TWISTED HOBBYS

yak edge mxs-c

mini mono planes

2000/2350kV motor (12g - 14g)
6 amp ESC
4 channel radio
2x 3.5g / 1x 4.0g servos
6x3 to 7x3.5 prop
2s 180 to 250mAh battery

USA Distributor
Twisted Hobbys
www.twistedhobbys.com

Wingspan = 24"
Length = 25"
AUW= 90 - 100g

TABLE OF CONTENTS

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!

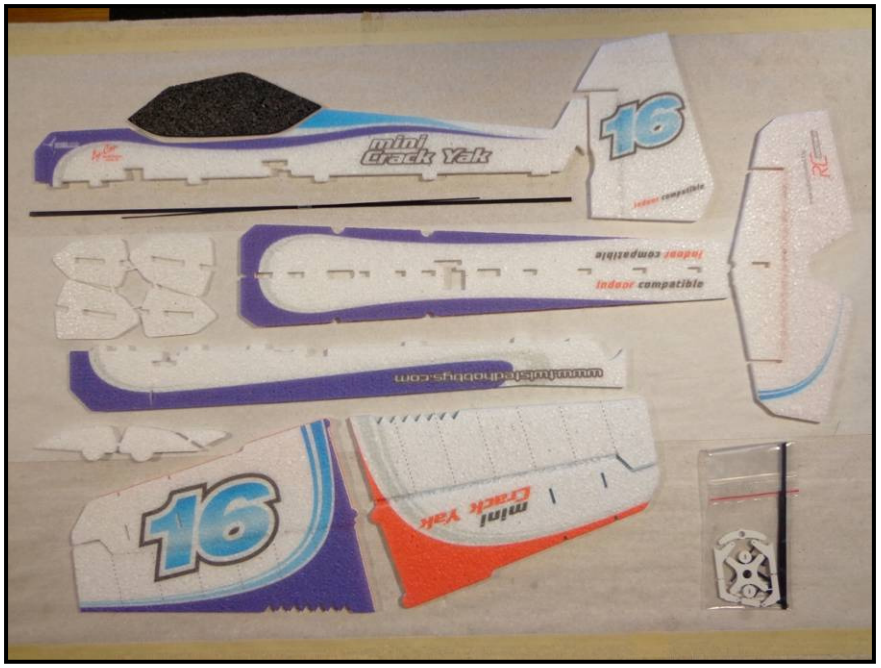
SAFETY NOTES

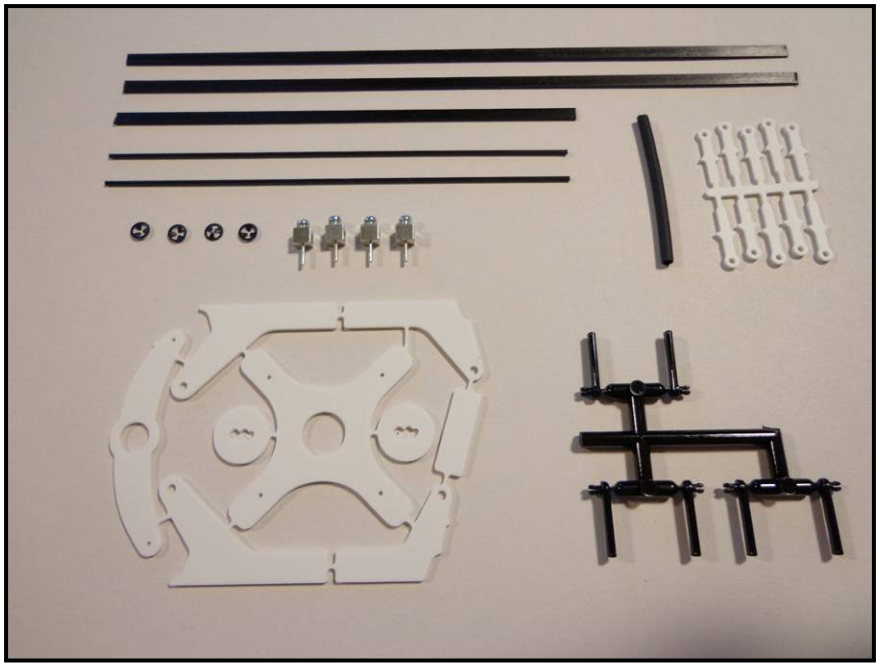
- ✓ Before assembling and flying this model, read carefully any instructions and warnings of other manufacturers for all the products you installed or used on your model, especially radio equipment and power source.
- ✓ Check thoroughly before every flight that the airplanes' components are in good shape 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.

KIT CONTENTS





standard parts list

2x - wing half
4x - side force generator
1x - fuselage (3 parts)
1x - canopy
1x - elevator
1x - rudder
2x - .5mm x 3mm x 500mm wing spar
2x - .8mm dia x 330mm control rod
2x - wheel pants
1x - tail skid
1x - hardware pack (see detail)

hardware pack

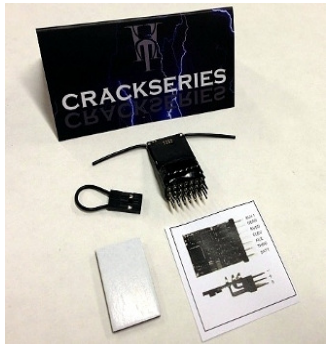
2x - 1.0mm dia Aileron push rod*
2x - .5mm x 3mm x 145mm landing gear strut
2x - .5mm x 3mm x 99mm (extra)
1x - plastic horn / accessory kit
6x - plastic snap links (2 are extra)
4x - quick link sets
1x - heat shrink tubing

* length may vary depending on the kit

OPTIONAL PARTS

Power Combo Kit
(matched by Twisted Hobbys)

