

EXTRA **AVG**



MOTOR: 1x 24-30g / 80-120 Watt Outrunner
ESC: 1x 10-15A ESC
SERVOS: 4x 8g
PROP: 1x 8-9 inch
BATTERY: 3s 350mAh-450mAh



RADIO: 4 channel
WINGSPAN: 34"
LENGTH: 34"
AUW: 200g to 220g
depending components used

SAFETY NOTES

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

IMPORTANT: PRIOR TO ANY ASSEMBLY

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

TWISTED HOBBYS

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

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

WARNING INFORMATION

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

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

SHIPPING DAMAGE

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

OUR MISSION

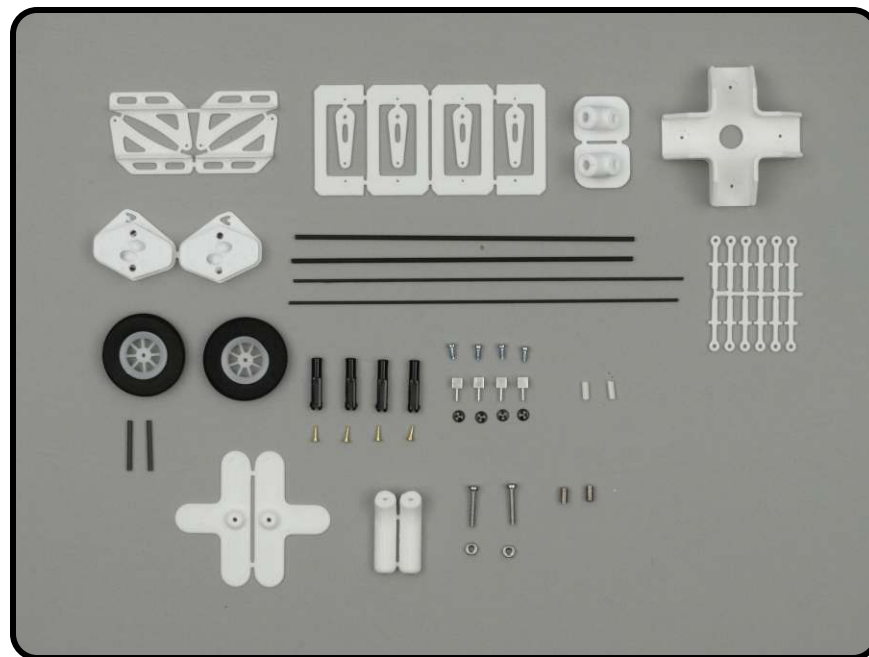
To provide the best products and service to our customers at the lowest prices possible. We take great pride in our company, our commitment to customer service and in the products we sell. Our online store is designed to provide you with a safe and secure environment to browse our product catalog.

Thank you for shopping with Twisted Hobbys!

kit contents



Wing Parts

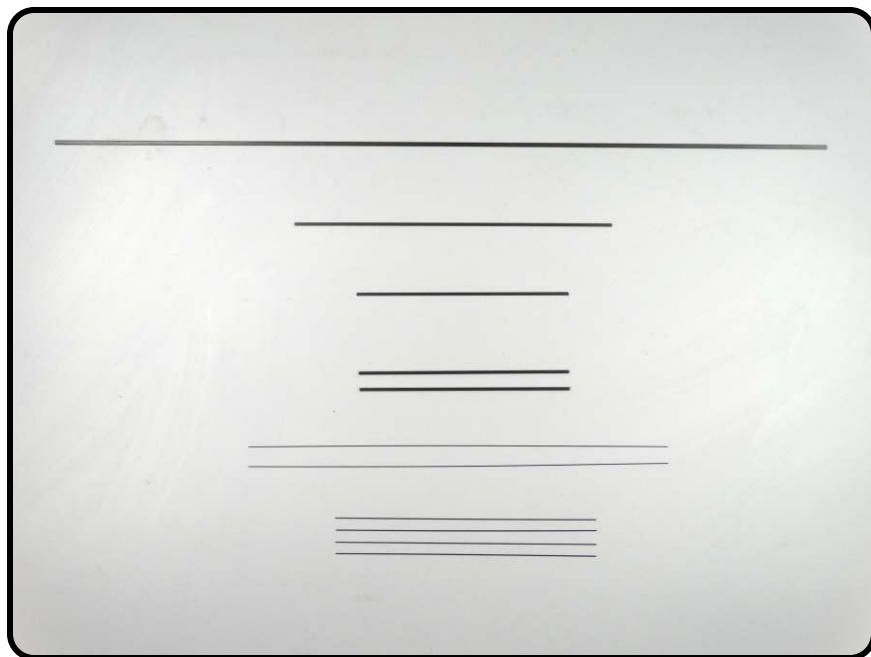


Hardware Packet Detail

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

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

kit contents & Electronics



Carbon Fiber Strips



Recommended Components

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

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

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

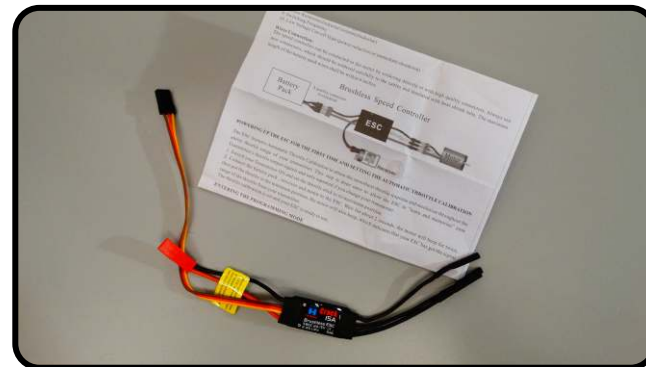
- **Lighter**
- **Small Drill Bits**
- **Tape Measure and Ruler**
- **Black Sewing Thread**
- **Welders or Foam Tac Glue**
- **Hobby Knife w/new Blade**
- **Needle Nose Pliers**
- **Wire Cutters**
- **Low Temp Hot Glue Gun**
- **Course Sand Paper**
- **Scissors**
- **Small Phillips Screw Driver**
- **Thin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

the build

CONSTRUCTION METHODS:

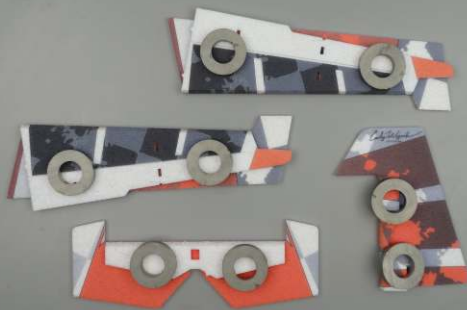
Building surface should be at least 2ft x 4ft and flat. Weights or some small heavy objects will be handy for holding things in place during the time glue is setting.

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



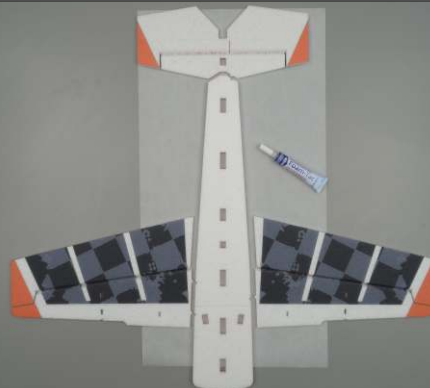
- ❑ Locate all the electronics that will be used on this model
- ❑ Create a model on your transmitter
- ❑ Following your radio mfg. instructions, bind your radio to the power combo components
- ❑ Calibrate the ESC.
- ❑ Confirm all components work properly.

