTOR: 23-30G 50 WATT OUT-RUNNER
ESC: 12 AMP
SERVOS: 2X 5g / 1X 9g
PROP: 8x4.3 OR 9x4.7
BATTERY: 2S/3S 450mAh

USA Distributor
Twisted Hobbys
www.twistedhobbys.com

RADIO: MIN. 4 CHANNEL
WINGSPAN: 32 INCHES
LENGTH: 30 INCHES
AUW: 7.2 OZ. W/LANDING GEAR

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 over look 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

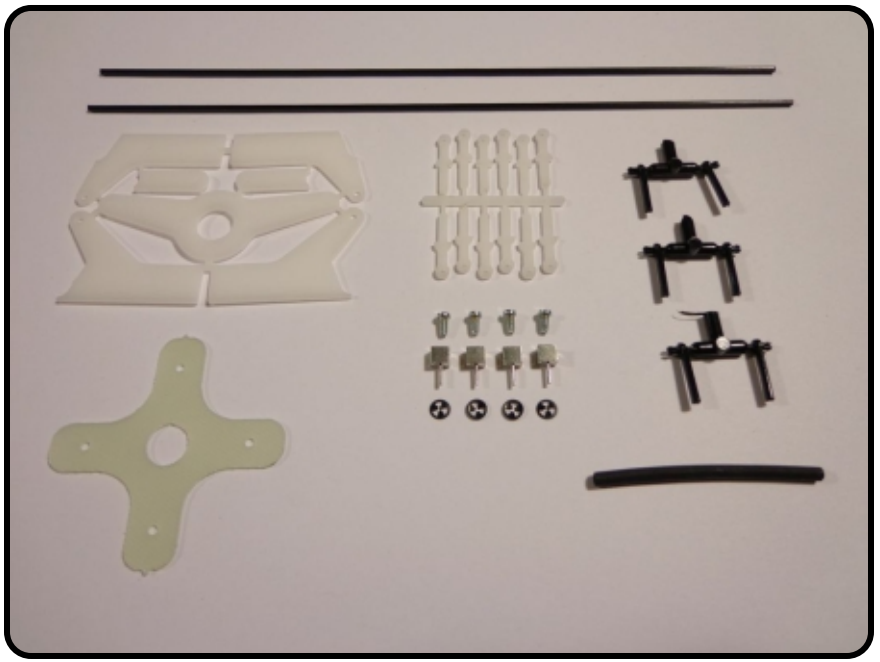
Twisted Hobbys checks each plane before shipping to ensure that each kit is in fine condition. We have no bearing on the condition of any component parts damaged by use, modification, or assembly of the model. Inspect the components of this kit upon receipt. If you find any parts damaged or missing, 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



MAIN AIRFRAME COMPONENTS AND KITS

Double check that you have all the above pictured items. The Carbon Bundle includes tail push rods and wing spars. Also pictured above is the bag with all the small hardware items, see the detail to the right for items in should contain.

HARDWARE KIT DETAIL

Double check that you have all the above pictured items. There are two extra snap links included and the use of the shrink tubing is optional. If any of the airframe or hardware items are missing, contact Twisted Hobbys before starting your build

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 Acrostic 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**

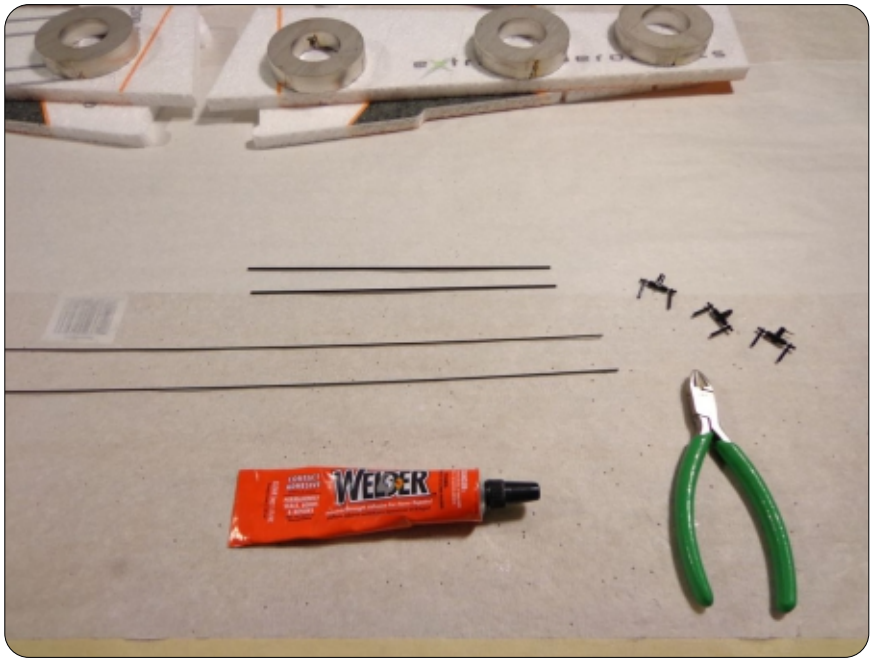
THE BUILD

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.

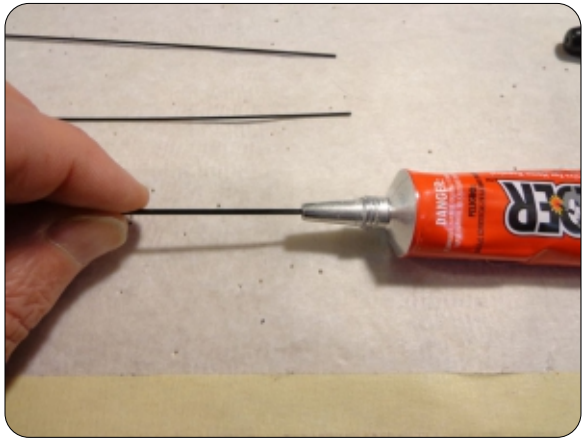
Welders glue is used for FOAM TO FOAM joints. Thin and Medium CA are used on the PLASTIC TO FOAM and CARBON TO FOAM joints. **When using the Welders glue for a butt joint, apply a thin film to each surface, allow to sit for approx five minutes and then assemble**. Note that this method will create a 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**, simple 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 the hinged items as shown above, bend them back onto each other as shown and let set for an hour or so. this process will help to loosen up the movement of the control surfaces, and is necessary to prevent servo damage



Gluing the snap links onto the ends of the control rods is important to do at this time.... the glue will need to cure for at least 24 hours in order to achieve it's full strength. Locate the rods and snap links as shown above

A quick link will be glued to the end of the 4 control rods. Hold the rod with your fingers....



.... dunk it approx 1/2” into the nozzle of the Welders tube as shown and twist a time or two

Pull the rod out and check that you have a nice, even coat of glue as shown, if not, repeat the process

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Attach a snap link as shown. Notice that the snap link has a “saddled” area, this should be where you rest the control rod, repeat for the other rods and set aside to dry for 24 hours

Multiple power combos are available through Twisted Hobbys. Each will operate the model per recommended spec’s, different components vary and are shown in the manual.