1x - 6a TH-CS ESC
2x - 3.5g servos
1x - 4.0g servo
1x - prop 7x3.5



Specifications

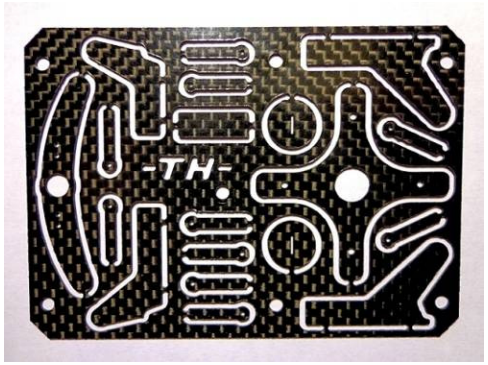
6 Channel / DSM2 / 2.4GHZ
25mm X 19mm X 11mm
Weight: 3.0g / Input: 3.5–9.6V
Bind plug included

Blenderm tape is one of the best know tapes used for hinging and repairing your Depron or Epp models. Each roll consists of 1/2" wide x 4m in length

CA and Kicker

Various thickness CA glues
and
Activator available from
Twisted Hobbys'

Perfect choice for building and repairing your Twisted Hobbys EPP planes! This is the only adhesive you will ever need. Welder virtually bonds anything to anything! Clear, heavy-duty, flexible and water-proof when dry. Use indoors or out. (1) 1 oz tube



Carbon bling especially designed for the Crack Minis

Note: many of these "optional parts" shown or similar items, may be available from the Twisted Hobbys' web store.

TOOLS & 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 & Medium CA**
- **CA Applicator Tips**
- **Activator**

THE BUILD

CONSTRUCTION METHODS:

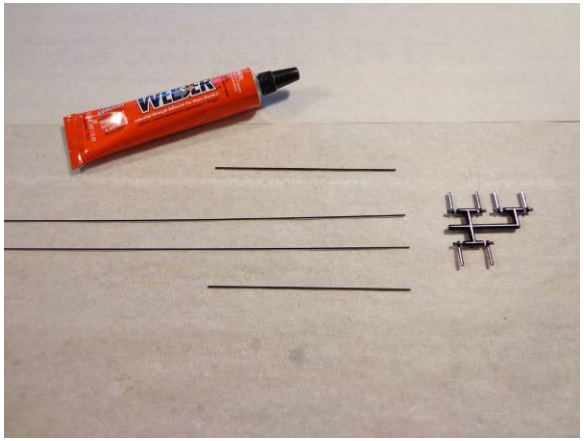
Building surface should be at least 2ft x 4ft and flat. Weights or some small heavy objects will be handy for holding things in place during the time glue is setting.

Welders glue is the primary adhesive used for this build. The Rod Guides and End Links use thin CA with Applicator and Activator. **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.

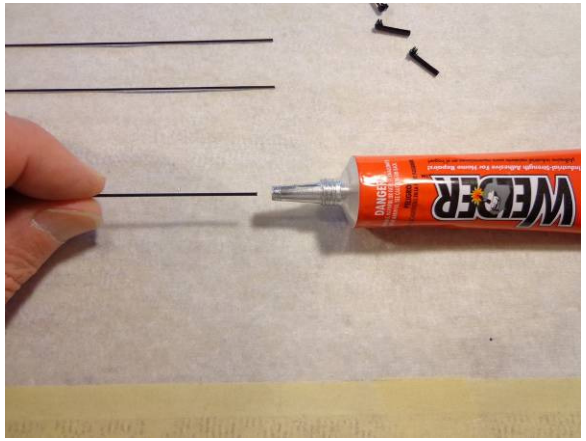
Open up you kit and inspect for damage and / or missing parts. Use the Parts List on page 5 to verify that your kit is complete.

Do the same with the Power Set, confirm that you have all your items and that they appear to be in sound condition. Testing of functionality will be one of the first steps that will follow shortly.

Start the build by folding all the hinged control surfaces back on themselves and hold the position with some weight

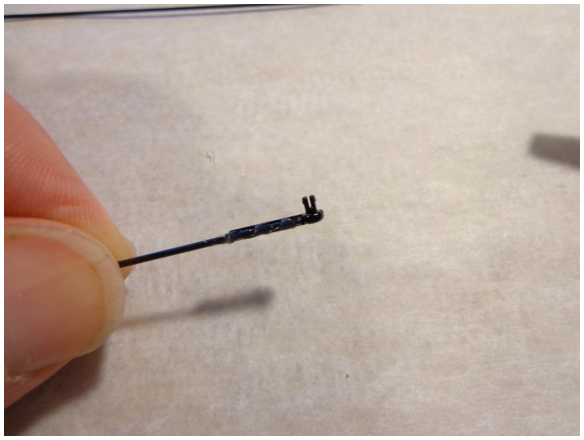


Since the snap links need to dry over night, build them now



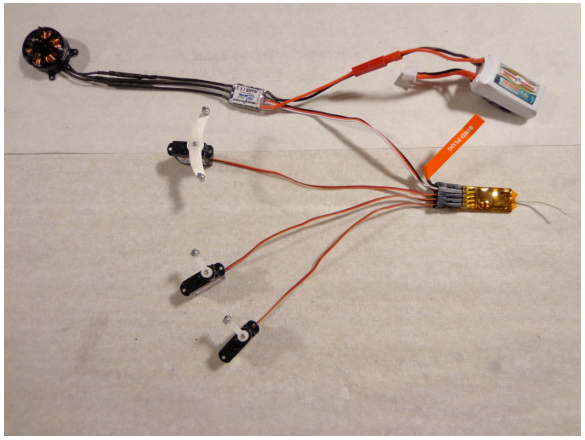
Insert the end of the control rod that the snap link will be glued to, about 3/8" into the nozzle of the Welders tube and twist to get an even coat of glue

Remove from the tube and check that you have an even medium coat of Welders on the end of the control rod



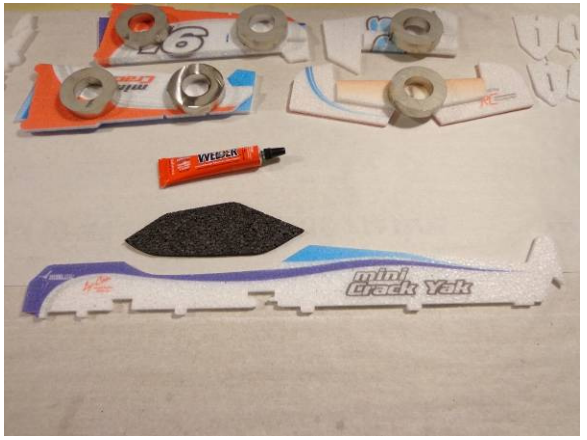
Locate the glued end of the rod onto the saddle area of the plastic snap link. For the Tail push rods, fully engage the rod in the saddle area. For the aileron control rods, see the next step....