To get started - bend all the surfaces back for 1 hour



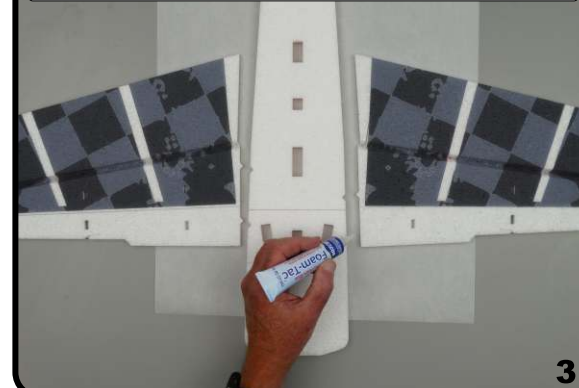
1

Locate shown items - bottom sides facing up



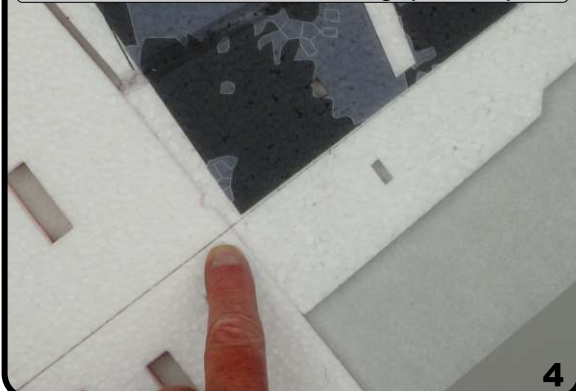
2

Attach the wings with FoamTac



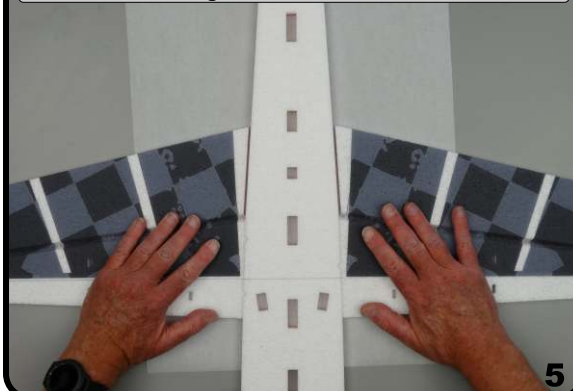
3

Make sure the slots for the wing spar line up



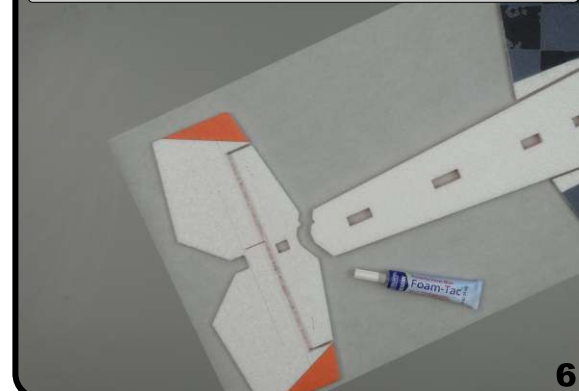
4

Press together to secure the bond



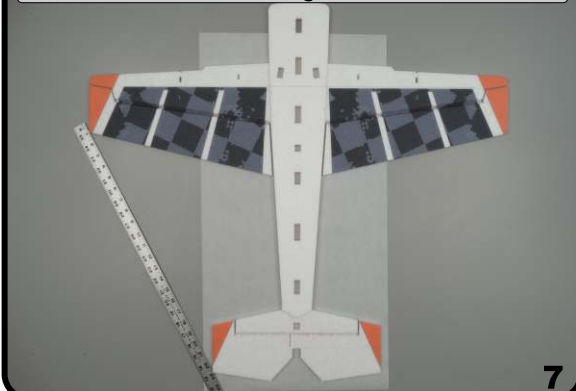
5

Attach the elevator with FoamTac



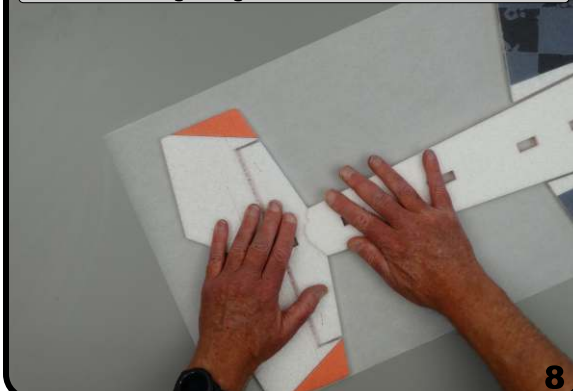
6

Measure both left and right side to make even



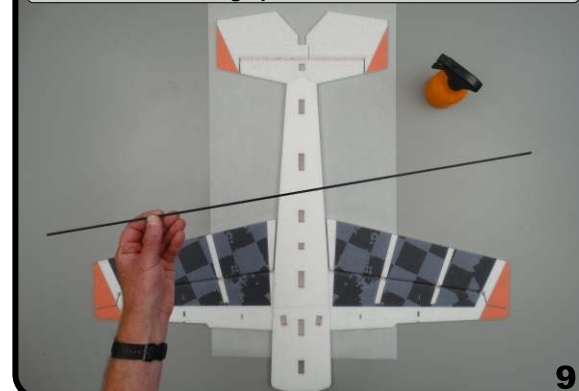
7

Press tight together to secure the bond



8

Locate the wing spar and clean with alcohol

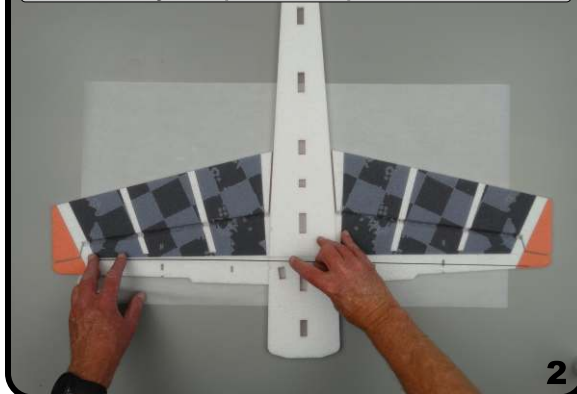


9

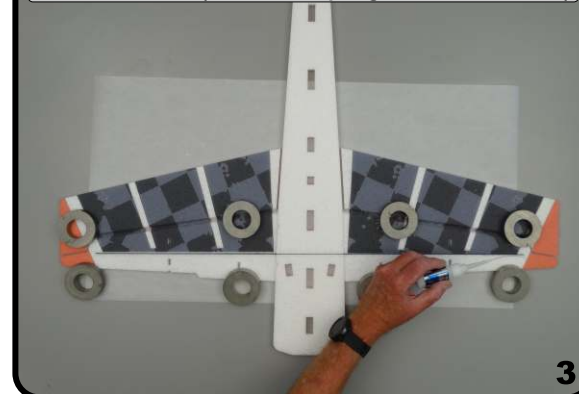
Use FoamTac for Durability / Use CA for Rigidity



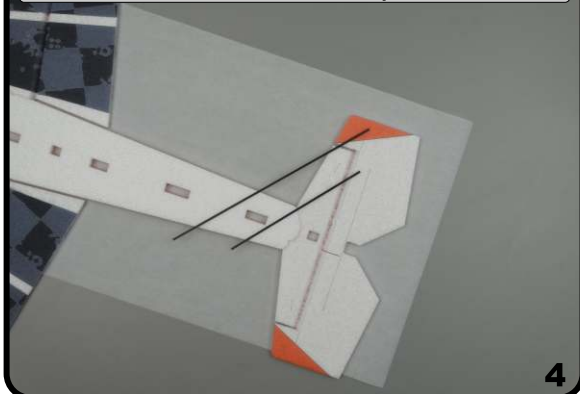
Lay the spar into the pre-cut slot



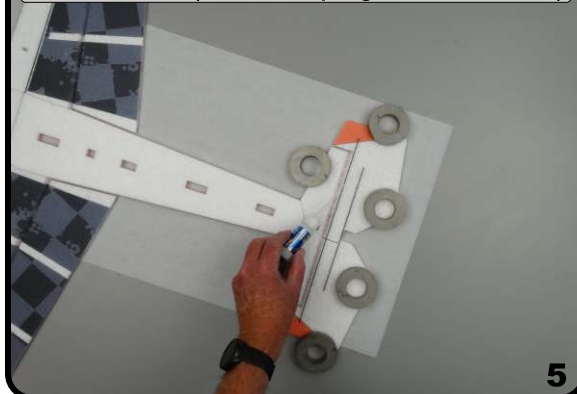
Secure with CA (w/FoamTac put glue in the slot first)



Locate the Elevator Spars



Secure with CA (w/FoamTac put glue in the slot first)



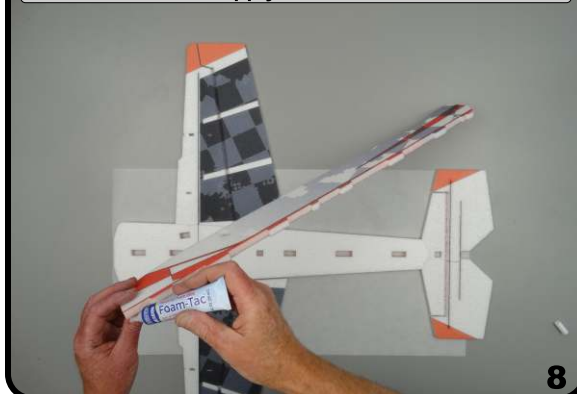
Locate the bottom fuselage section



Test fit into the slots



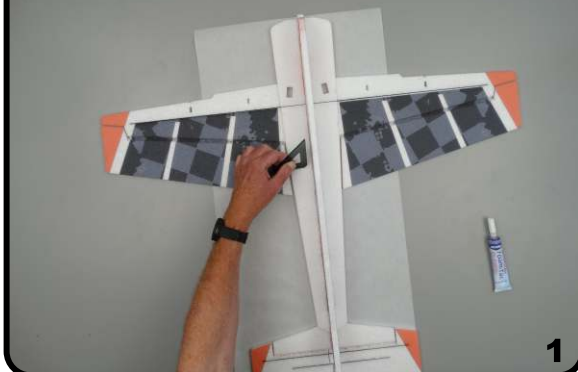
Apply FoamTac



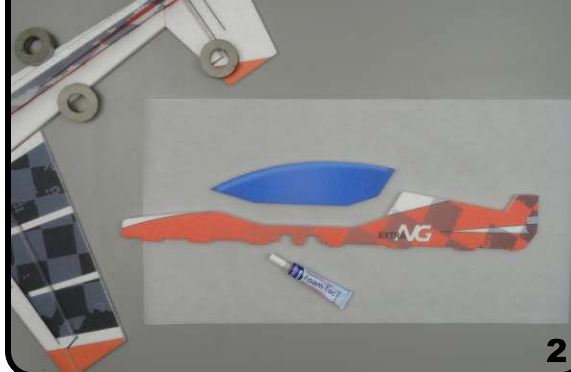
Set into place and press together for good fit