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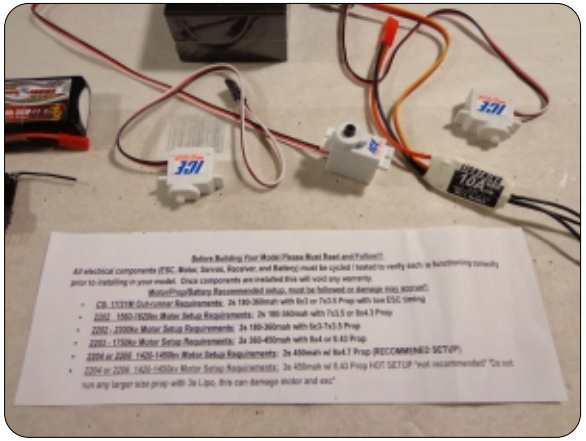
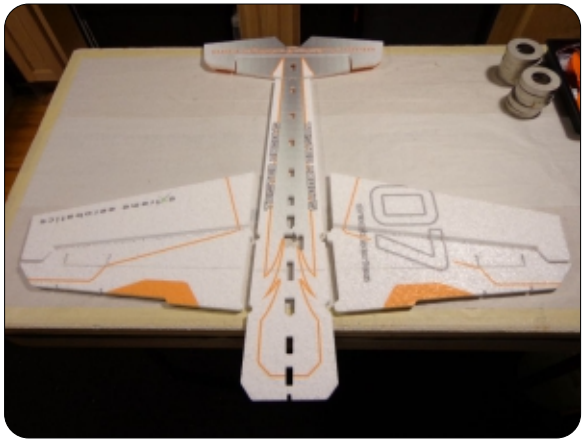


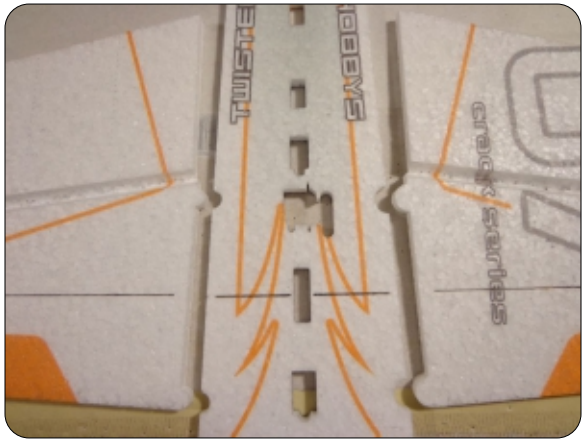
Read all the warnings and misc included instructions from the various electronic items

Create a model profile in your radio and bind the receiver per the manufactures instructions

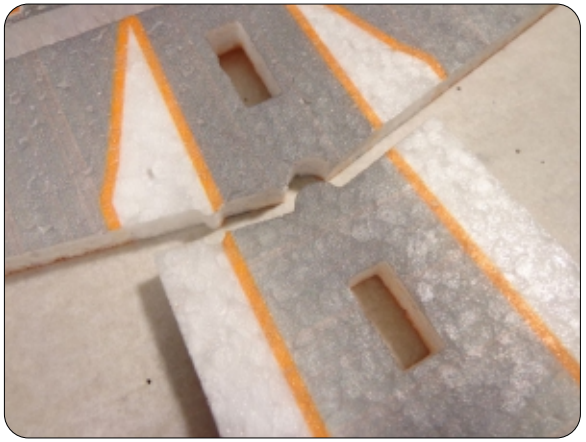
Hook up all the items as shown and center the servos with sub-trims so that the arms are 90 degrees to the servo case. Ice Power Combo shown above. See back of manual for servo horn options.



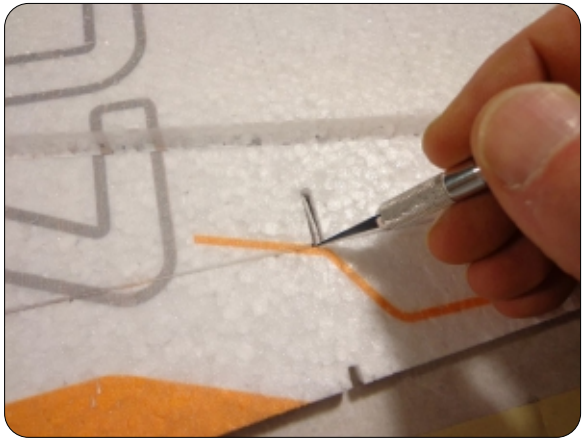
Locate the airframe components pictured above



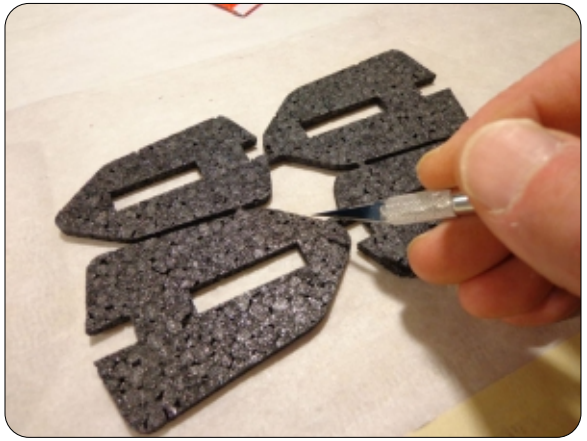
Notice that the tabs are of different configuration to aid in proper assembly. Coat each of the mating surfaces with a thin coat of Welders and let tack up for approx. 5 minutes



The elevator is also keyed to help with proper orientation during assembly, as with the wings, coat the mating surfaces with a thin coat of Welders and set aside to tack up



While waiting for the Welders to tack up, clean out the small scrap from the cut out near the end of the wing as shown



Locate the Side Force Generator Tree and free all the parts from each other

Once free from one another, remove all the little tabs so that the edges are smooth

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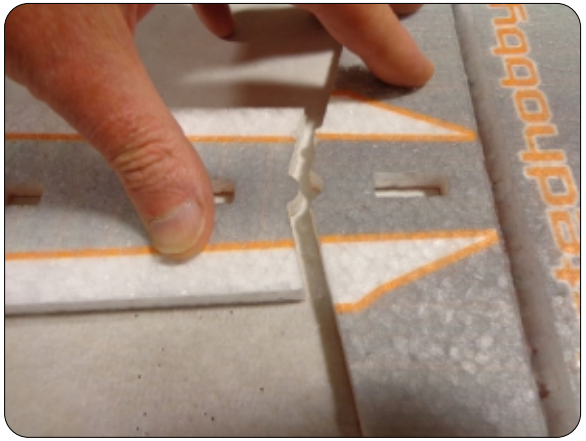
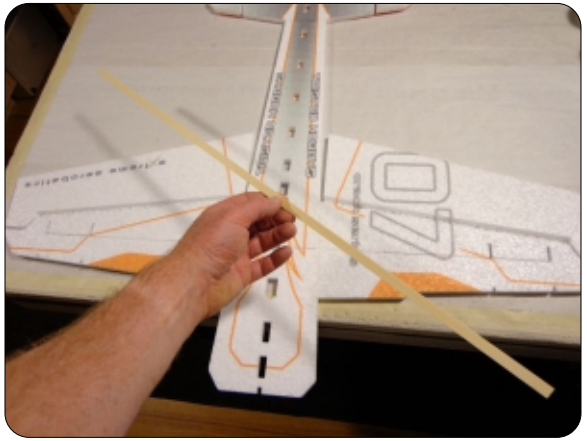
In the center of the rear of each SFG, split the foam as shown

This slit will be used later to install the SFG onto the wing... repeat this with the other three pieces

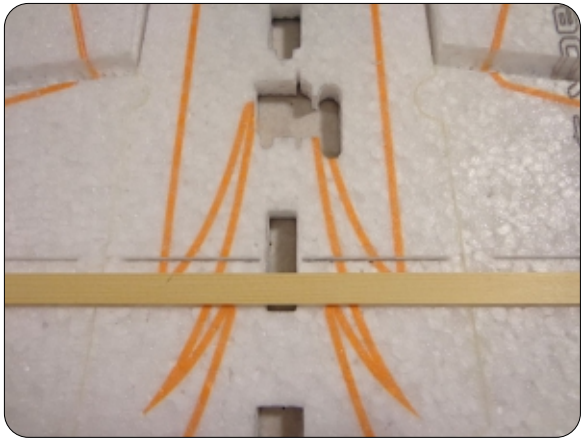
By now the Welders should be tacked up. Carefully bring the pieces together making sure that alignment is maintained. With the tack up method, you have to get it right the first time.



Repeat the previous process as mentioned to the fuselage and elevator connection.