... adjust the link onto the end of the aileron control rod so that the over all length from the center of the snap link boss to the end of the rod is at minimum the dimension above for your model

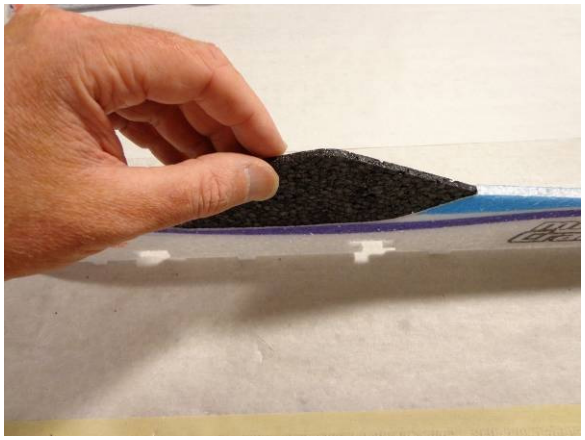


Hook up all the electronics, center and test. Mount the control horns and install the quick links as shown in the outer most holes. Aileron horn is glued on as shown in the next step

Glue the plastic ailerion differencial horn on to the UNDER side of the double sided stock horn as shown. (this is required to LG clearance). Let the glue cure before adding the quick links



Tack up method will be used to attach the canopy to the top half of the fuselage. Lay a bead on the canopy, bring the two parts together to distribute the glue, than seperate.



Carefully bring the two parts together, notice that the canopy material is a little thinner, so center it on the mating edge of the upper fuselage section

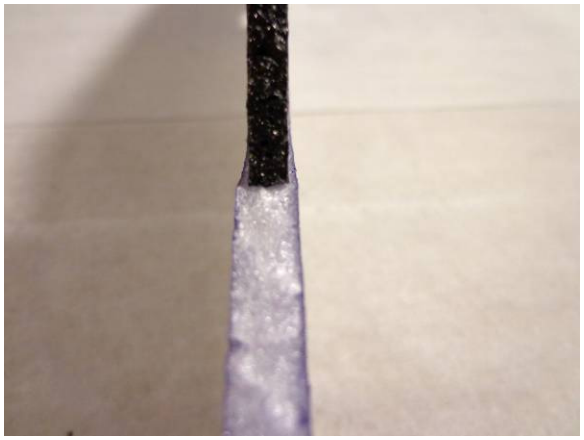
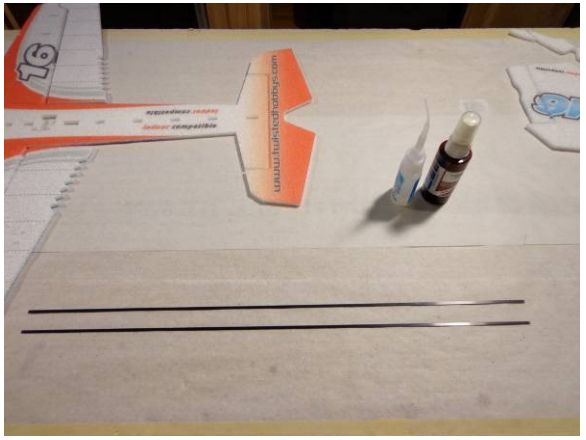


Photo showing how the canopy is to be located in the center of the thickness of the upper fuselage section

Use the tack up method to attach the wings and elevator

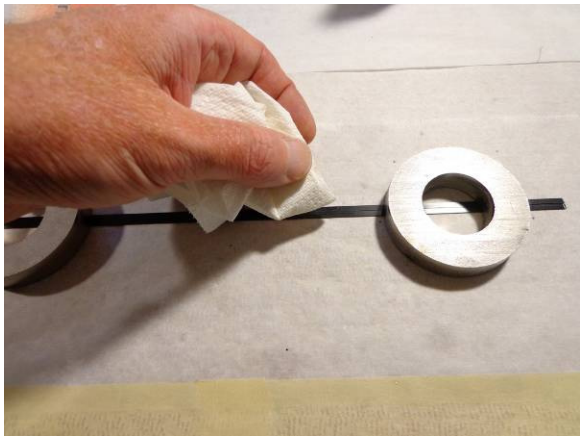
Once the glue has tacked up, bring the wing halves together, make sure the tabs are all lined up



Prepare the two rectangle wing spars to be installed. It is easier to temporarily tack them together with CA before installing into the slot in the wing

Lay the spars together with their edges touching and place a small drop of CA approx every 2 inches

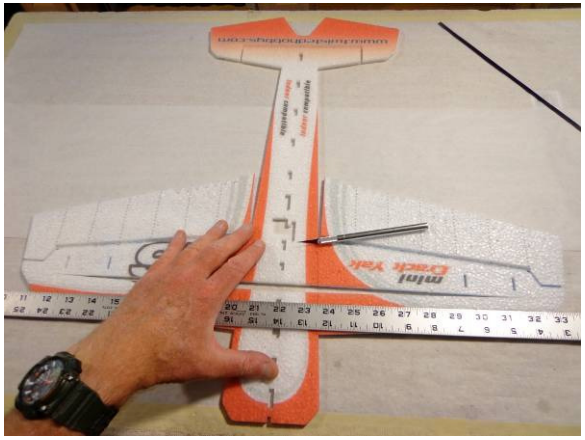
Apply a mist of kicker...



... wipe away any extra CA and kicker... allow the CA to setup for a couple seconds before handling. This should hold them together until installed into the wing

Mini YAK: Free the tabbed areas of the wing spar slot.

Mini MXS: Free the tabed areas **AND** split the fuse as required for the spar.



