

## ***T-14 EDF***



## **INSTRUCTION MANUAL**

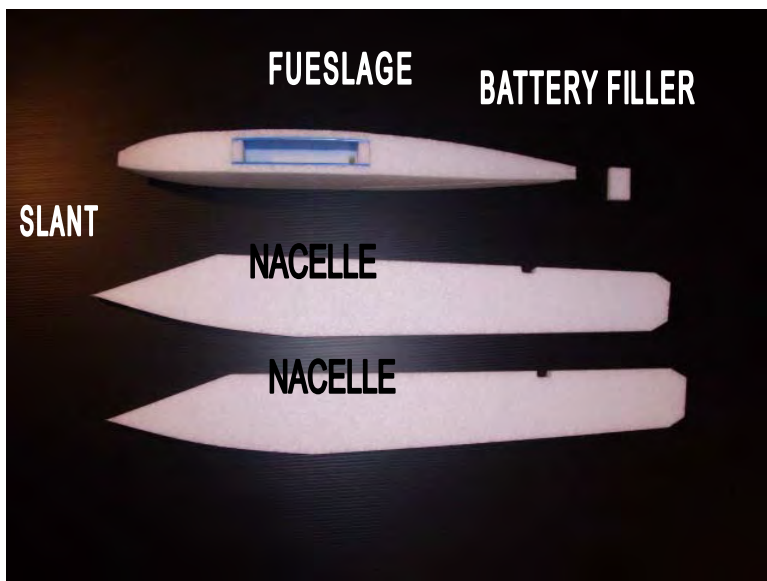
### **Specifications**

Wingspan.....31in  
Length.....41.75in  
Wing Area.....615 sq in  
EDF.....70mm 12 Blade

Weight.....2.5 lb  
Radio.....3 channel  
Motor.....Brushless  
Battery...14.8v 2200mah 40c

## KIT CONTENTS

- (1) Wing
- (1) Fuselage
- (2) Nacelles
- (1) Battery box spacer
- (2) Vertical stabilizers
- (1) Canopy
- (1) Canopy hinge
- (1) Rare Earth magnets
- (2) 14 Gauge wire
- (1) Carbon Fiber Shaft 30 inch
- (4) 3mm X 12mm Bolts
- (4) 3mm X 14mm Bolts
- (8) 3mm Lock Nuts
- (4) Flat washers
- (4) Control horns
- (4) Clevis
- (4) Push rods
- (4) Push rod keepers
- (1) Coroplast® motor mount stiffener
- (4) Wood dowels



# BEFORE YOU BUILD

## WARNING!!

**This kit is not a toy.**

**This model is intended for the competent builder and RC pilot aged 14 years and older. It is the responsibility of the modeler to ensure the model is airworthy before attempting to fly it.**

Always ensure that any glue, paint or solvents used to build this kit are compatible with the materials contained in this kit. Some glues and paint can melt Styrofoam and plastic that is contained in this kit.

Before gluing any parts together, we strongly suggest trial fitting the parts without glue first; to ensure that all the parts align and fit properly. This will ensure the airplane is built straight and square.

## ABOUT THE TOUGHJETS T-14 EDF

The ToughJets T-14 EDF was designed by life-long RC modeler Wayne Roberts to be the highest performing fun scale RC propjet on the market. You'll find the T-14 has an enormous flight envelope. It's capable of 65+mph, it's highly aerobatic, yet it lands at near zero ground speed in the slightest of headwinds.