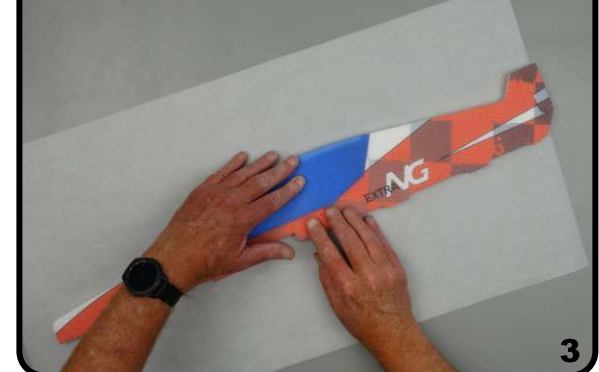
Check for squareness - set aside to dry



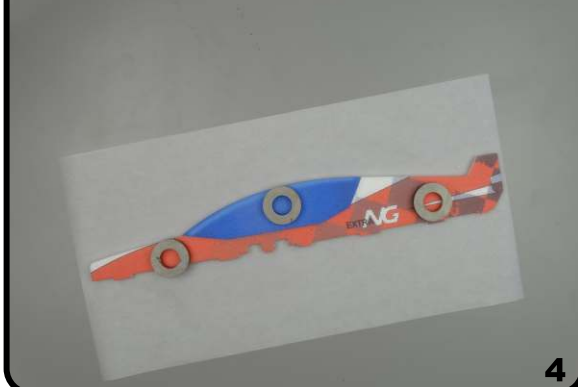
Locate the canopy and upper fuselage section



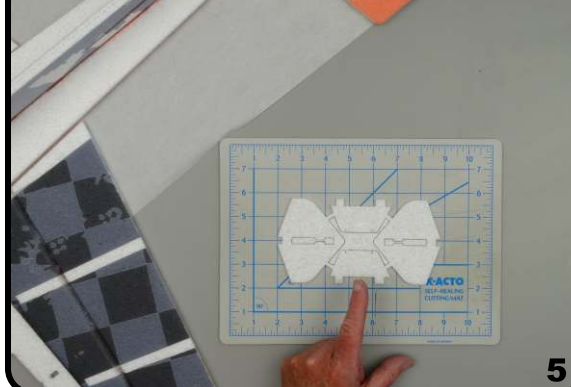
Attach the two pieces together with FoamTac



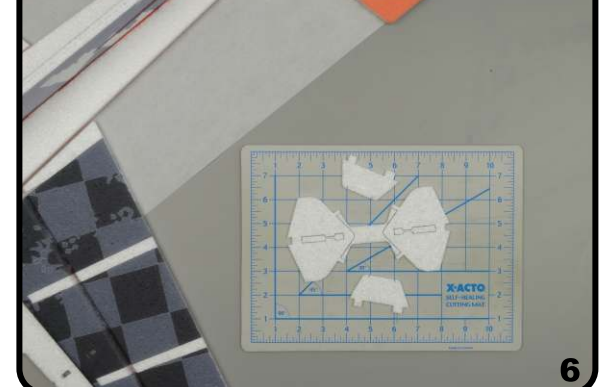
Constrain flat and set aside to dry



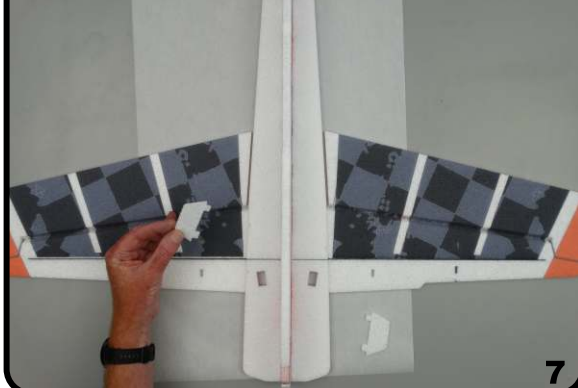
Locate the lower wing struts



Separate them from the other parts



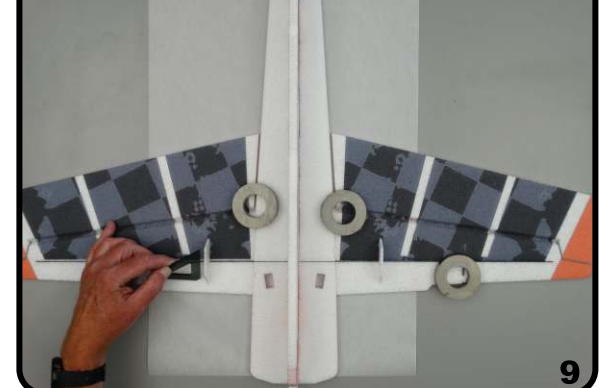
Test fit - Note they are NOT symmetrical



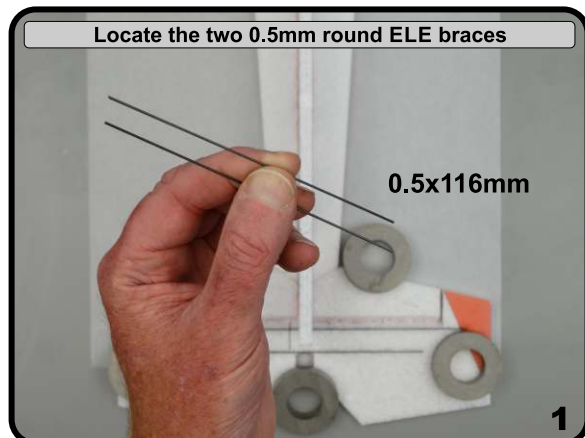
Attach with FoamTac



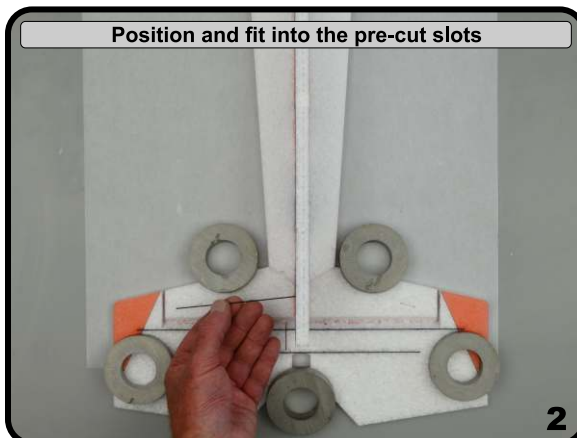
Check for squareness



Locate the two 0.5mm round ELE braces



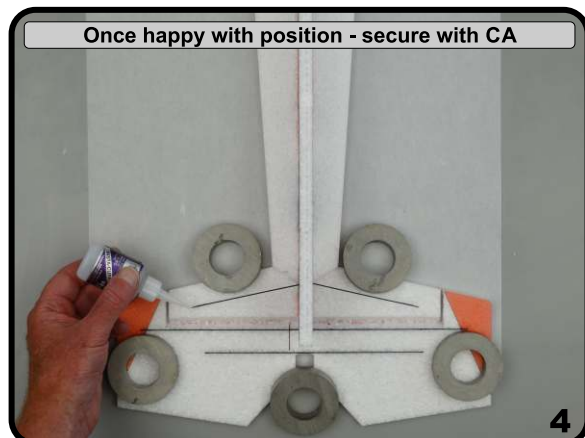
Position and fit into the pre-cut slots



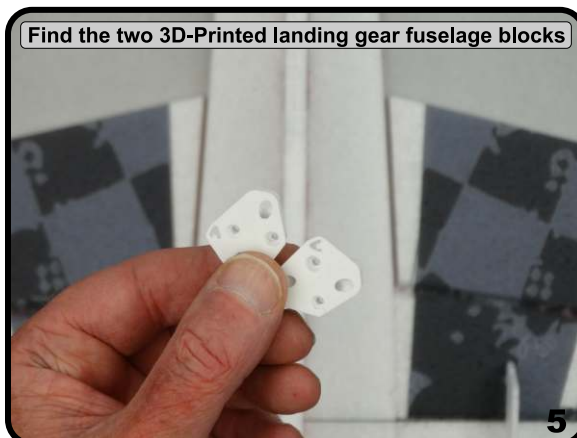
No Glue yet - Check for squareness



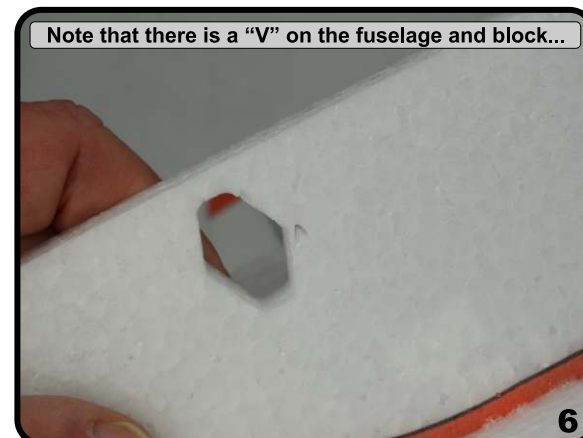
Once happy with position - secure with CA