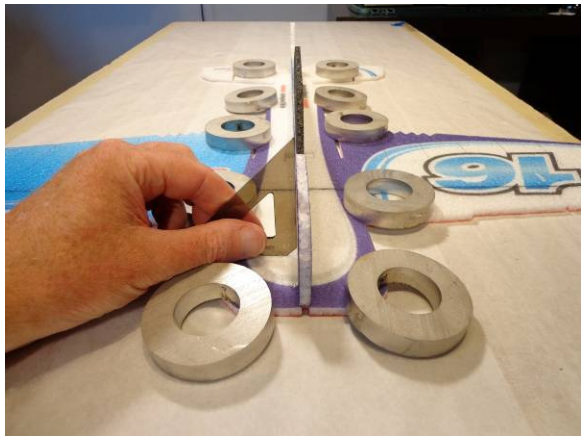
Check that the slot is clear and test fit the spar assembly

Apply a medium coat of Welders to both sides fo the spar assembly

While spreading the foam, lay the spar assembly into position

Once the spar is fully inserted, make sure that there are no gaps between the foam slot of the wing and the spar. Use weights, tap and or stick pins to hold everything tight. Let dry.

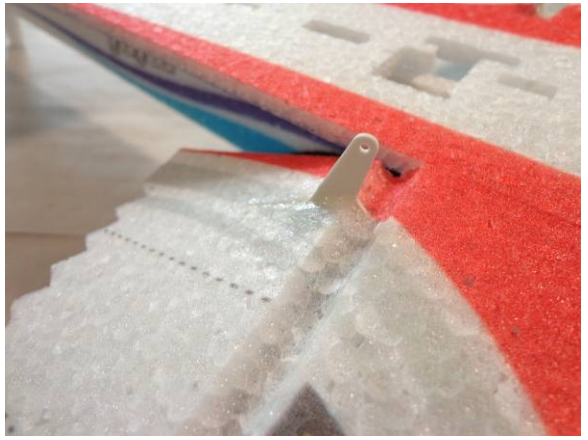
After the spar has been allowed to dry, the top vert. fuselage section can be installed. Attach this piece using the WET glue method. Keep approx 1/4" around the tail servo areas free of glue.



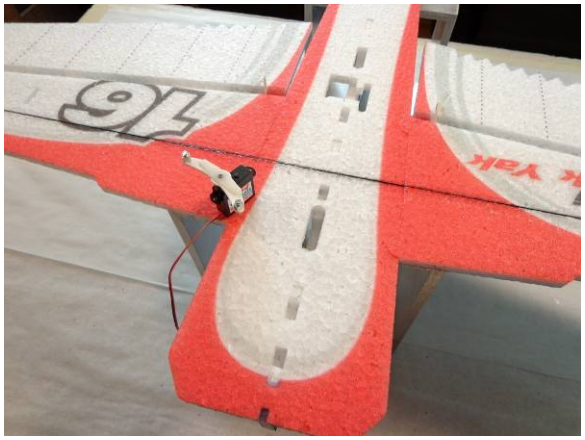
With a small square or other similar item, verify that the vert. fuselage section is perpendicular to the horiz. assembly.

Once the upper fuselage has had a chance to dry, flip the airframe over and prepare to install the aileron control horns

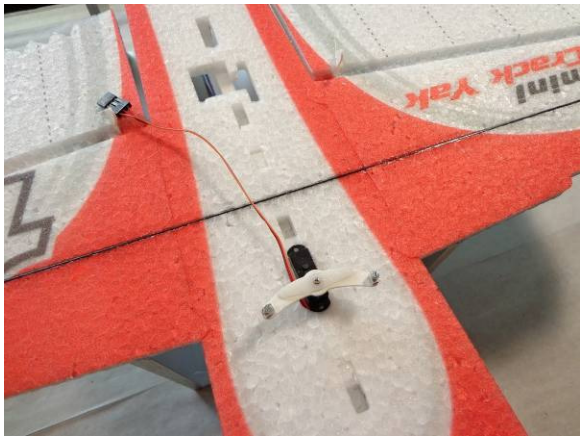
Clean up the precut slot to allow the horn to be completely seated flush with the bottom and ...



... so that the profile of the horn matches the profile of the cut out hinged area

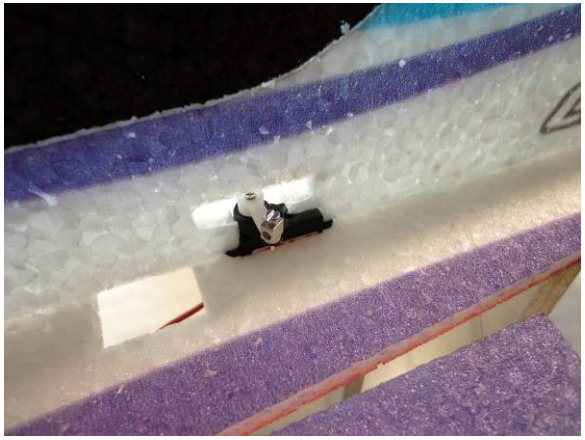


Install the aileron servo into the large slot. Note that the output arm will be towards the nose and the horn oreintation should be as shown. Do not use any glue on the servos at this time

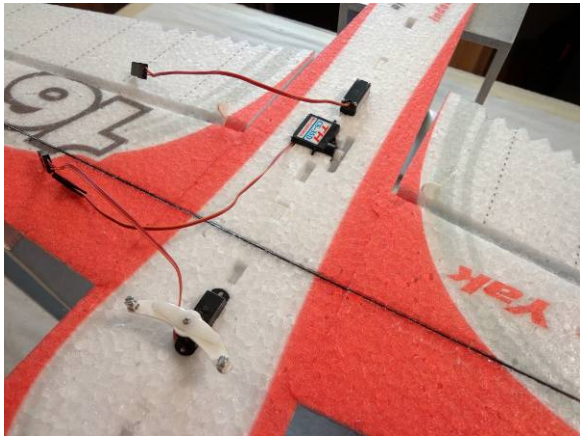


Servo should sit flush on the mounting ears. Feed the wire through on the side shown. Make sure the servo is electronically centered and that you have installed the servo horn screw

Install the rudder servo from the top side, insert as shown. Push the foam of the vert. fuse slightly off to the side so that the servo ears can slip underneath