## TOOLS AND SUPPLIES REQUIRED

5 Minute Epoxy

Hobby knife

CA glue

Wire Cutters

Electric Drill

Scissors

Assorted Drill Bits

Clear Packaging Tape

Needle nose pliers

Pencil

Small screw drivers

Rubbing Alcohol

Allen wrench 2.5mm

3M Type 77 Spray Adhesive

## ADDITIONAL EQUIPMENT REQUIRED

3, channel radio with mixing (Minimum)

4, sub micro 9 gram servos (Tower Pro or equivalent)

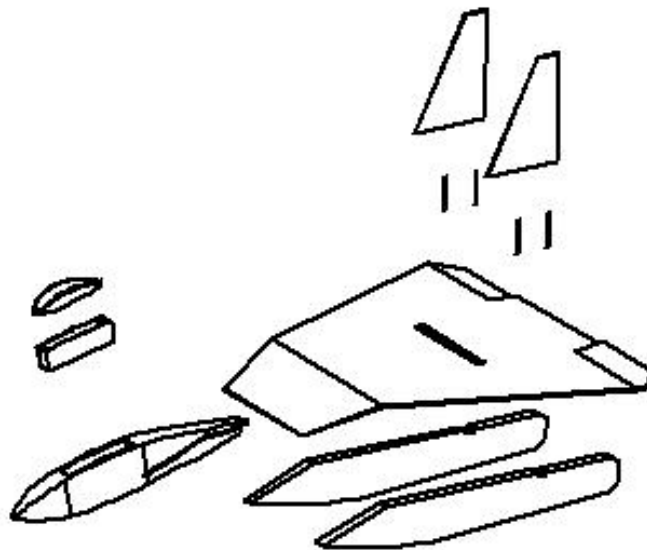
2, Y servo cords.

70mm 12 blade Ducted Fan (FMS 70mm Ducted Fan or equivalent)

70 amp electronic speed control

4 cell lipo battery 14.8 volt 2200 mAh 40 c or 2600mAh 40 c

## EXPLODED VIEW



Use this exploded view to help guide you through the assembly of the major components of your ToughJets T-14

# LET'S BEGIN BUILDING

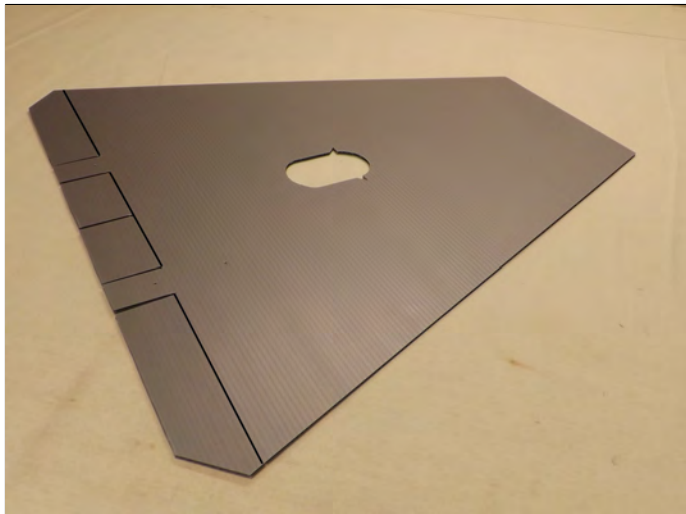
It is strongly suggested you review the drawings, photos and captions to familiarize yourself with the design and construction of the model.

Before beginning construction, you will want to decide whether to paint or cover the foam parts with heat shrink film such as EconoKote, or packaging tape. You may also choose to leave these parts uncovered. If you choose EconoKote, or packaging tape, spray the surfaces to be covered with 3M Type 77 spray adhesive prior to covering. Allow the adhesive to set for 5 minutes prior to applying the covering, this will improve the overall adhesion of the covering to the foam. When covering the nacelles, do not apply covering material or paint to the surfaces to be epoxied to the wing.