Find the two 3D-Printed landing gear fuselage blocks



Note that there is a "V" on the fuselage and block...



.... they should line up on top of each other



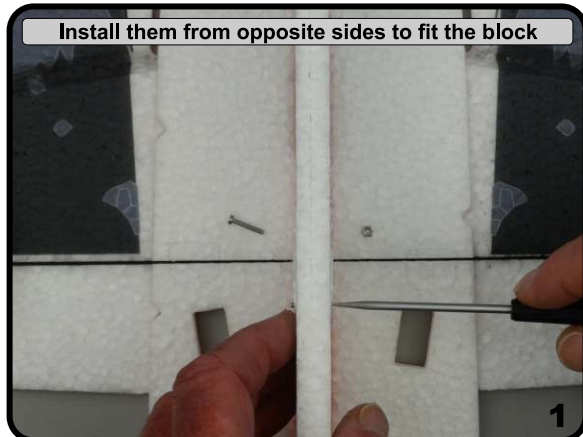
Do not glue - these part install "dry"



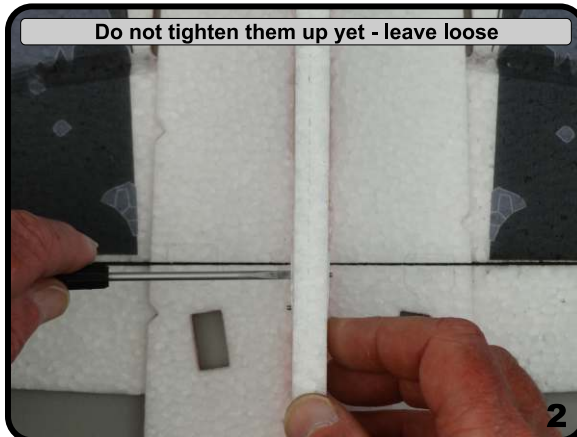
Locate the small screws and nuts like shown



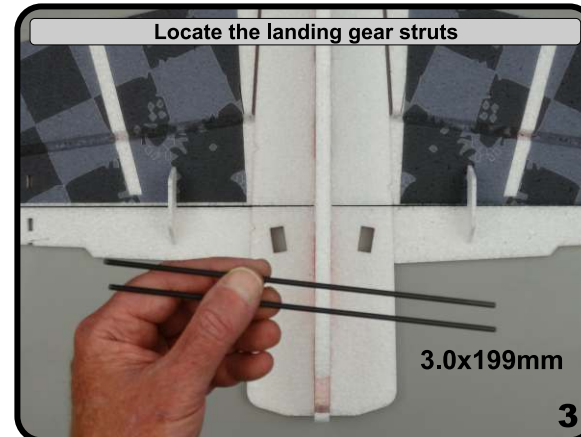
Install them from opposite sides to fit the block



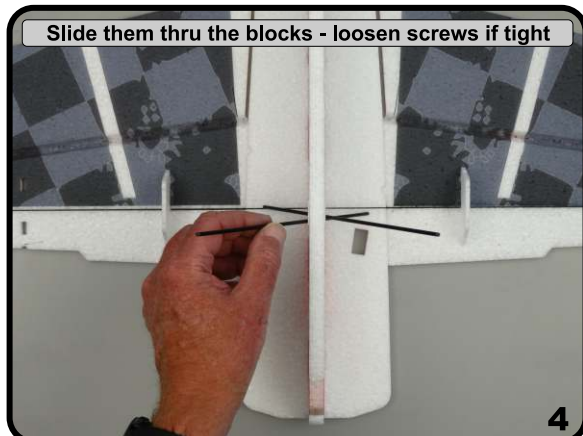
Do not tighten them up yet - leave loose



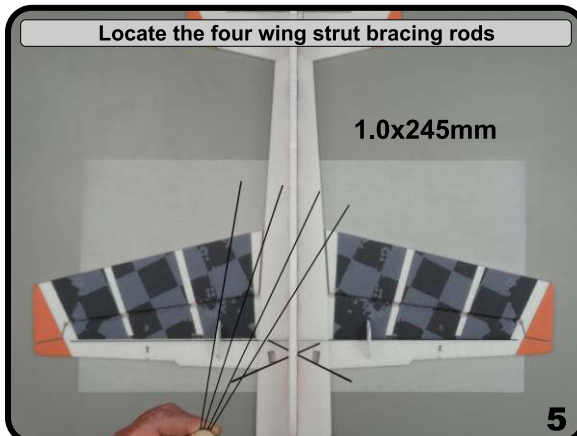
Locate the landing gear struts



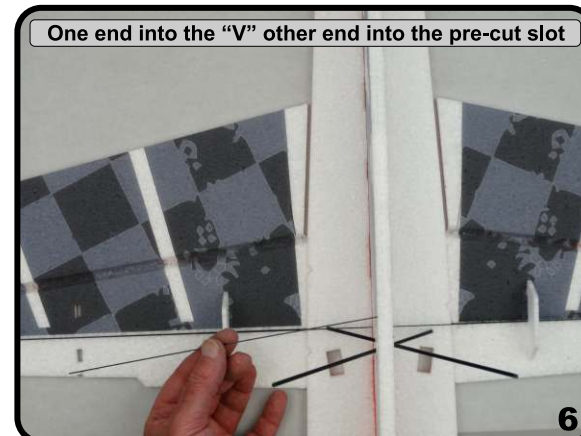
Slide them thru the blocks - loosen screws if tight



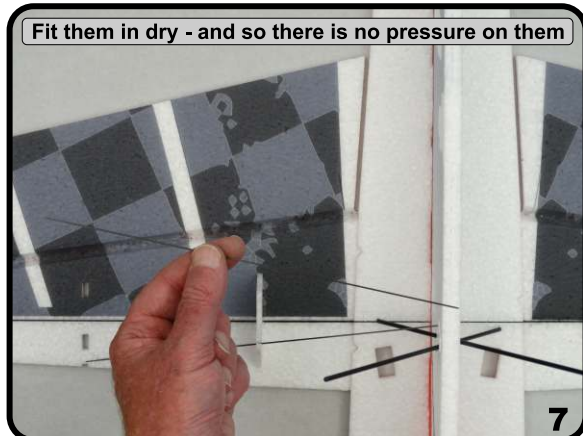
Locate the four wing strut bracing rods



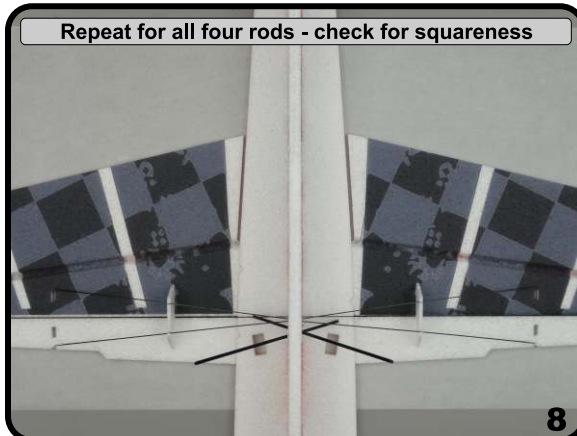
One end into the "V" other end into the pre-cut slot



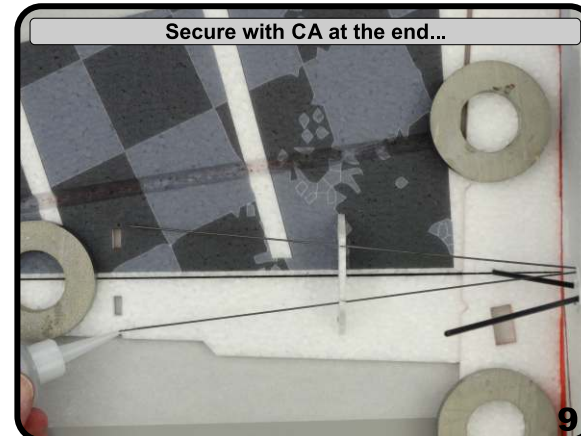
Fit them in dry - and so there is no pressure on them