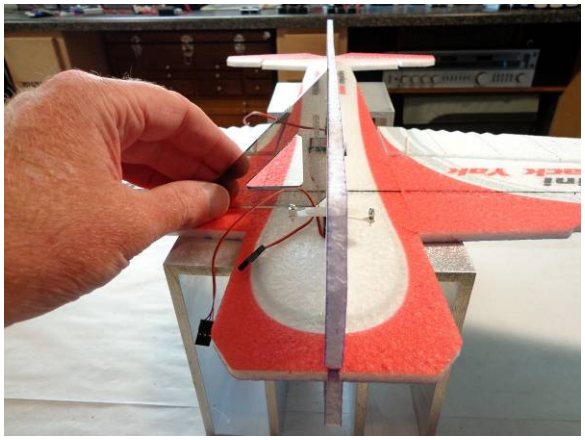


View of the rudder servo full seated into it's designated area. With the aircraft upright, the output shaft is towards the nose and the arm sticks out the left side



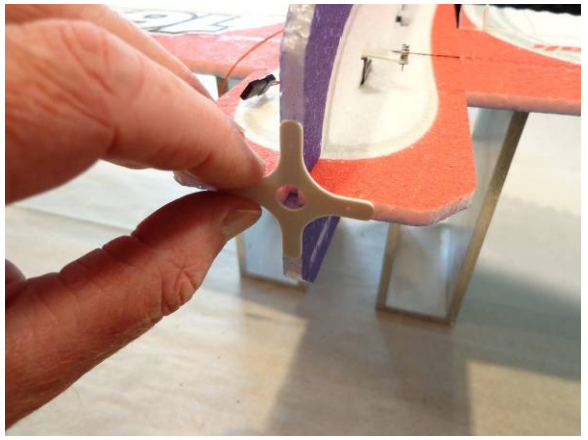
Install the elevator servo as shown. Again with the output shaft towards the nose and servo are pointing up. Route all the wires to one side as shown

Test fit then glue the lower vert. fuse as shown. Use the WET glue method for this step. Make sure the fuse section fits flush every where

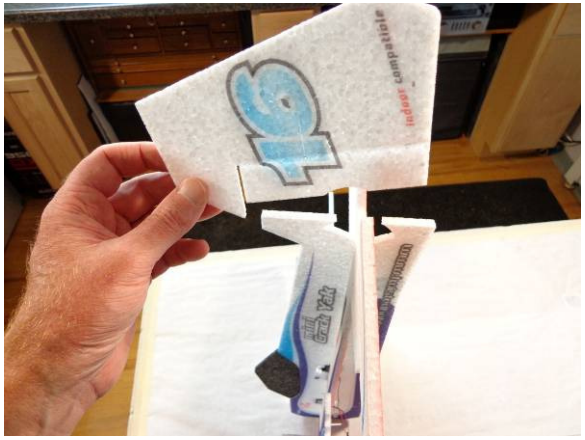


Once all the tabs are fully engaged and everything is flush, check for squareness along the length of the piece, once satisfied, allow to dry

Locate the motor mount and apply a medium skim coat to the back of the motor mount and the mating area of the fuselage nose

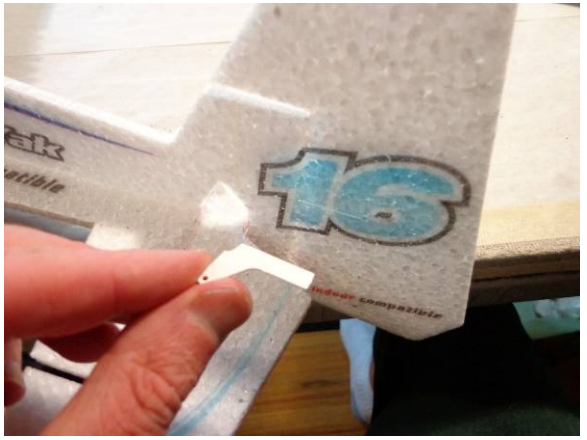


Once the glue has tacked up, attach as shown. Make sure and line up the tabs of the motor mount with the foam thickness edges



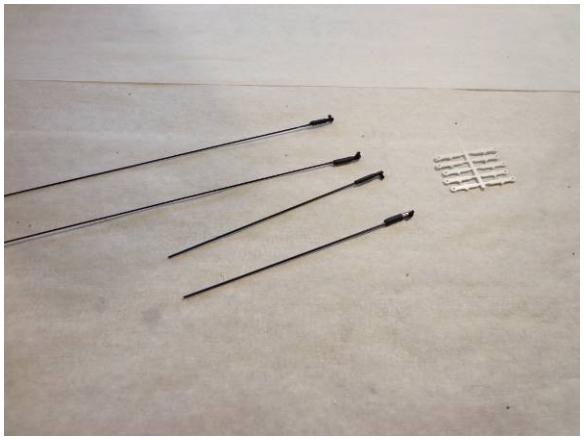
Attach the rudder using the tack up method. Line up the slit in the rudder with the mating top edge on the fuse, there will be a step on the bottom this is okay and intended

Locate the shorter of the two tail control horns and install into the precut slot. It may be necessary to cut the slot a little deeper. Make sure the horn in the hinge area lines up with the foam



Longer horn is used on the rudder. Install same as the elevator. See the next picture for how the horns should look when in the proper location

View showing how the profile of the horn should match the profile of the foam when installed in the proper location



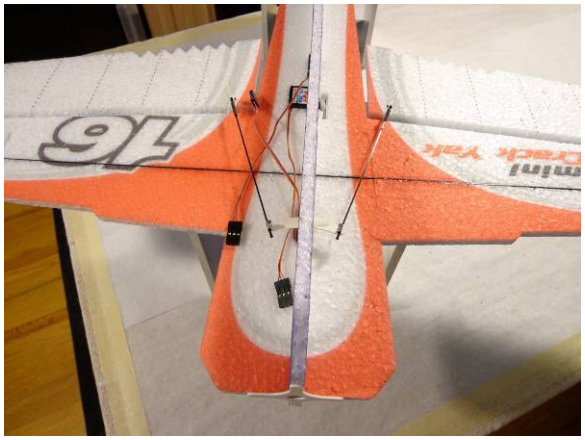
By now your snap links and control rods should have had the chance to dry for 24 hours. Locate the guides and prepare to install