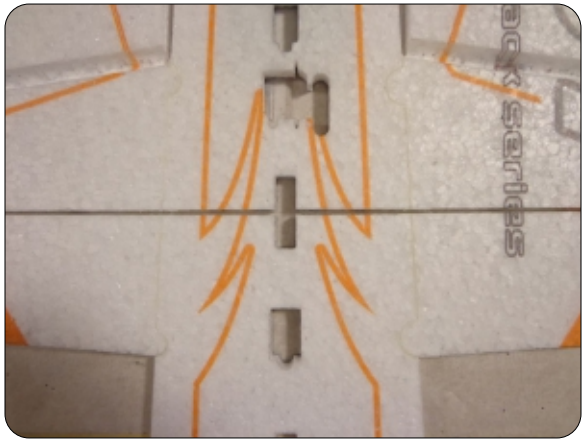


Installing the main spar is next, locate the wood spar as shown above.

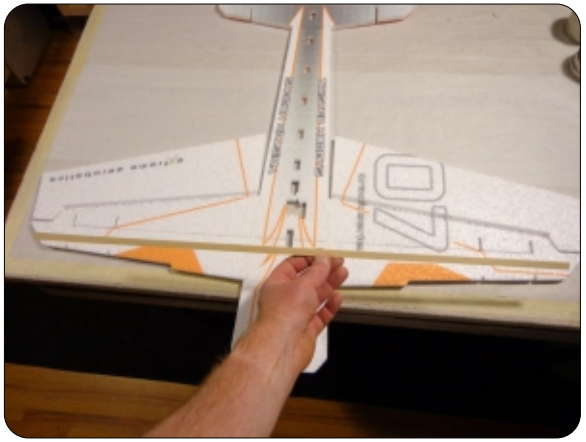


Notice that there are some webbed areas that will need to be removed prior to installing the main spar

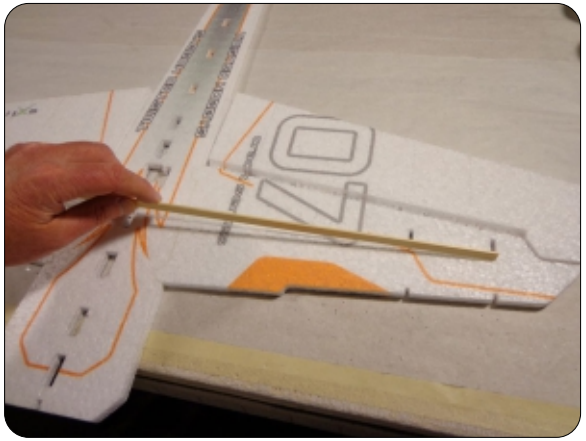
With a straight edge and sharp hobby knife remove the webbed areas as required



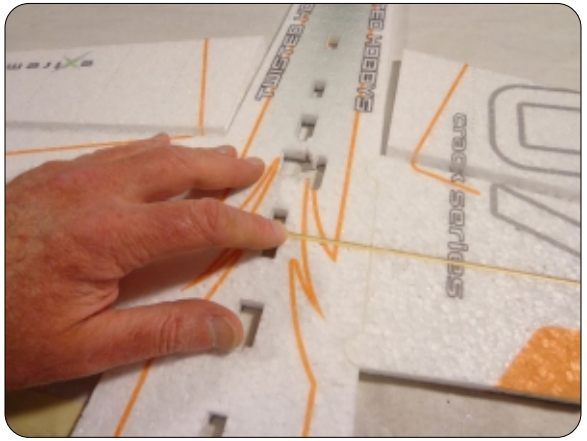
When complete, you should have a nice consistent slot in which to install the main spar



Test fit the spar. It is not likely that any additional trimming will be necessary, but it is good to know how it will fit prior to adding glue



If everything is correct, the spar should fit tight from wing tip to wing tip...



.... and be flush or slightly below flush with the upper and lower surfaces of the wing

Once satisfied with the fit of the spar, remove it and lay down a nice bead of Welders

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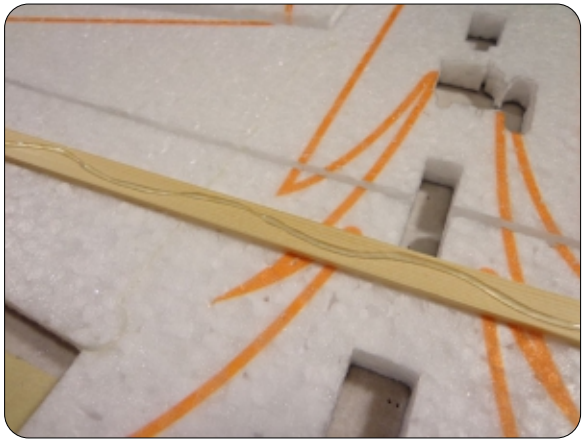
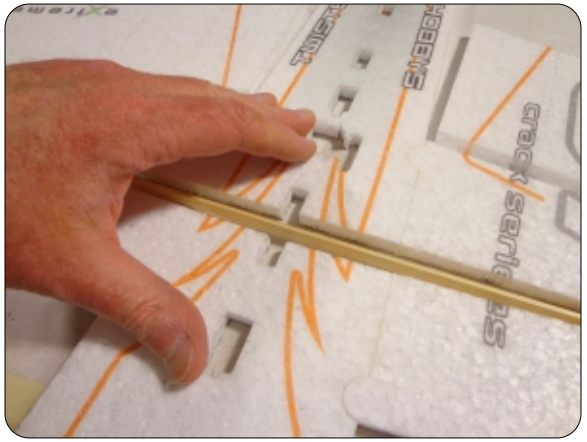
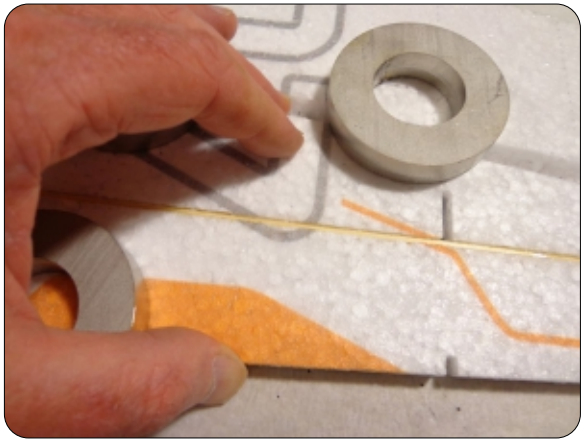


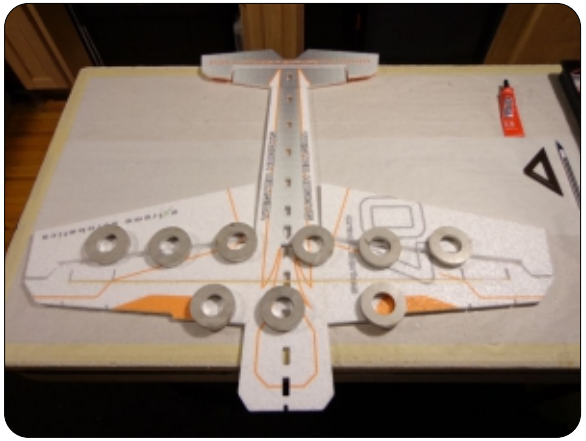
Bead of Welders should look something like what is pictured above... repeat for the other side of the spar



Spread the area of the wing that receives the spar wide enough to get the spar in with out scraping too much of the glue off during the process



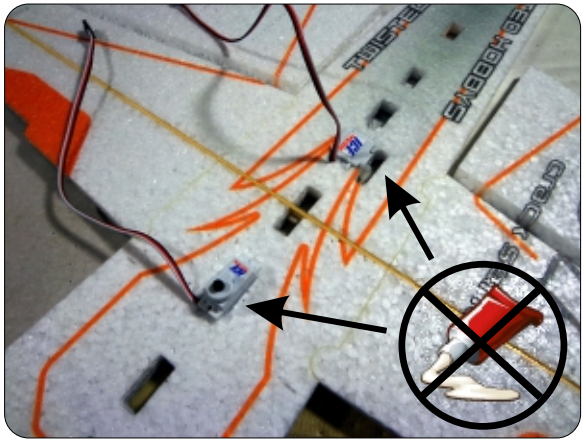
Squeeze the spar area together as shown, do this several times along the length of the spar to ensure a good sold glue joint. Wipe away any extra glue with a paper towel



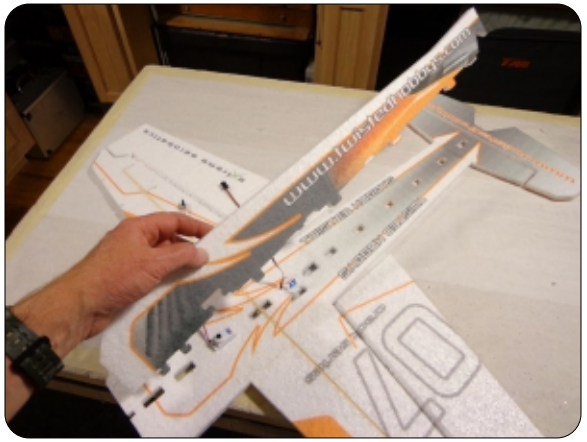
Use some weights to hold everything in position while the glue dries. You should let this sit for an hour or two, and then handle carefully.