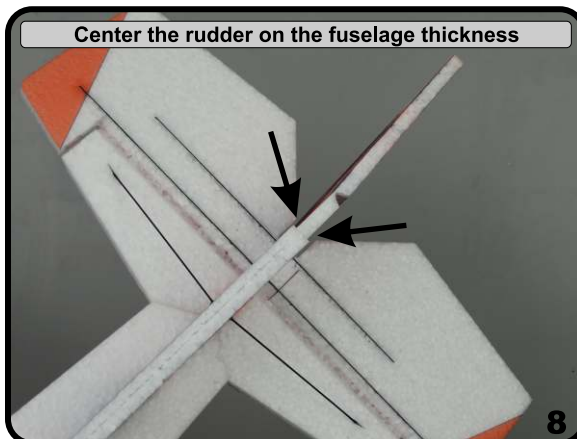
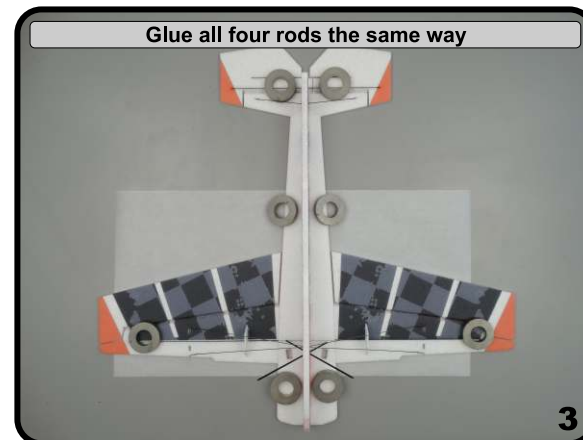
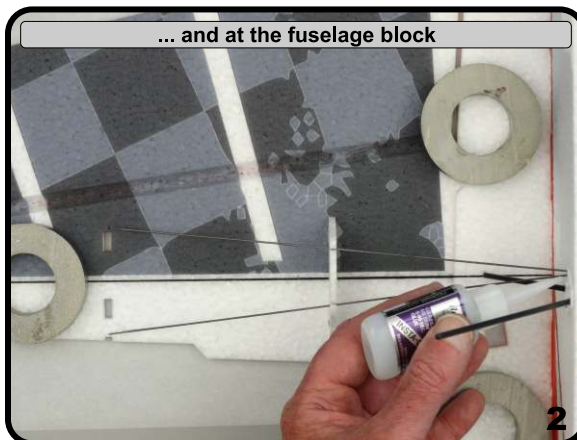
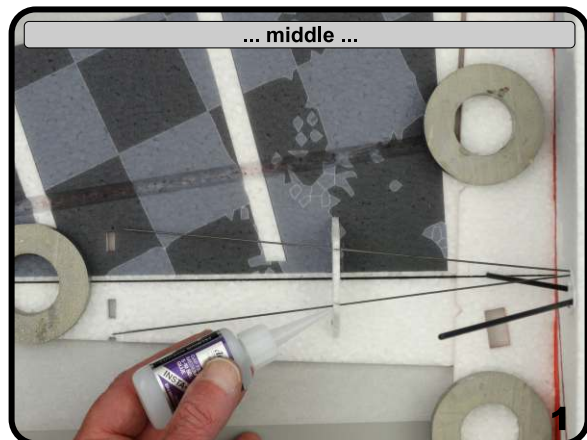


Repeat for all four rods - check for squareness



Secure with CA at the end...





Locate a scrap piece of carbon rod - or a toothpick

~1.0x65.0mm Rod
(or a tooth pick)

1

Install as shown to keep rudder from dragging

2

Locate the 3D printed motor mount

3

Coat all the inside surfaces with FoamTac and install

4

Find the Side Force Generators

5

Separate them out a slit apart as shown

6

Put some FoamTac on the mating area of the wing

7

Slide the SFG in place and check for squareness

8

OPTIONAL - Re-Enforce hinge lines with Blendern

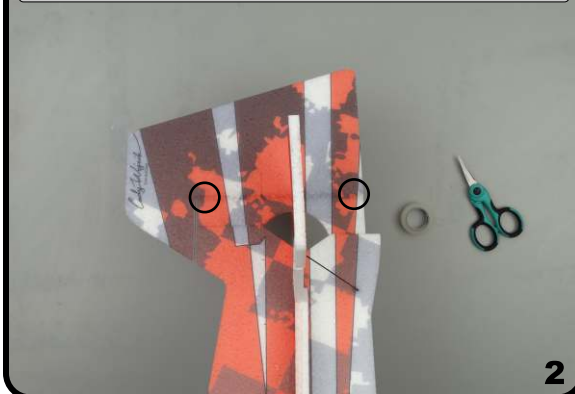
6pcs - 1/2"x1.0"

9

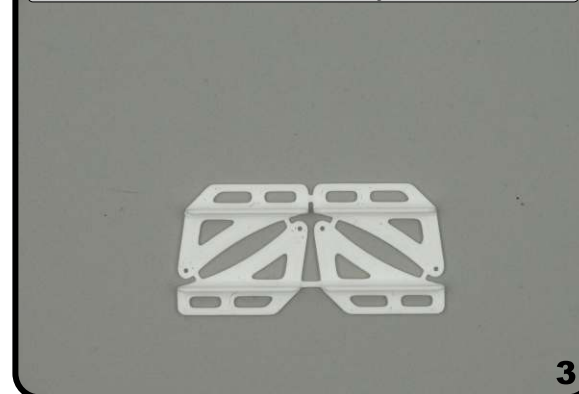
OPTIONAL - skim coat of FoamTac, Blendederm on top



OPTIONAL - rudder locations



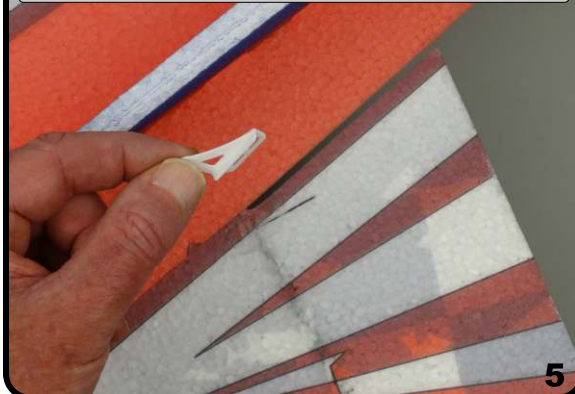
Locate Control Horns - Note they are all the same



Separate them with a pair of flush cutters



Start with the ailerons...



... fill the pre-cut slot with FoamTac



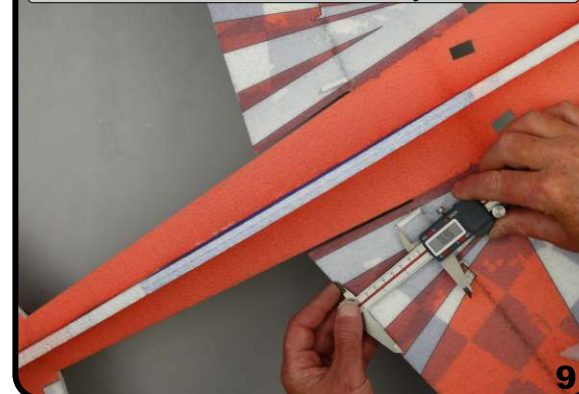
Install the horn - hole inline with hinge line



Repeat for the other side



Measure each side to make sure they are the same



Elevator horn - install like was done on the ailerons



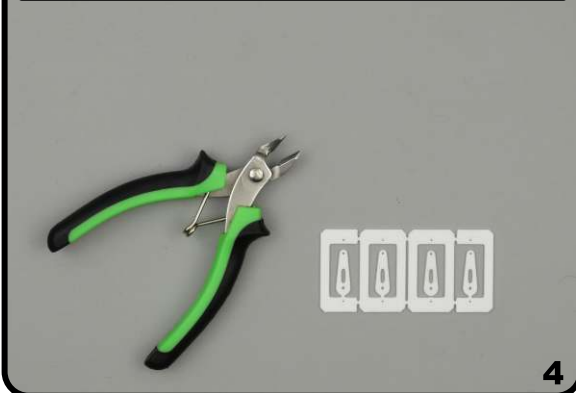
Hole over the hinge line



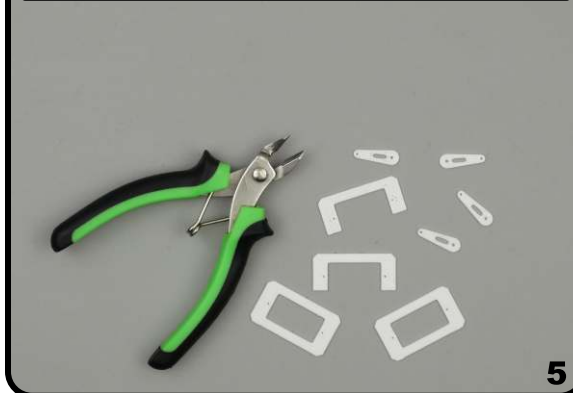
Repeat for the Rudder horn



Locate the servo trays and arm extensions



Separate them out



Attach the trays with FoamTac - Center on cutouts



Aileron trays installed



Left side of the fuselage - RUD tray in rear position



Right side of fuselage - ELE tray in front position

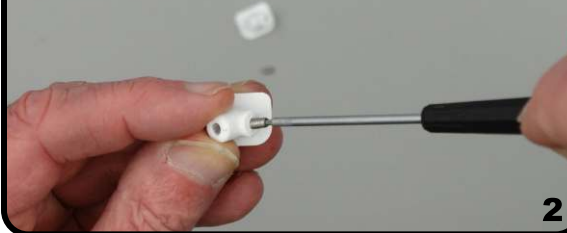


While the glue dries on the previous step...