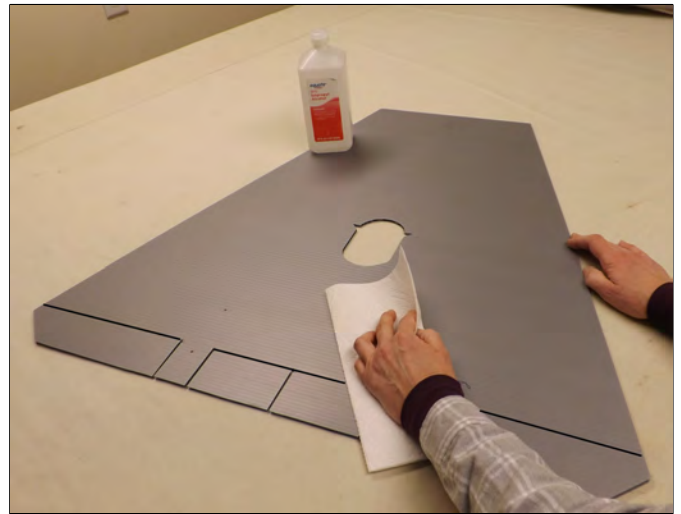


It is highly recommended to apply the covering material or paint prior to assembling the model. Do **NOT** apply covering to the top edge and slant of the nacelle (see insert)

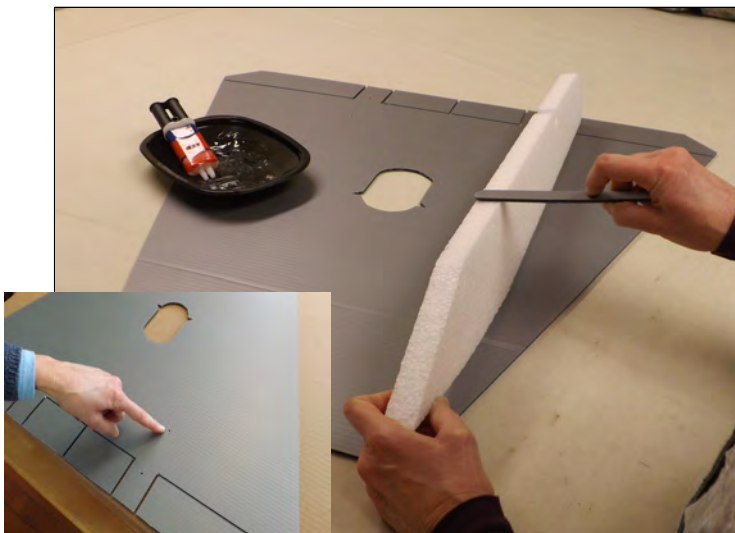
## WING / NACELLE / FUSELAGE ASSEMBLY



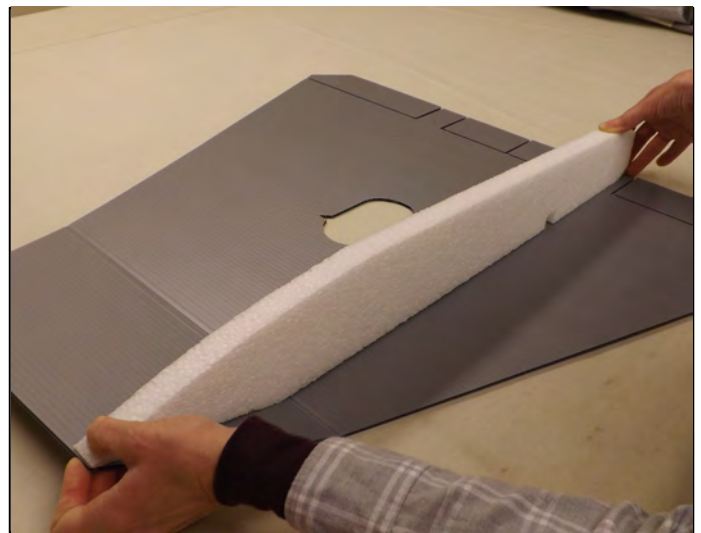
Lay wing on a flat surface, bottom side up. This is the side with the hinge slots and crease.