While the spar is drying, put a skim coat of Welders on the black canopy and mating fuselage part, let the glue tack up

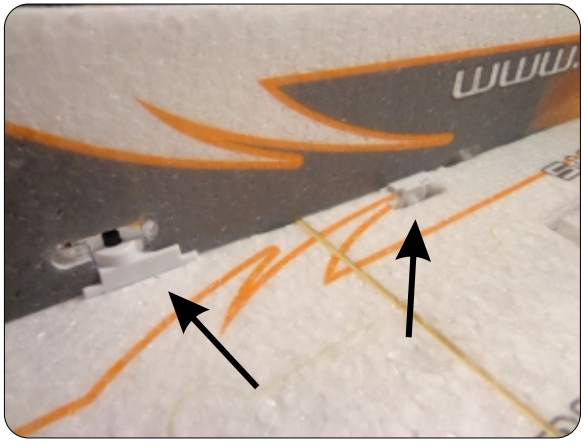
Once the glue has tacked, bring the two pieces together as shown.



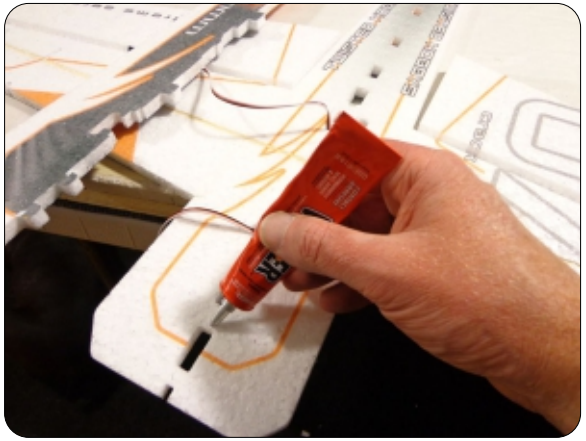
Install the aileron and elevator servos as shown. NOTE - DO NOT GLUE THEM IN AT THIS TIME. ALSO SERVO ARMS CAN BE INSTALLED NOW, JUST MAKE SURE THEY ARE CENTERED



Test fit the lower fuselage section.

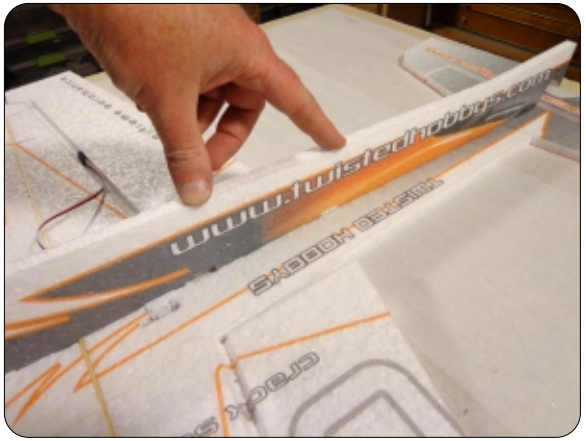


Make sure that there is no interference with where the servos fit.



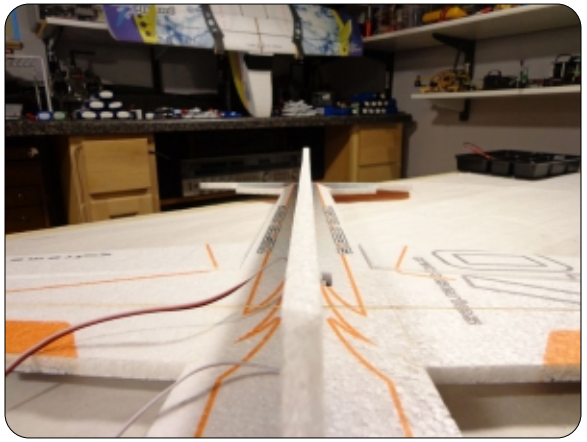
Lay down a medium bead of Welder's along the mating surface of the horizontal section of the fuselage, avoid the servo areas and make sure to put a little in the appropriate tab slots

Assembly the two pieces while the glue is fresh and wet

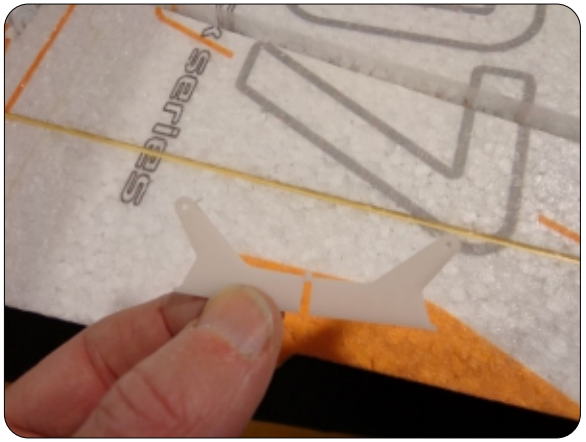


Push all along the length of the lower fuselage piece to make sure all the tabs and slots are fulling engaged. Do this a couple time over a couple minutes, this will help ensure a good glue joint

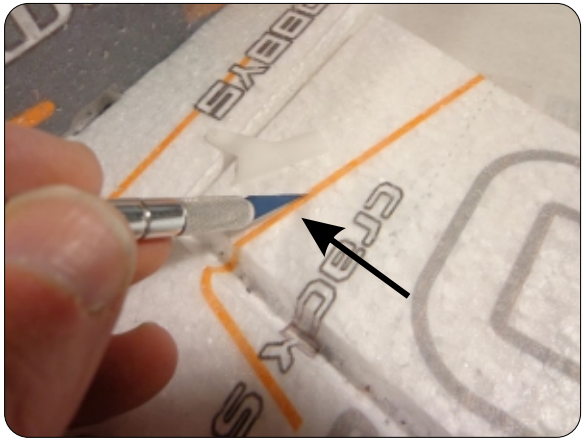
Use a small builder square or other item to check that your airframe is going together nice and square



Sight down the length from the nose of the aircraft to veriify that there are no waves in the vertical sections. let this dry for about an hour

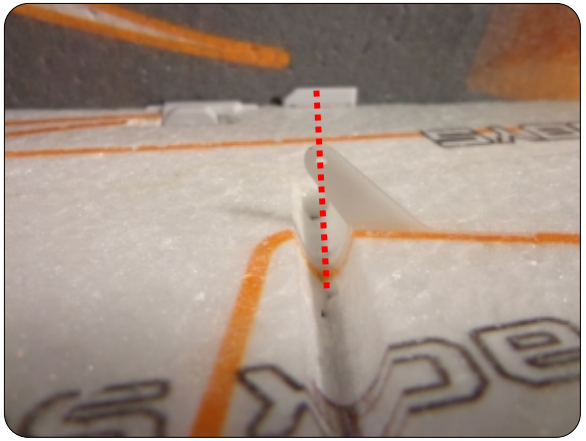


While the fuselage is drying, locate the aileron horns and remove them from the plastic tree, they are the ones with the larger holes.