1

... locate the upper landing gear blocks...



2

... and partially thread the set screws in

make sure screws don't interfere with struts sliding in



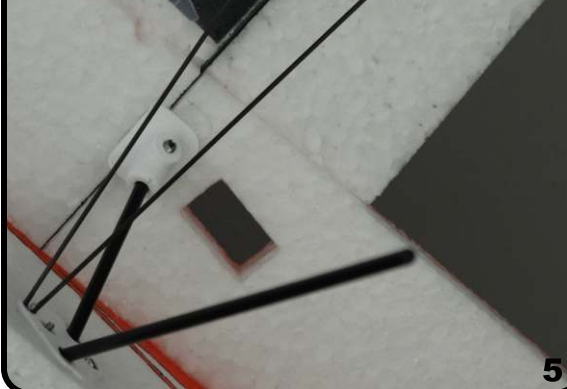
3

Apply FoamTac - keep the hole clear of glue



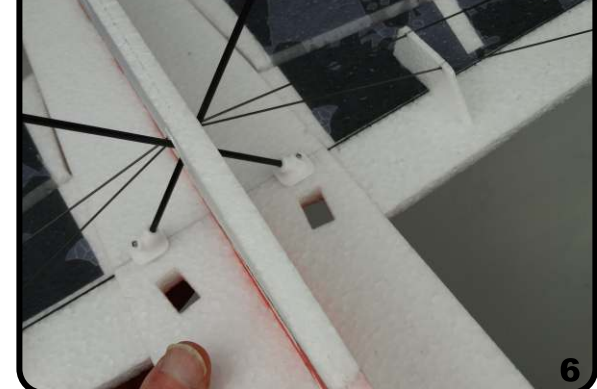
4

Use strut to locate the block - keep screw loose



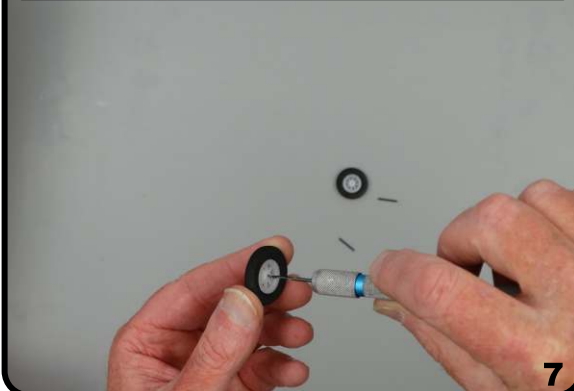
5

Repeat for the other side - Let dry



6

Locate the wheels and axles - drill out to fit



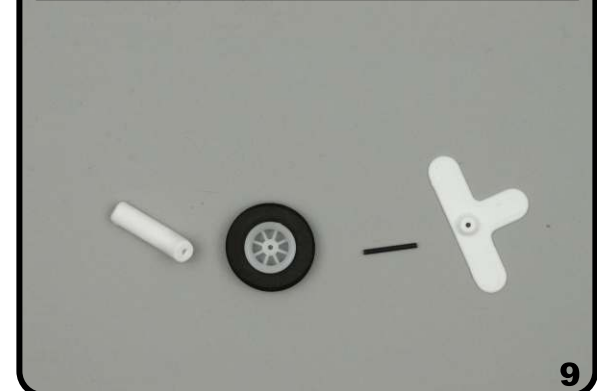
7

Make sure wheel spins freely and is not sloppy



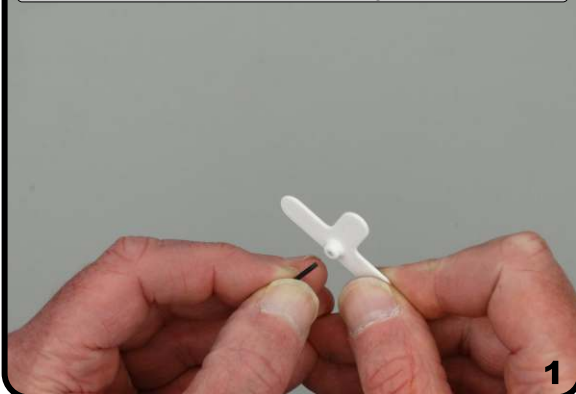
8

Locate the strut end and wheel pant mount

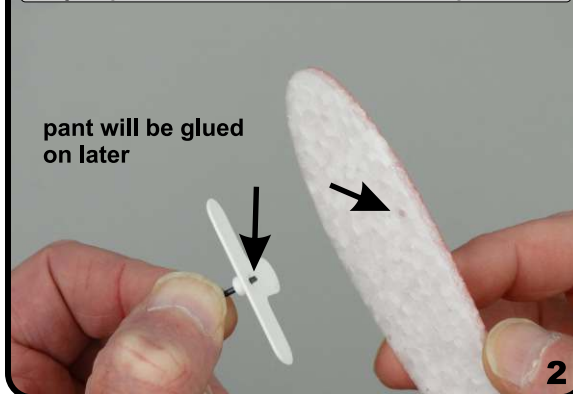


9

Press the axle into the wheel pant mount...



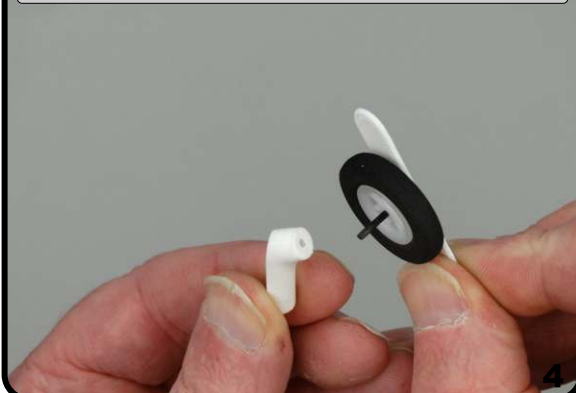
... just past flush on far side to locate on pant hole



Slide the wheel onto the axle



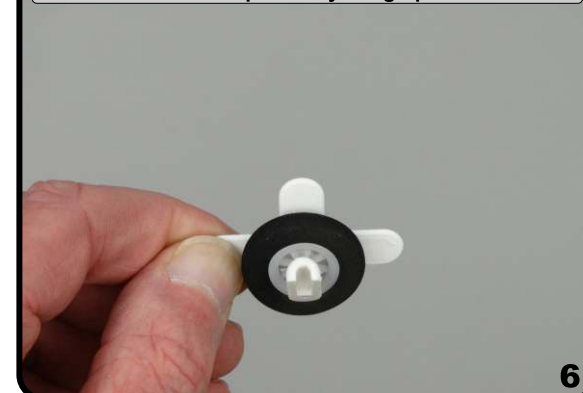
Grab the strut axle block...