Clean the bottom of the wing with rubbing alcohol before gluing



Apply 5 minute epoxy to top of nacelle on flat section only. **Do not** apply epoxy to slanted section at this time. **Do not** let epoxy clog vertical stab dowel holes see **insert photo**

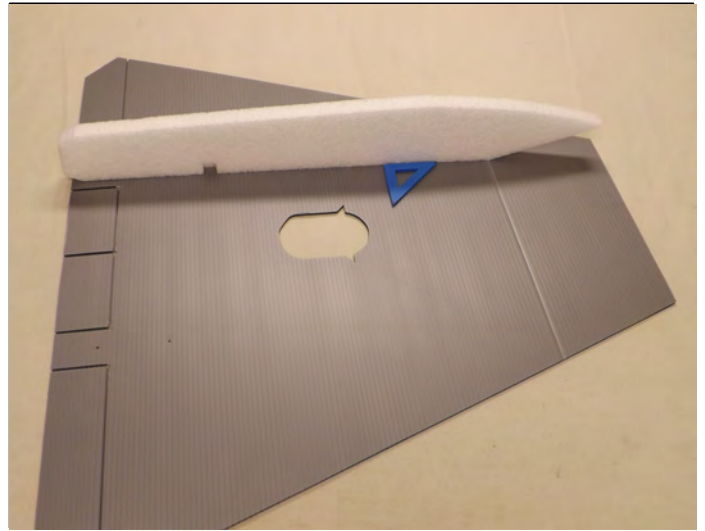


Carefully align nacelle with leading edge and crease on the bottom of the wing.





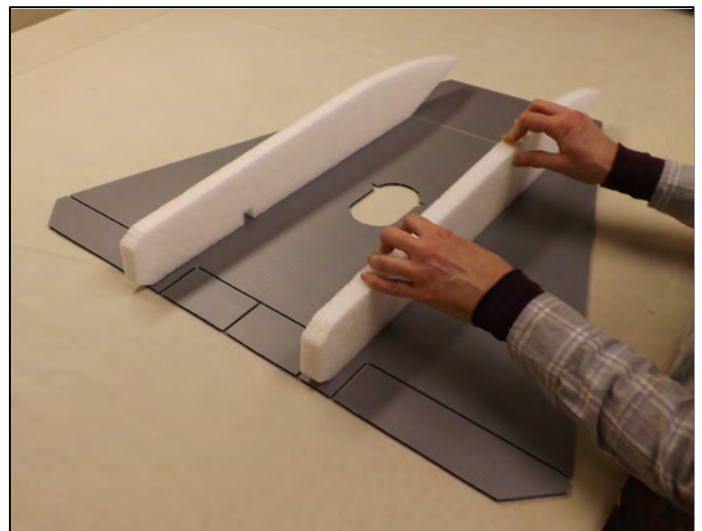
Be sure that the nacelle is properly aligned with crease



Ensure the nacelle is parallel and 90 degrees to flutes in wing. You have some time to make slight adjustments before epoxy cures but move quickly.



Hold the nacelle in place until the five-minute epoxy cures, check that nacelle is aligned with leading edge, crease and centered on Vertical stabilizer dowel holes on wing.



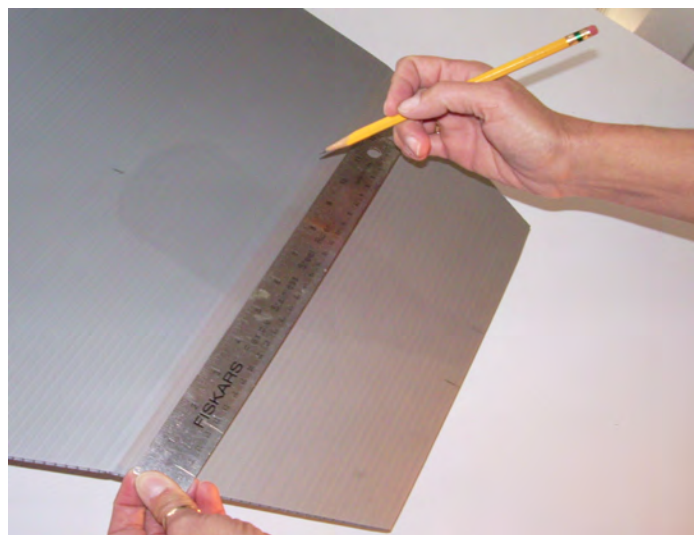
Repeat the steps to attach the second nacelle to the wing. Nacelles should be straight and parallel



Now apply 5-minute epoxy to the slanted sections on both nacelles.