There is a pre-cut slot located approx where shown. It will need to be cut all the way thru to accommodate the aileron horn properly

Test fit the horn



Make sure the hole of the horn is directly above the hinge line of the control surface

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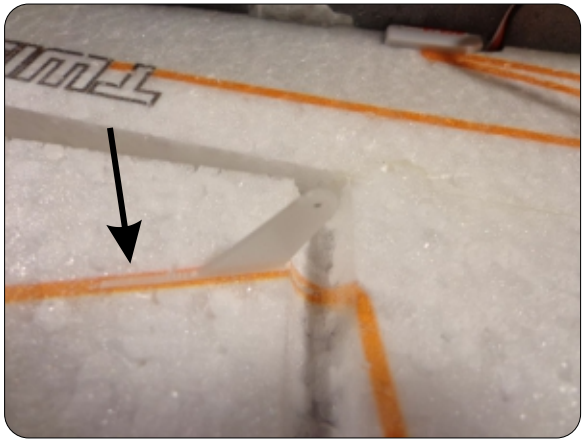
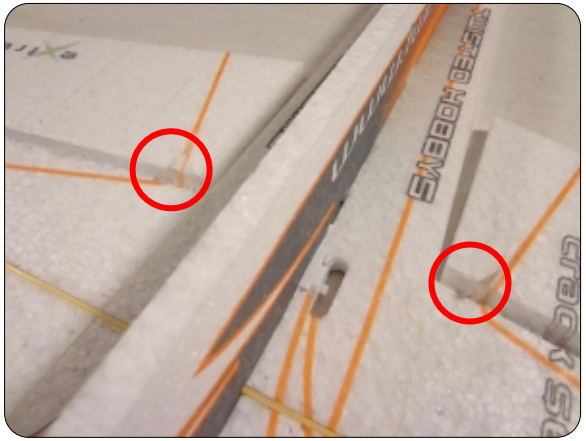


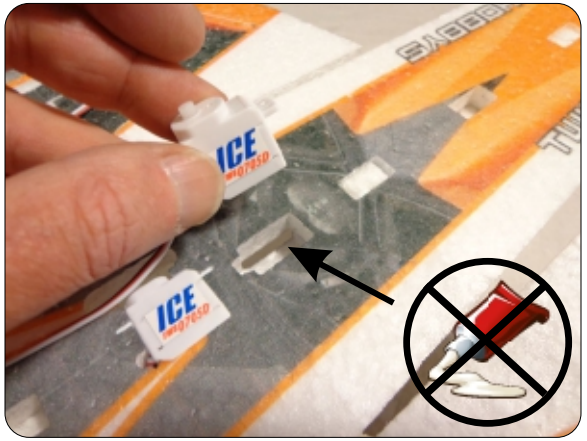
The horn should also be full seated into the slot so that the back area is flush with the surface of the wing

With the tip of the Welder's tube, force some glue into the slot

Apply a thin coat of Welder's to the area of the horn that gets buried in the wing

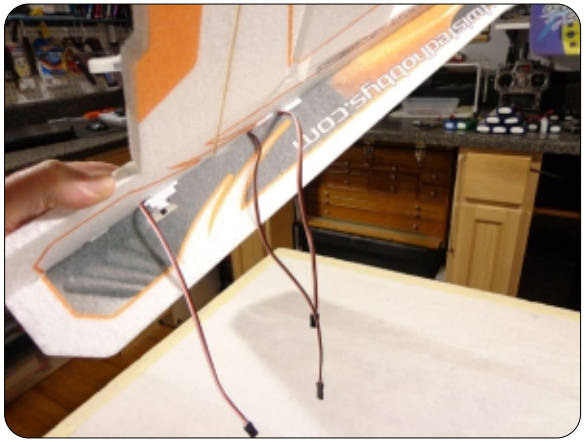


Install into the slot, wipe away any extra glue and repeat for the other side



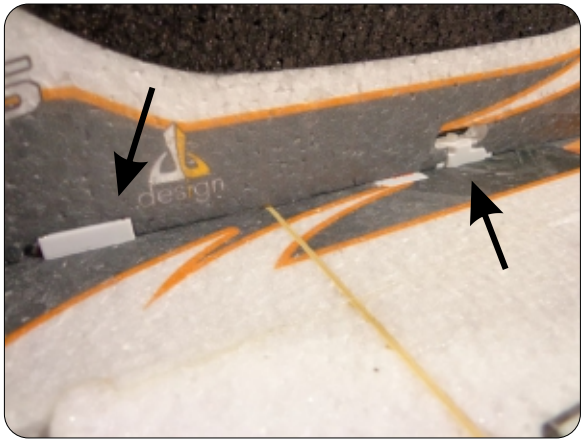
Once the glue of the partially assembled airframe has set up enough to handle, install the rudder servo.
NOTE - DO NOT GLUE THE SERVO AT THIS TIME

Make sure that the servo sits nice a flush in the provided hole



For ease of wiring later make sure all the servo wires are on the same side of the fuselage

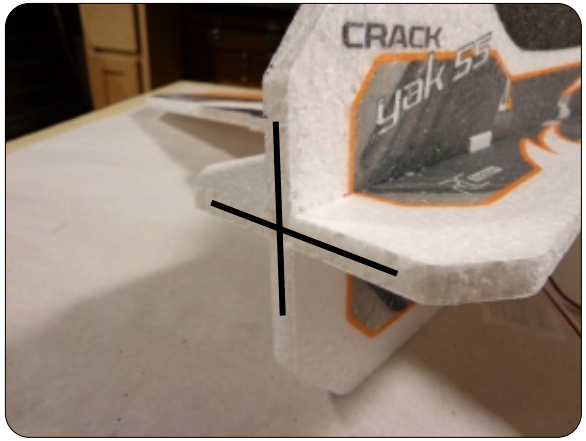
Test fit the upper fuselage section and make sure that all tabs and slots are able to fully engage



Check the areas around the servos, they should not interfere with the fuselage sections meeting up nice a flush

Lay down a medium bead of Welder's like you did when attaching the lower fuselage section. Making sure to get all the tabs and slots and AVOID THE SERVO AREAS

Bring the two pieces together while the glue is fresh and wet, press along the length a couple time over a few minutes to make sure everything is fully engaged



The nose pieces should be flush with one another

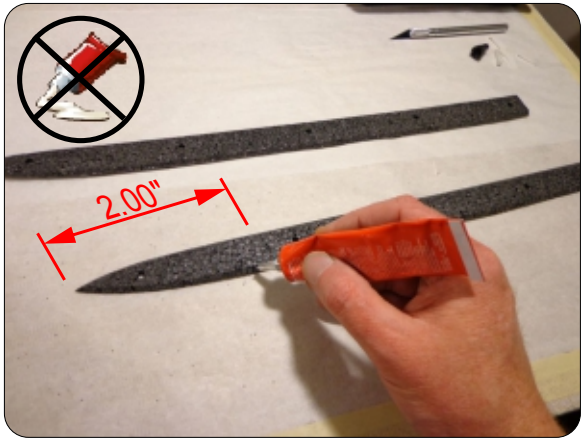
During this process also check for squareness all along the upper fuselage section

Airframe assembly as shown should be dry before moving on to the next steps.