Slide the guides onto the rod, insert the rod thru the quick link on the servo and snap the snap link into the hole of the control horn

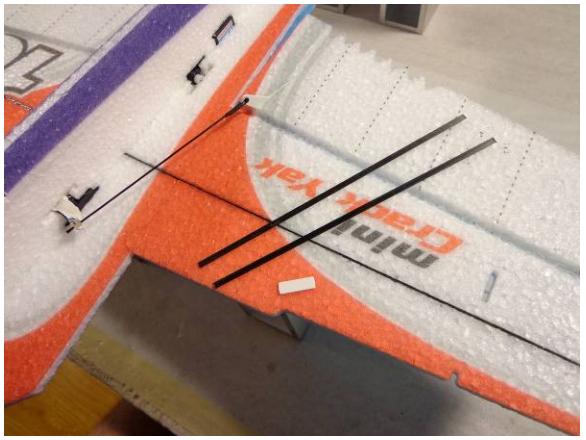
Put a dab of Welders into each of the precut holes, install the guides and align them all by looking down the length of the rod. If using CA install the guides first, align, then a drop of CA at the base of each guide

Clip off the extra control rod length. Leave about 1/2" extra in case you ever need to redo the snap link end. . Slightly tighten the screw, too much will crush the rod

Install the aileron push rods. Make sure the servo is electonically centered and the the ailerons are level with the horz. fuselage section. Slightly tighten the screw, too much will crush the rod.

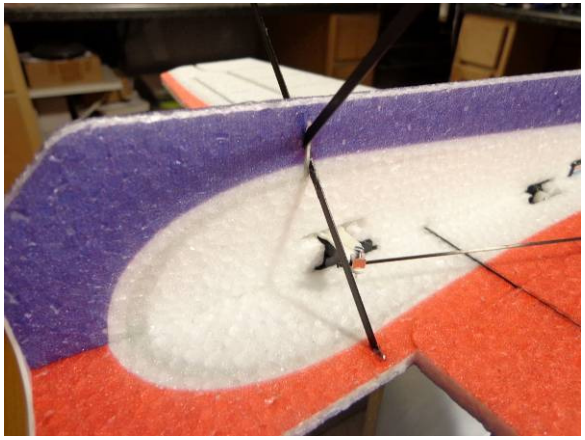


Over view showing how the horn should be perpendicular to the fuselage with the ends pointing forward as well as both control surfaces being level with the horz fuselage section

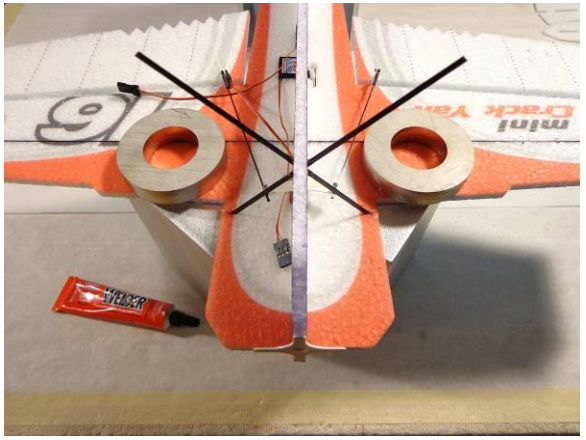


Land gear struts are next. Find the two carbon rectangles and small plastic bulkhead as pictured above

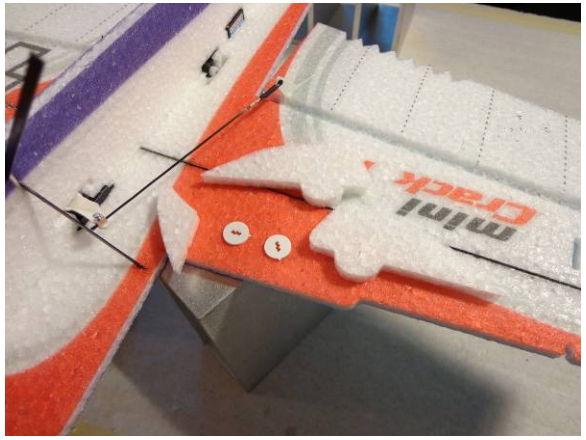
Squeeze a small amount of Welders into the extreme upper and lower (narrow areas) of the LG slot, leave the wide area free of glue at this time



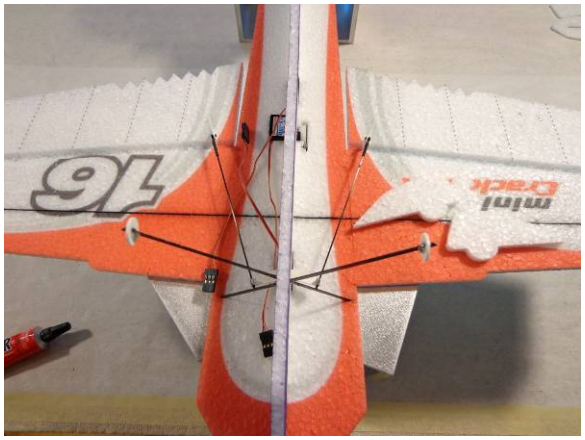
Slide the LG struts through as shown. There are small slits in the horz. fuse section to recieve the ends.



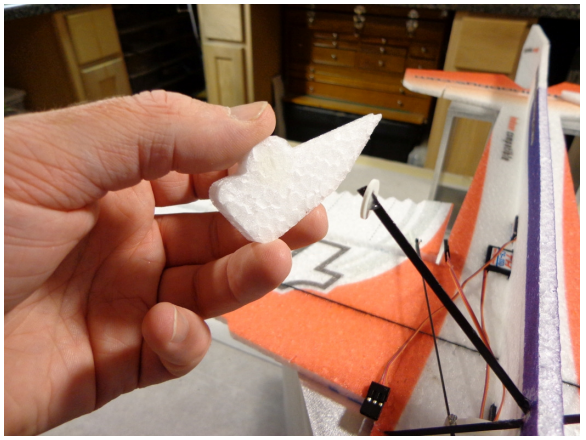
Once satisfied, use the nozzle of the Welders tube and squeeze some glue into the horz. fuse slots and the vert. fuse area. Wipe away any extra glue.