Press both nacelles to leading edge of the wing applying pressure on a smooth flat surface for 5 minutes until the epoxy cures

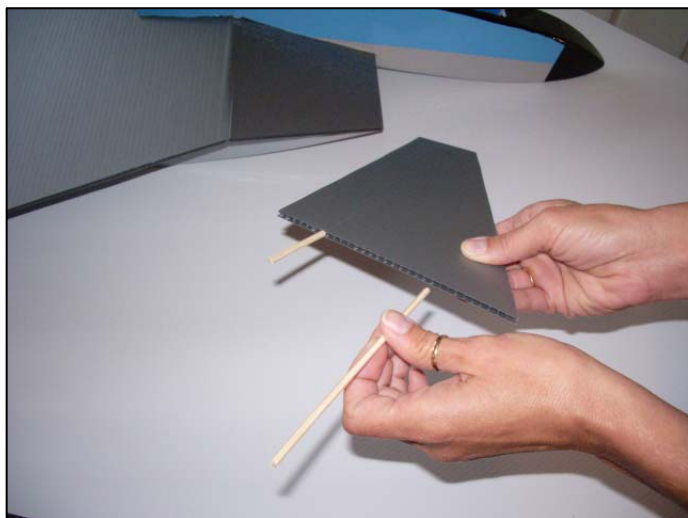


Turn the wing over, measure and mark on the top the center of the wing

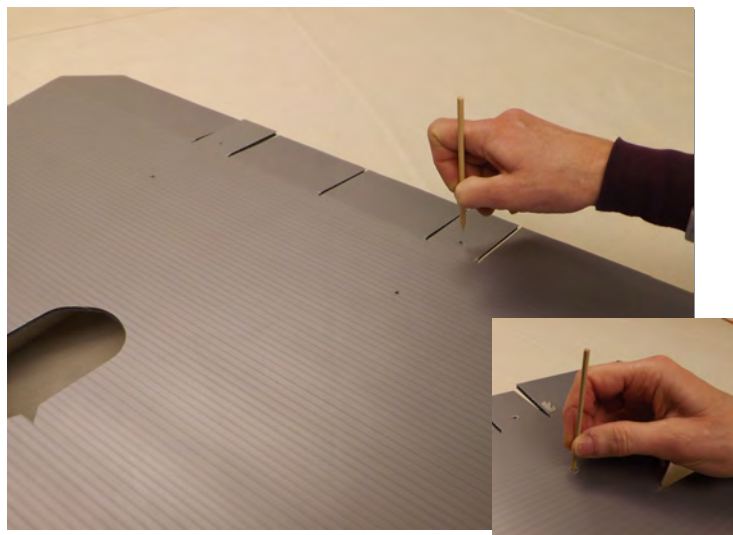


Apply 5 minute epoxy to both side of fuselage wing slot. Slide the fuselage onto the wing. Be sure that the fuselage is centered straight and square to wing.