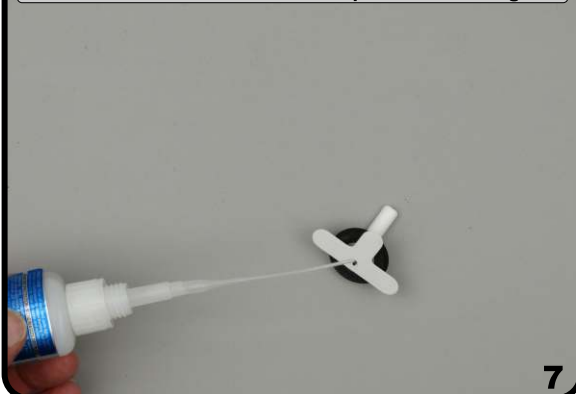
... press fit in to capture the wheel



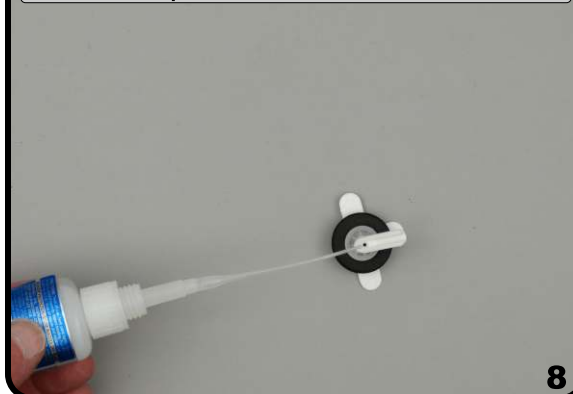
Wheel should still spin freely - align parts as shown



Use thin CA on back side - keep wheel free of glue



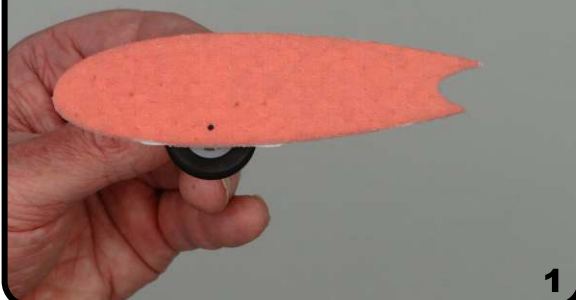
Repeat for the strut block side



Now the wheel pant can be attached



Align parallel to the horizontal part of the mount



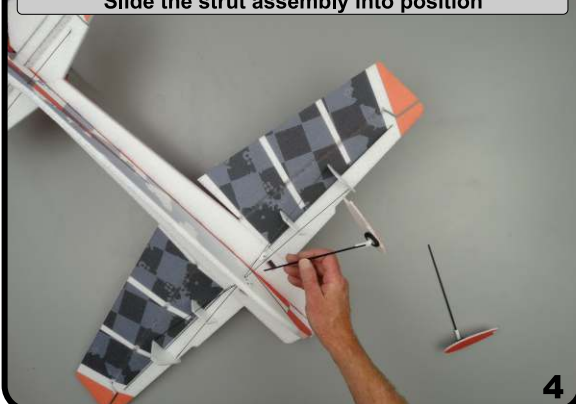
Repeat for the other side



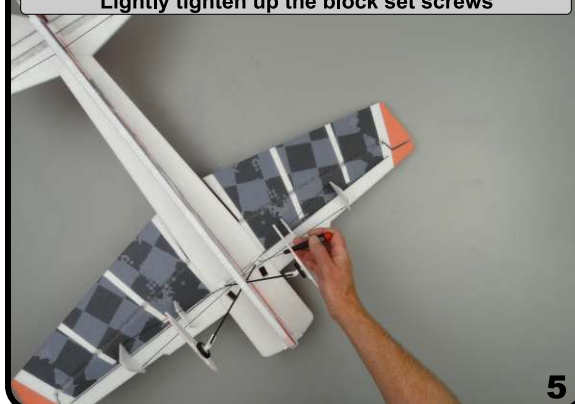
Use Med/Thick CA to attach the struts



Slide the strut assembly into position



Lightly tighten up the block set screws



Repeat for the other side



Locate all the items to build the control rods

2pcs - 0.8x400mm / 2pc - 1.5x108mm



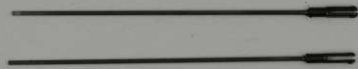
Hardware Detail



Use Med CA to attach clevis to the 1.5mm rods

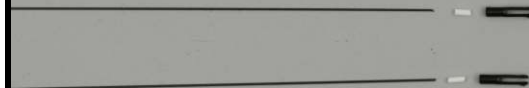


Attach one clevis to the end of each 1.5 rod



1

For the 0.8mm rods, the small spacers will be needed



2

Press the spacer into the end of the clevis



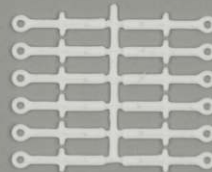
3

Then secure with Med CA



4

Locate the control rod guides



5

Separate them apart - set aside



6

Drill out the horn mounting hole to fit servo screw



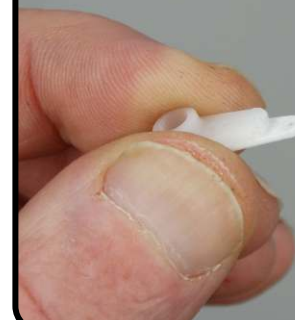
7

Locate the stock servo horns



8

Trim the stock horn if needed for clearance



9

Locate the four quik connectors and the push backs



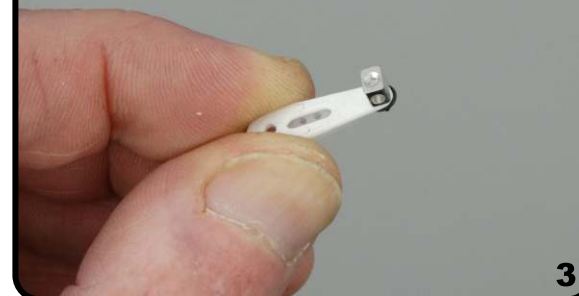
1

Attach them as shown



2

Next take the arm extension...



3

... and attach it to the stock arm with a small screw



4

Repeat for all four arms



5

Install the servos into their trays as shown



6

With eight 2mm screws...



7

... secure each servo with two screws each



8

If not already done, bind the Radio



9

Center all the servos and attach the arms at 90 deg



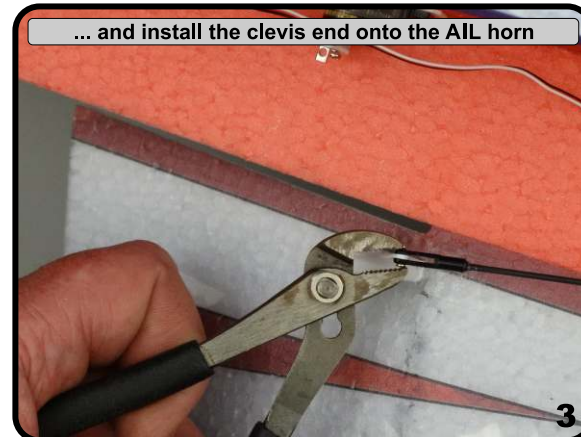
1

Grab one of the short control rods...