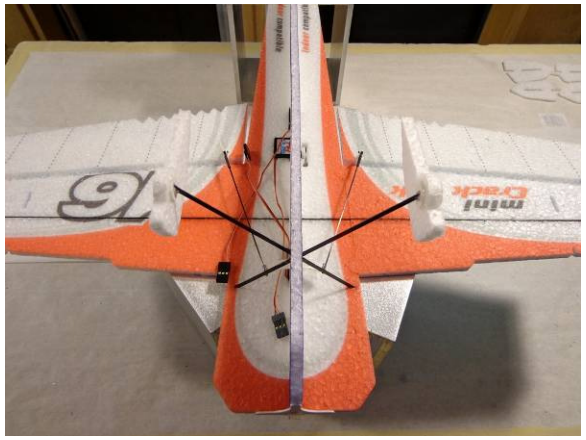
After the struts have had time to dry, we will add the front (gym floor) wheels and rear skid. Welders or Medium CA, if using Welders, let each step dry completely before moving to the next



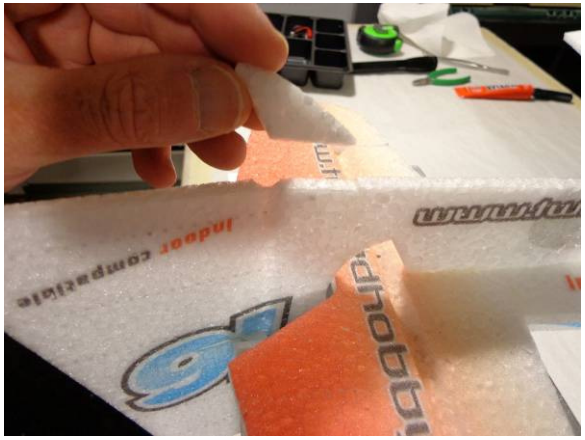
Glue the round doublers onto the struts as shown. Leave about 1/8" sticking out. Make sure that the are both perpendicular to the wing and parallel to each other



Once the doublers have dried attach the wheel/wheel pant, centering the doubler on the round part of the pant. Make a small slit for the in the pant for the extra cabon to go into



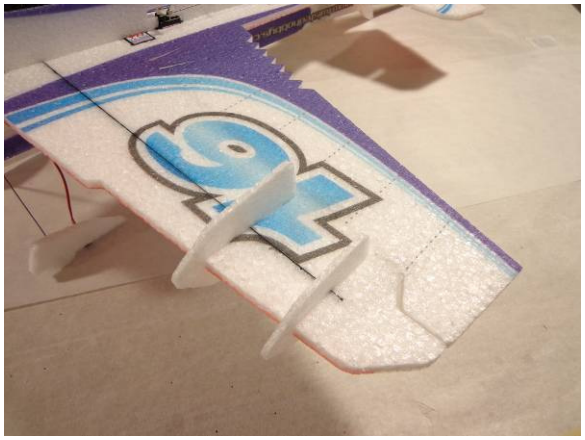
Attach them both. Again check that they are square to the wing. Bottom edge of the pant should (roughly) be parallel to the bottom of the wing



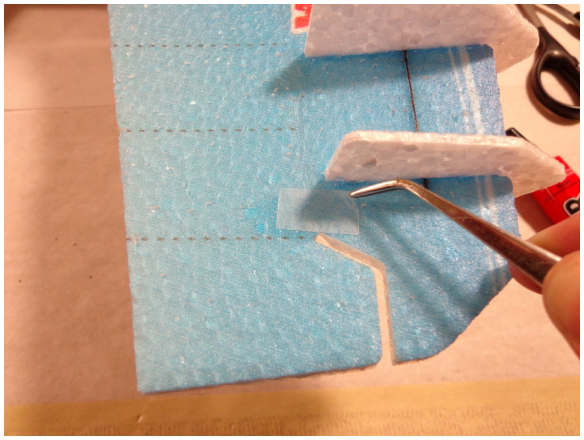
Using the tack up method, attach the tail skid as shown. Front edge of the skid should line up with the small notch from where the rudder and fuse meet up

Locate the SFG's and cut them free of each other

Slit each of the SFG's as shown above, there are small notches to help locate the center of the tab. Note - only cut the small tab, leave the front of the SFG in tact

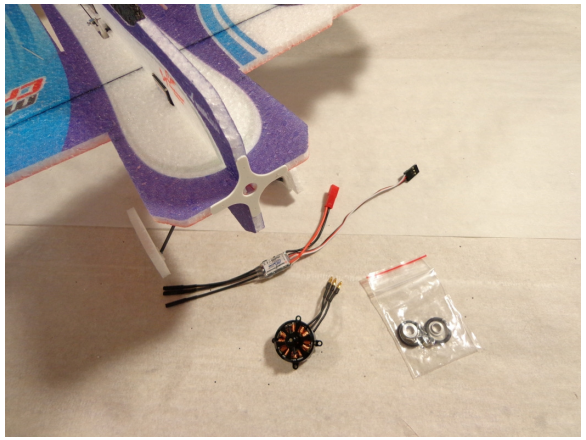


Apply a thin bead of Welders to the area where the SFG and Wing meet, as well as some in the slot. Smaller SFG goes outboard. Repeat for both wings. Make sure they are square as the glue dries



OPTIONAL BLENDERM MOD

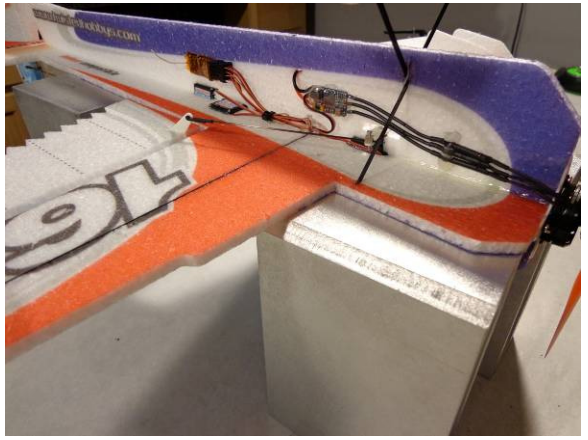
Use Blenderm to re-enforce the ends of all the hinge lines. Also use some around the tabs of the motor mount.... Skim coat of Welders under the tape makes it stick much better