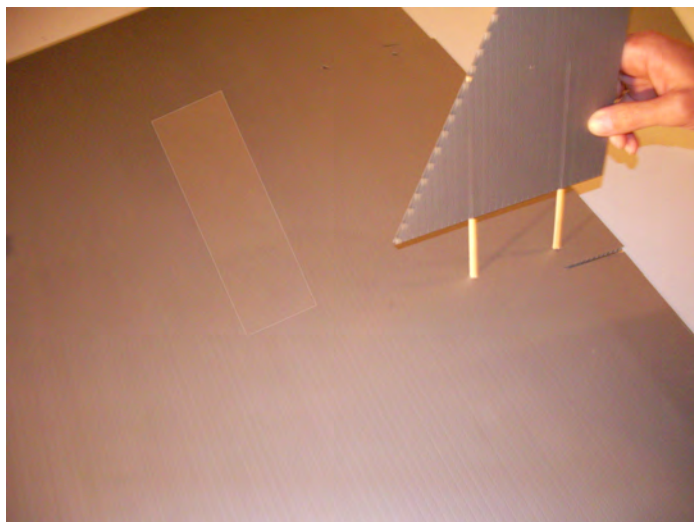




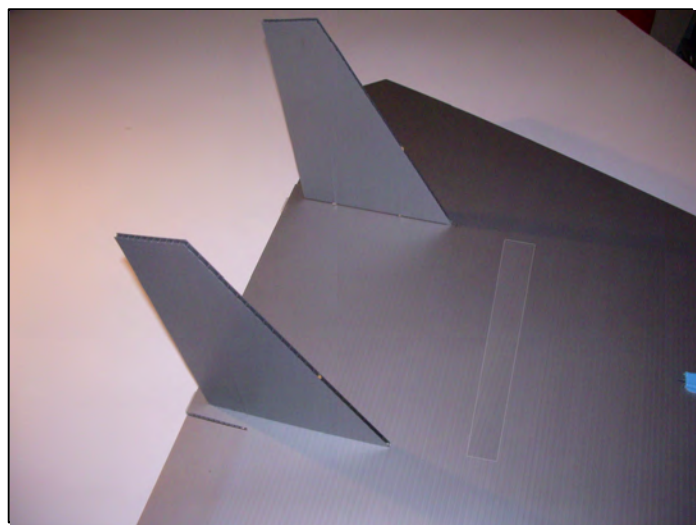
Epoxy 2 dowels into the flutes of each vertical stabilizers. Position the dowels 1½" and 4 ½" from the trailing edge. Leave about 1 ½" of dowel exposed



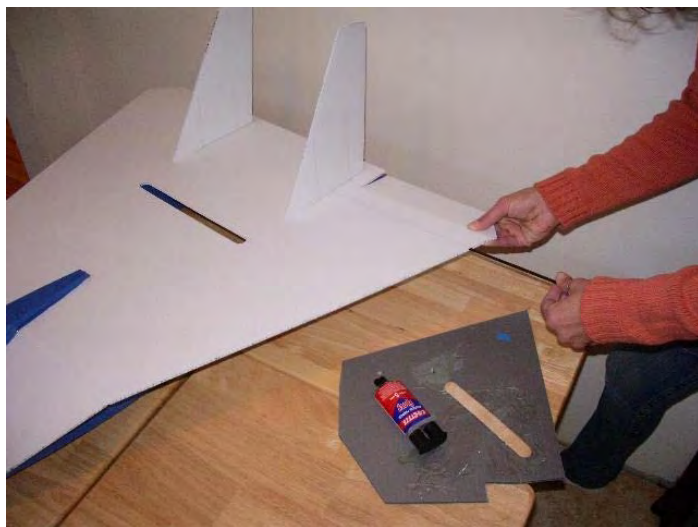
Pierce foam with sharp dowel by pushing it down into Vertical stabilizer dowel holes to clear out foam to for dowels



Insert stabilizer dowels it should be a tight fit not needing glue, remaining removable for transporting.

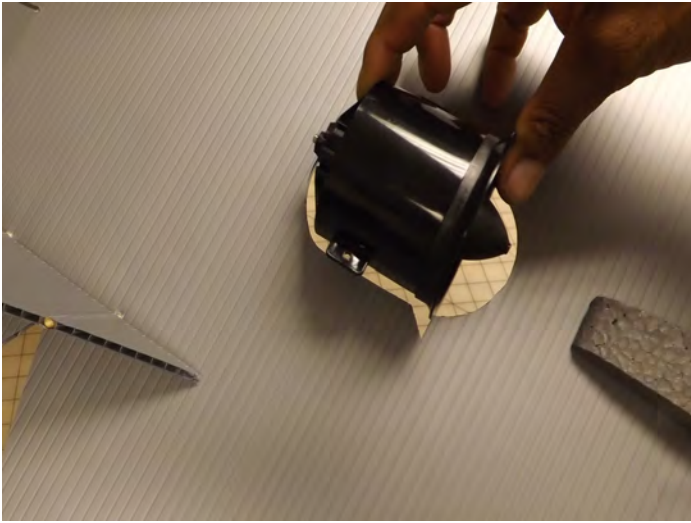


Repeat steps for other side. It's starting to look like a plane now.