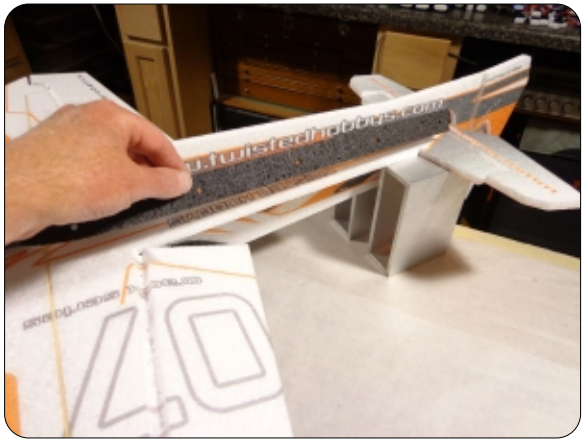
Locate the rudder as shown above and apply a medium skim coat to both of the mating surface and allow the glue to tack up

Once the glue has tacked up, assemble the two pieces. Use the slot on the rudder to line up with the fin on the fuselage

Next up are the fuselage trusses. To install these, apply a medium bead of Welder's to the beveled areas. Do one at a time, keep an area of one free of glue as shown two steps down

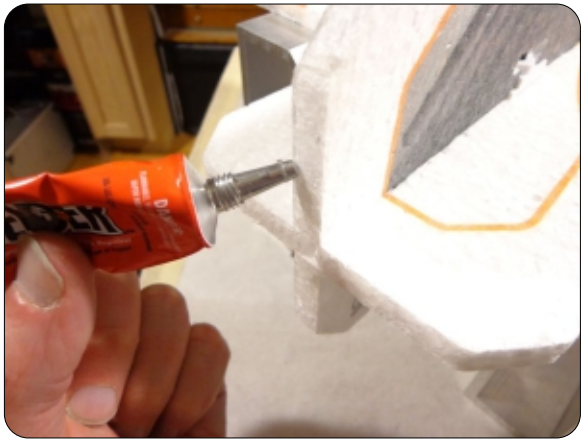


Do the truss for the electronics side next, keep the area shown free of glue for now, this will help to provide an area to tuck the wires into later on.



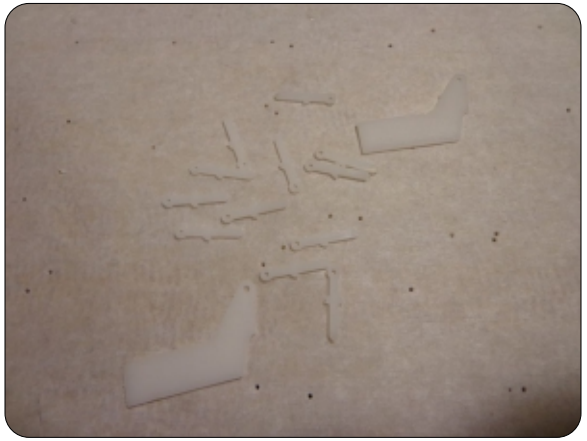
While the glue is fresh and wet, bring the pieces together. Apply a little pressure along the glue joint a couple times to ensure a solid bond. Repeat for the other side.

Locate the motor mount, rough up one side with sand paper or the edge of a file and apply an even medium coat of Welder's to the roughed up side.

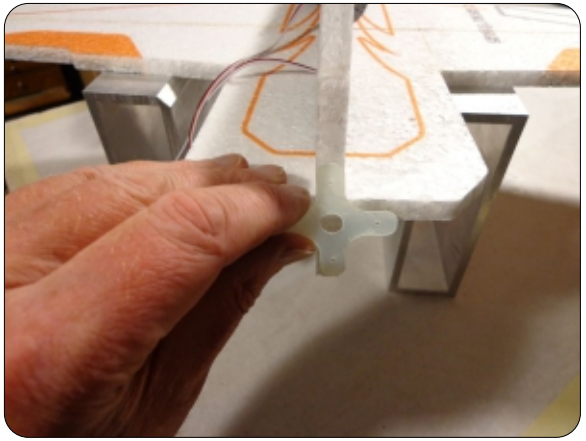


Apply Welder's to the mating surface of the aircraft and allow to tack up.

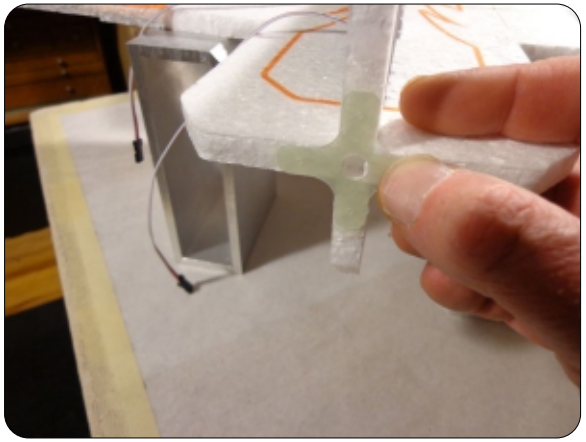
While the Motor mount is tacking up, locate the remaining plastic hardware pieces shown.



There should be two equal size horns, one for the elevator and one for the rudder, along with 10 push rod guides



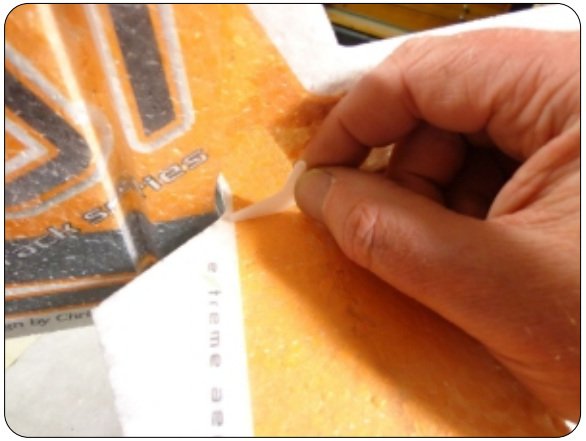
By now the glue for the motor mount should be tacked up, locate as shown above...



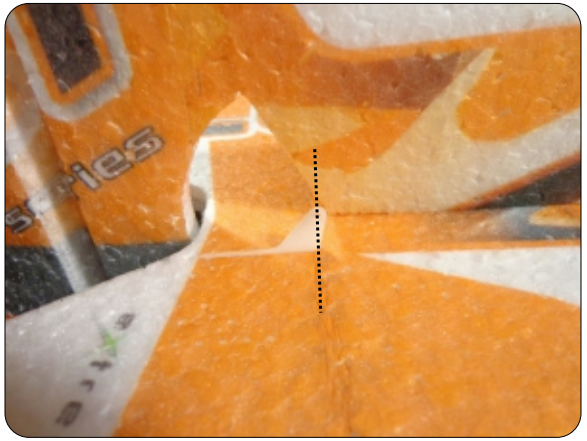
.... bring the two pieces together and firmly press together for a strong and solid bond

Install the tail surface horns, starting with the elevator horn, locate the pre-cut slot and with a sharp hobby knife make the cut all the way through

With the tip of the Welder's nozzle, force some glue into the slot



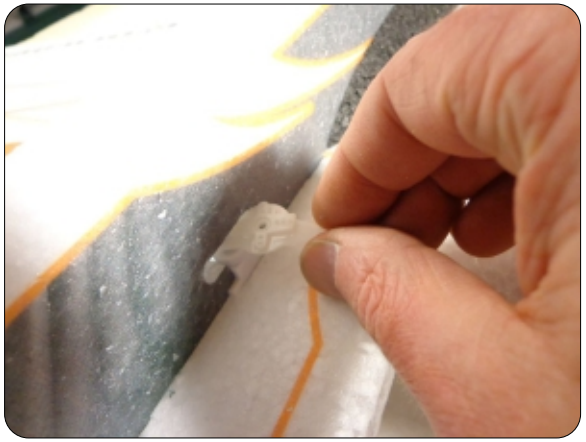
Install the horn into the slot, should be all the way thru and flush with both surfaces.



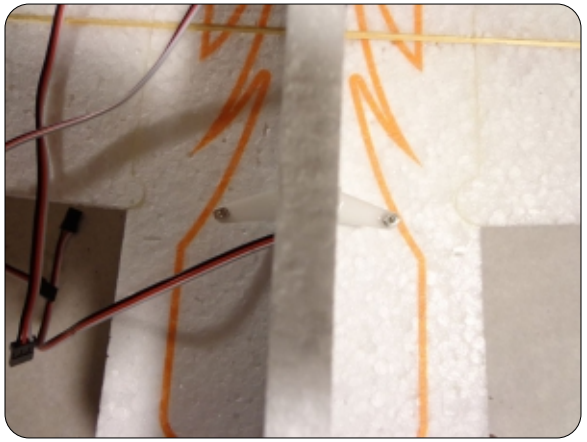
When properly installed the hole of the horn should be directly above the hinge line flush with both the top and bottom surfaces..... as well as....