Installation of the motor and esc are next

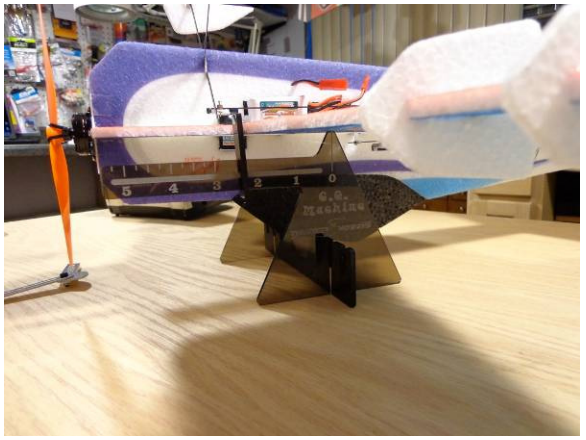
Mount the motor with the included screws. Make sure and route the wires to the side you are going to install the ESC on

Determine where you want to locate the ESC and Receiver



Completed Electronics. Use a dab or two of hot glue to hold the wires in place

If you did not already set up a program at the begining of the build, do so now



Set the CG per page 21 and the model you are building. Measeared from the nose of the aircraft. Adjust battery location as required for balance

Set the elevator and rudder throws up to approx 50 degrees in each direction, ailerons should be set to 40 degrees, make sure there is not binding or overload of the servos.

FINISHING TOUCHES

Tuck all the wires away and clean up any glue strings that are left over from the assembly process.

Double check that all the glue joints are robust and secure.

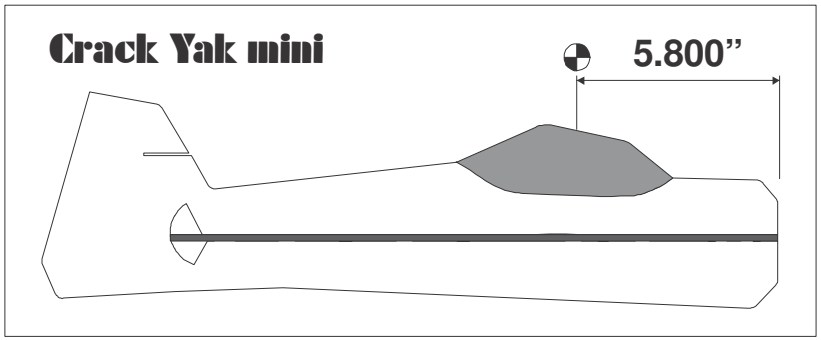
Verify that servos are not stalling at the extreme ends of travel.

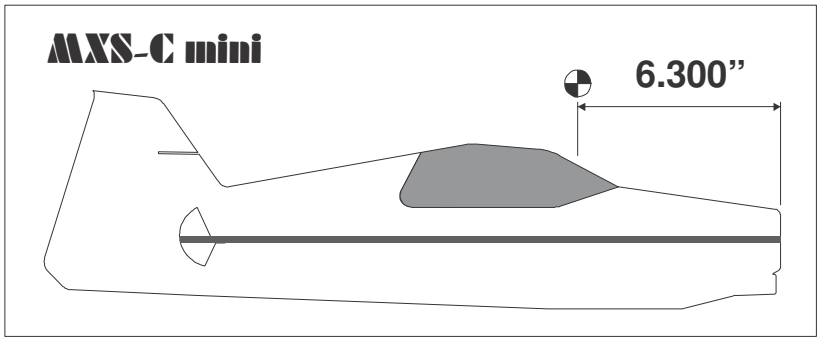
Double check that all control movements are in the proper direction for command input

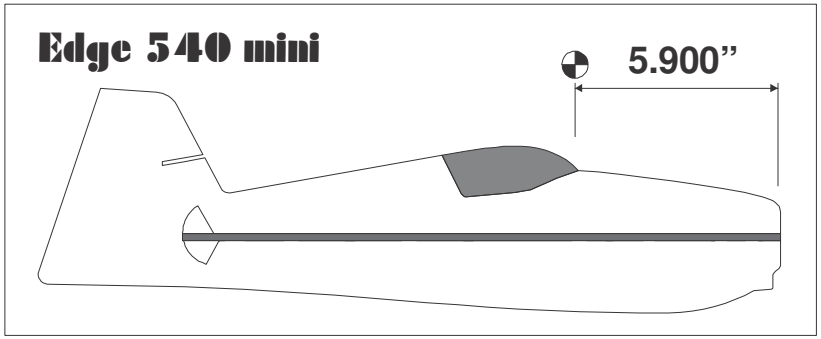
Congratulations, this completes the build. Don't let the size of these planes fool you, they have higher wing loading than their big brothers, so they are very solid in the air. Hang on when you bang the aileron stick, roll rates at full travel are insanely fast with these airframes, make sure you have plenty of expo programmed in for the initial flights. With the higher wing loading, these Minis don't mind a little breeze, but if you have a basket ball court (or larger) indoor venue these models will really shine. Adjust your program to suit and enjoy!

Another really good source of information for these and other Twisted Hobbys' planes is RCGroups.

CENTER OF GRAVITY







Locate battery and other components as needed to achieve the CG point as indicated above for the model you are building.

EXTREME & 3D SET UP PRECAUTIONS

In order to achieve the control throws as suggested above described for “Extreme & 3D”, it is imperative that the control surface, 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

CONTROL THROWS

Extreme & 3D:

Ailerons - approx +/- 40 deg
Rudder - approx +/- 50 deg
Elevator - approx +/- 50 deg
Expo to suit

Beginner & Sport:

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

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.

Flight Testing

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 the perfect size for the local park or school yard.

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 & S/U SHEET

Setup Sheet

Transmitter - Receiver -

Model

Weight - g oz

CG Point - mm from wing leading edge

timer - min

Travels and Exponential

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

Electronic Components

Aileron Servo -

Rudder Servo -

Elevator Servo -

Battery -

motor -

ESC -

Propeller -

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.