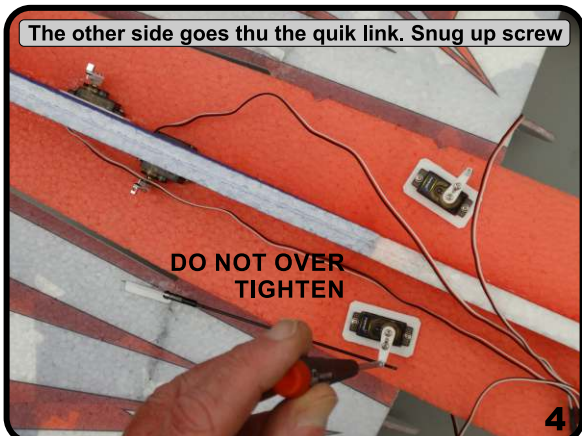
2

... and install the clevis end onto the AIL horn



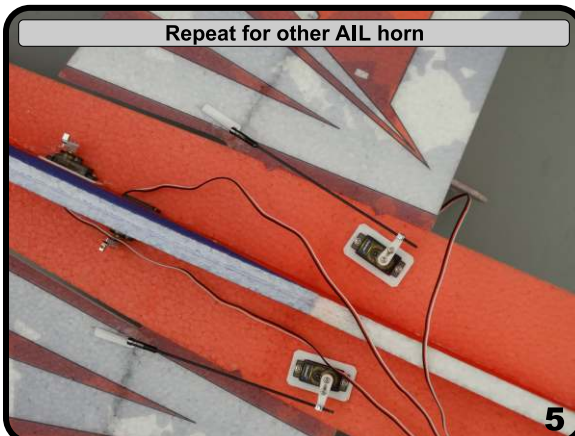
3

The other side goes thru the quik link. Snug up screw



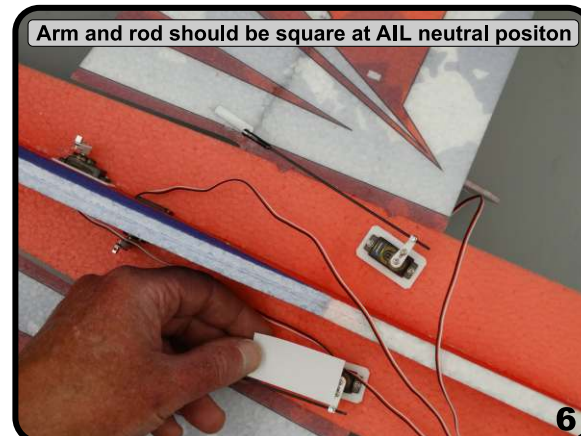
4

Repeat for other AIL horn



5

Arm and rod should be square at AIL neutral position



6

The RUD and ELE control rods are next



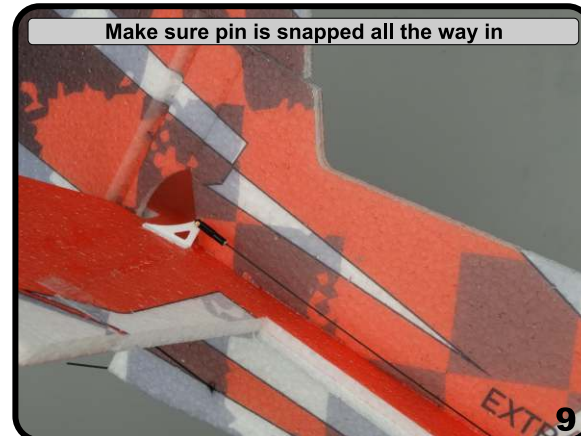
7

Attach the clevis to the ELE control horn



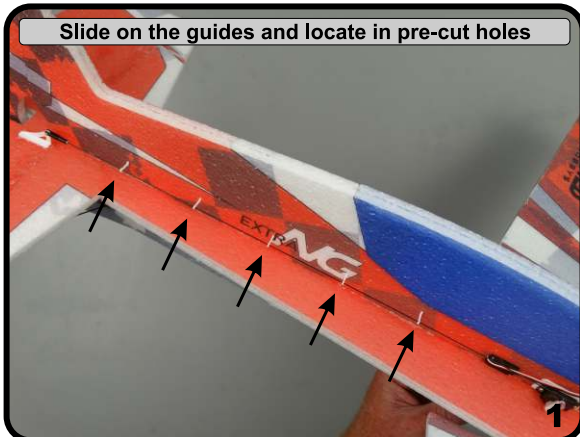
8

Make sure pin is snapped all the way in

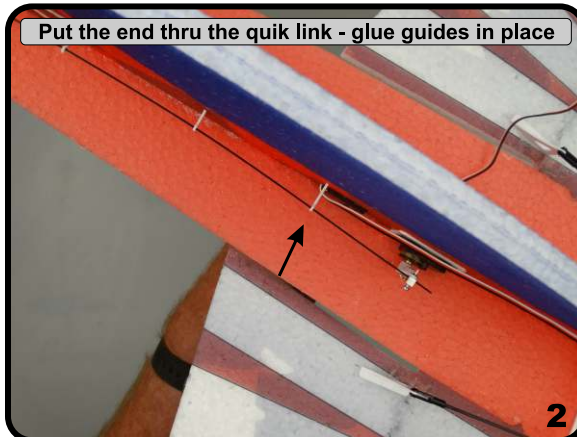


9

Slide on the guides and locate in pre-cut holes



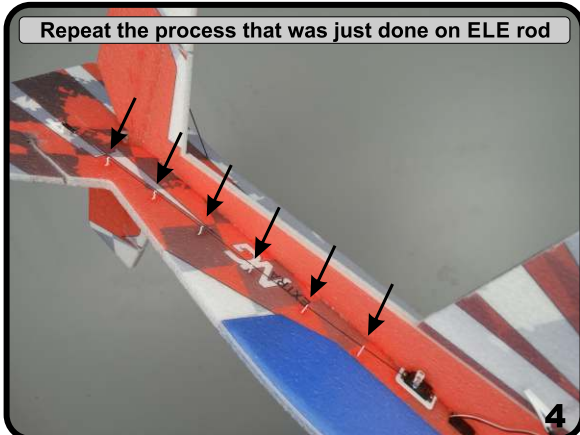
Put the end thru the quik link - glue guides in place



Do the RUD control rod next



Repeat the process that was just done on ELE rod



With servos and surfaces centered - snug rod screws



Install the motor next



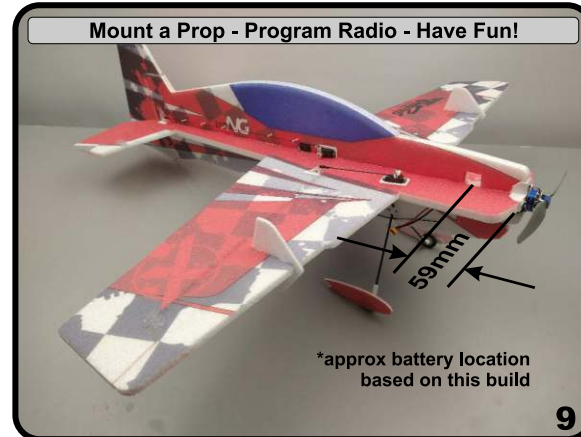
Install with wires facing toward the ESC location



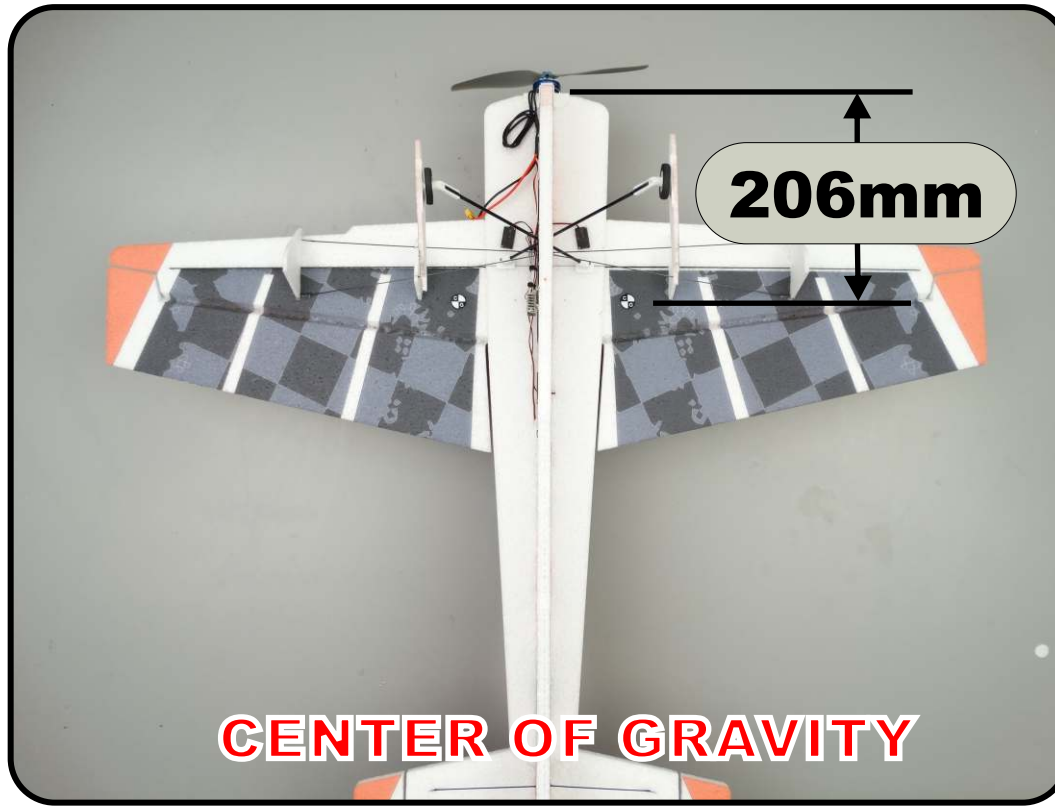
With FoamTac locate RX - ESC - and route the wires



Mount a Prop - Program Radio - Have Fun!



center of gravity and control throws



C.G. - 206mm from nose

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

Control Throws

Ailerons: +/- 40 deg
Rudder: +/- 50 deg
Elevator: +/- 50 deg

**Expo and
Dual Rates to suit**

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



pre-flight & testing

PREFLIGHT CHECKS

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

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

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

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

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

PREFLIGHT CHECKS

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

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

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

STORAGE

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

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

TIPS AND TRICKS

- A good building surface is “drop ceiling” panel from a local hardware store on a nice flat board
- Use parchment paper between the areas being glued and your work surface
- Heavy flat objects (like books, batteries, etc.) could be used to hold everything flat
- When resetting your radio, start with all the ATV's or throw volumes at 100%.
- Make sure you have set the direction of the servos correctly before attempting to trim for zero position.
- If possible, try the servo horns in different locations to determine which position will require the least amount of sub trim.
- Installing the servo horns in their final location and attaching quick links to the servos may make servo installation much easier later.
- On the Twisted Hobbys 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 FoamTac glue to set for one or two 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.

notes and s/u sheet

Setup Sheet

Transmitter -

Receiver -

Model

Weight - g oz

CG Point - mm from wing leading edge

timer - min

Travels and Exponential

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

Electronic Components

Aileron Servo -

Rudder Servo -

Elevator Servo -

Battery -

motor -

ESC -

Propeller -