Repeat the process for the rudder and wipe away any extra glue, pay attention to the rudder horn direction, should be as shown in photo

---



It is now time to install the aileron differential horn, you will need to fit assembly as shown. The EPP foam can be bent easily in order to get the horn in....



... the arms should be pointing forward as pictured above. Repeat for the tail servos. Rudder Horn pokes out the left side of the fuselage and the elevator horn thru the top of the right side.

Secure the horns with the retaining screw, since the servos are not yet glued in, you can move them slightly in the direction needed to reach the screw with a screwdriver.

Locate the Side Force Generators that you worked on earlier

Spread as shown and test fit each of the four pieces

Apply a small bead of Welder's to the mating area on the wing

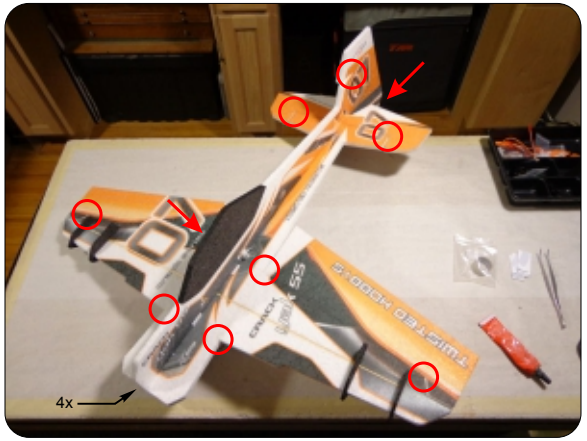
---

Install the SFG and repeat for the other three pieces

Before the glue dries, make sure the SFG's are square to the wing

Next steps are optional, but will help to reinforce weak areas and increase durability. Four places around the nose/motor mount and ten places at the end of hinge lines and fuse stress

Gather 3M Blenderm tape and the other tools shown above.

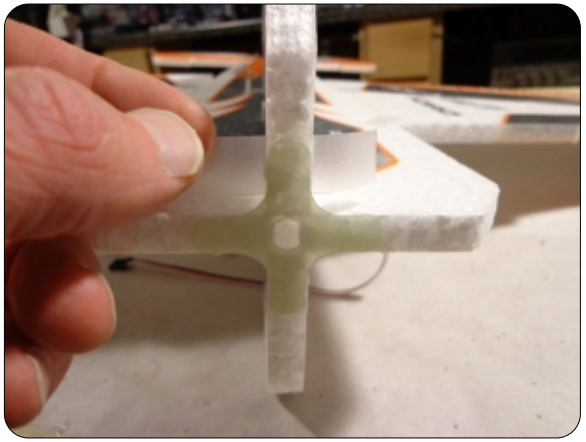


Above are all the areas Blenderm will be applied. 1.50” pieces for the 4 on the motor mount and 1.00” pieces for the rest of the locations

Starting with the motor mount area, apply a bead of Welder’s approx as shown

Spread it out to approx the area that the tape will be. Repeat this for all the areas in which Blenderm is being applied. Let the glue tack up for about 5 minutes

While the glue in the tape areas is tacking up, cut the strips. You will need 4 pieces 1.5” long and 10 pieces 1.0” long.



Starting with the 1.5” pieces and the motor mount, center the piece of tape as shown, and with a little pressure, fold it back onto the sides of the fuselage and press firm to bond

Repeat the process with the shorter pieces and all the locations were glue was applied

Locate your motor and motor hardware bag

Attach the motor as shown.... note the motor wires should be routed to the same side of the fuselage as the servo wires

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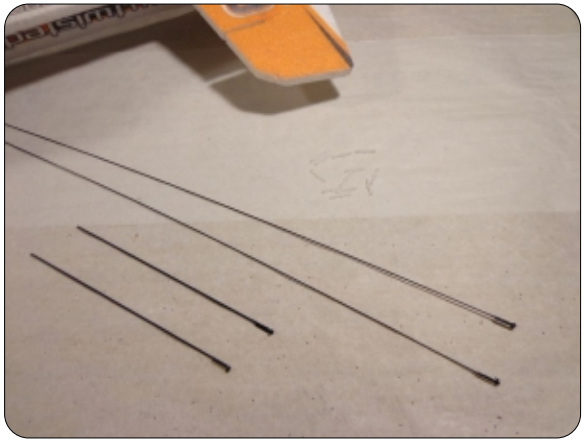
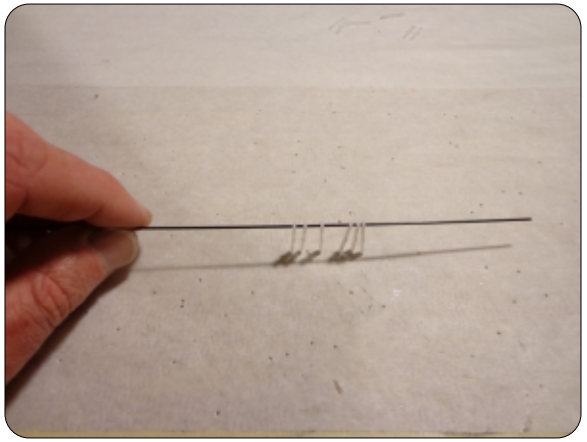


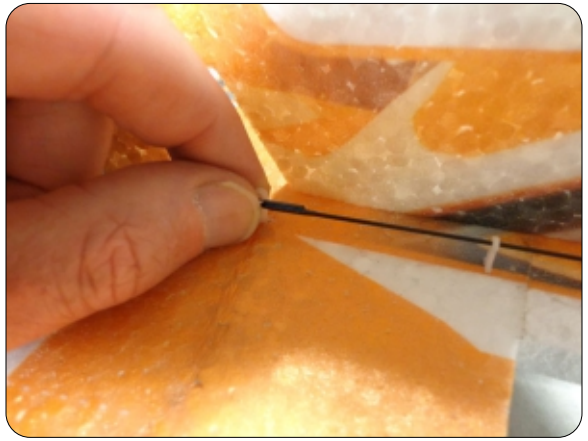
Next is the control rods, locate the rods that you set aside to glue at the beginning of the build.



On one of the longer ones, slide 5 of the guides onto the rod as shown

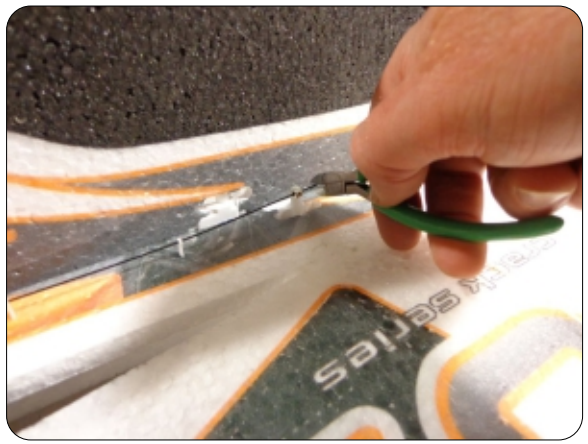
Slide the raw end of the control rod thru the adjustable link as shown

Stick each of the push rod guides into their respective holes, hold the fuselage up again a light source to make the holes a little easy to spot



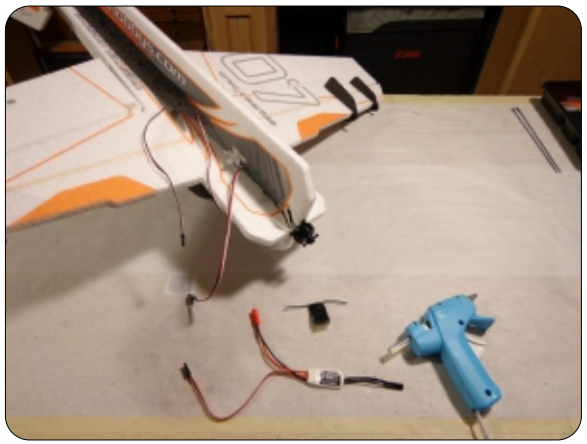
Once all the guides are in place, carefully align the snap link up square with the hole in the control horn and apply pressure with your finger tips, it should snap right in

Site down the length of the control rod and align all the guides into a nice straight line, then apply a drop of CA to the base of each and hit with kicker



Clip the extra length of the control rod off, leave about 1/4”

Repeat the process with the Rudder control rod and guides



Locate your RX and ESC. Time to mount these items and button up the electronics part of the build

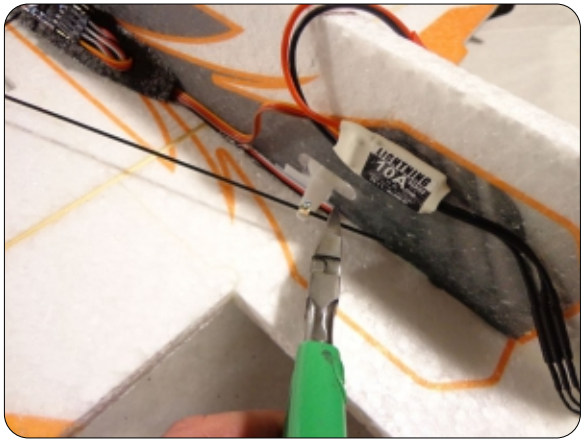
Locate all the electornics to your preference or as shown. Use low temp hot glue for this process

NOW is the time to glue the servos... apply a couple small dots of Welders to the areas you can reach with the tip of the glue tube. Keep to a min., this will make removal easier later if needed.

Low temp hot glue can be used instead of Welder's. Hot Glue makes for a little easier replacement if needed since the glue joint can be released with alcohol.

Power everything up (no prop yet) make sure the servos are centered and at 90 degrees

Install the small adjustable link screw and gently tighten while holding the control surface in the neutral position. NOTE - it is easy to cross thread these screws, so make sure they start true



Repeat the process with the Elevator and Aileron Control surfaces and quick links and trim as required

See the back of the manual for the CG point of the model you are building, for the Crack Yak shown the CG is 210mm back from the nose of the aircraft

Locate your battery with the method of choice, here it is shown with velcro. It is a good idea to not cut a hole in the fuselage until sure of the location after doing a couple flight

Check all your control directions and control throws. Make sure nothing is binding and that the servos are not being over loaded. Balance a prop and attach with the included O-Rings

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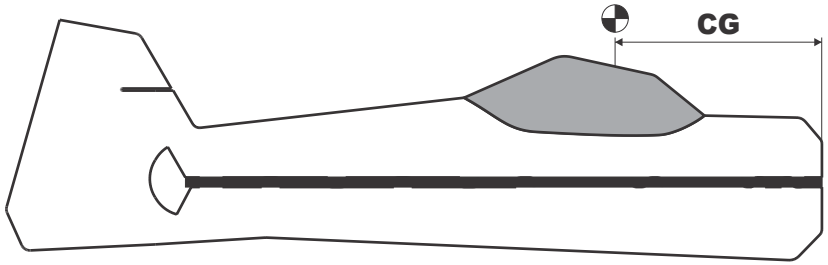
This completes the build. Center of Gravity, Control Throws and some basic radio settings are on the following pages. There is also a setup sheet included with this manual if you would like to record all of your parameters.

Another good resource is RC Groups. Threads for these models can be found there under the 3D Foamies section.

CENTER OF GRAVITY

CG = 210mm / Crack Yak 55
CG = 200mm / Edge 540
CG = 200mm / Sbach
CG = 175mm / Extra Slick



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 - approx +/- 45 deg
Rudder - approx +/- 45 deg
Elevator - approx +/- 45 deg
Expo to suit

Beginner & Sport
Ailerons - approx +/- 20 deg
Rudder - approx +/- 20 deg
Elevator - approx +/- 20 deg
Expo to suit

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

Prefight 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.

Prefight 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 indoor flying and will be right at home in the local gymnasium or other similar sized venue.

Storage

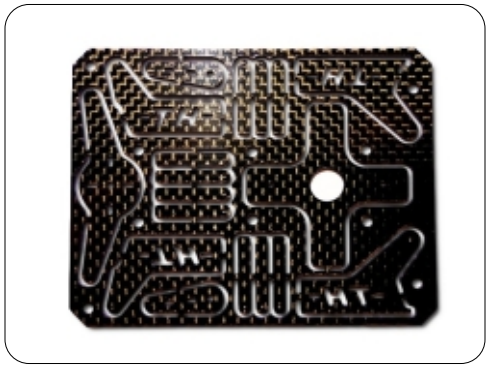
This EPP plane should be stored resting it's landing gear or hung from the prop. Storing in other fashions that put stress on the airframe could cause the airframe to distort. Storage in a hot car could also cause damage.

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

OPTIONAL PARTS

CRACK POWER COMBO
Perfectly matched items for the ultimate Standard 32" foamie. Check the website for the latest specs

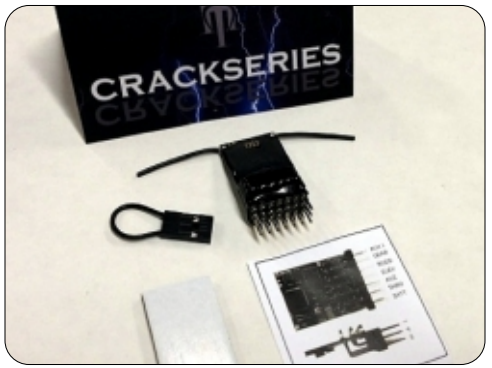
2s / 450mAh Battery
If intending to fly with 9in props with a more tame setup this is the battery of choice



Carbon Fiber Kit
Wanting the ultimate in strength for your foamie, this is it.

TMW/TWS POWER COMBO
A great package for the budget minded builder. Check the website for the latest specs

3s / 450mAh Battery
If intending to fly with 8in props and extreme flying style this is the battery to use



6ch Receiver
Great little 6 channel receiver, light weight and durable. Check the website for the latest specs

NOTES AND S/U SHEET

Setup Sheet

Transmitter - Receiver -

Weight - g oz

CG Point - mm from wing leading edge

Model

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 -

SERVO HORN CONFIGURATIONS

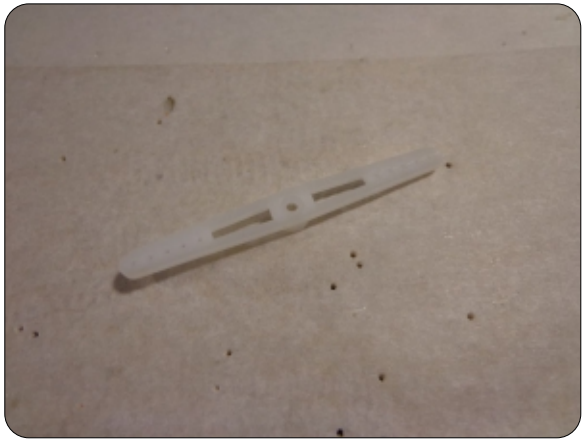
OPTION 1

Standard horns for the tail servos as shown with the adjustable links in the outer most hole. For the Aileron Horn this is the same for all options. Find one of the horns that the Differential horn can be glued to and install from the back side of the stock horn

OPTION 2

Use this option for your tail servos if the stock horns do not provide enough travel for the control surface. Differential Horn is the same as shown in Option 1. There servo horn you have to mount it to may be different than what is shown.

OPTION 3



This option is for the servos that come with extra long arms. Trim off one side and mount a quick link on the inner most hole. Differential Horn for this Option is the same as for Option 1 and 2. Outer holes are not recommended and as they will stress the servo.

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.