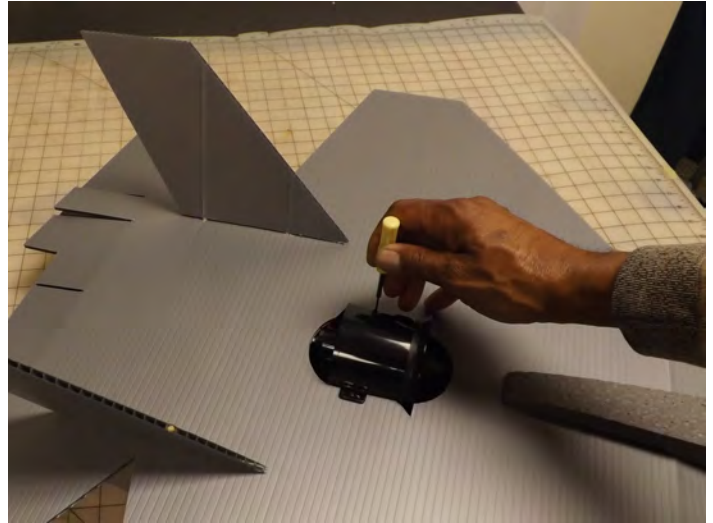


Apply a little 5 minute epoxy to the 3mm carbon fiber shaft, then insert it in the second wing flute from the hinge (see photo)

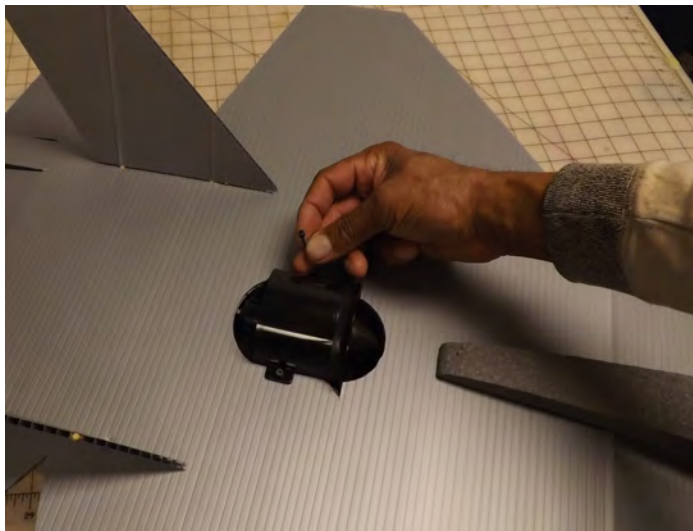
## INSTALLING MOTOR



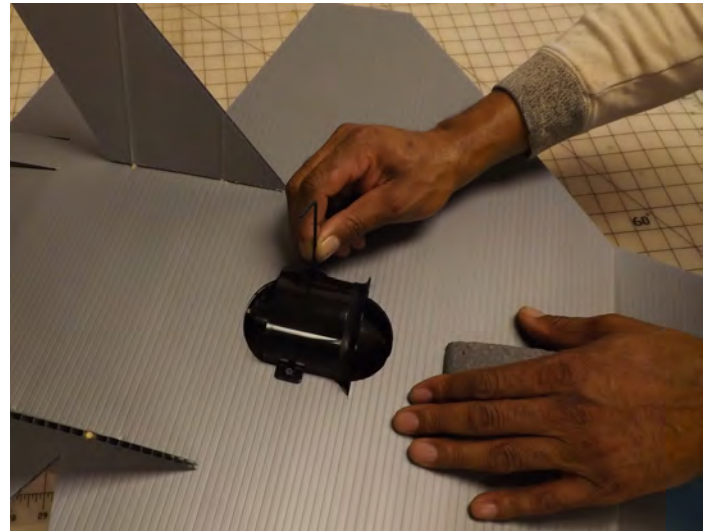
Set your EDF unit in wing with ESC wires facing down **DO NOT** omit intake ring



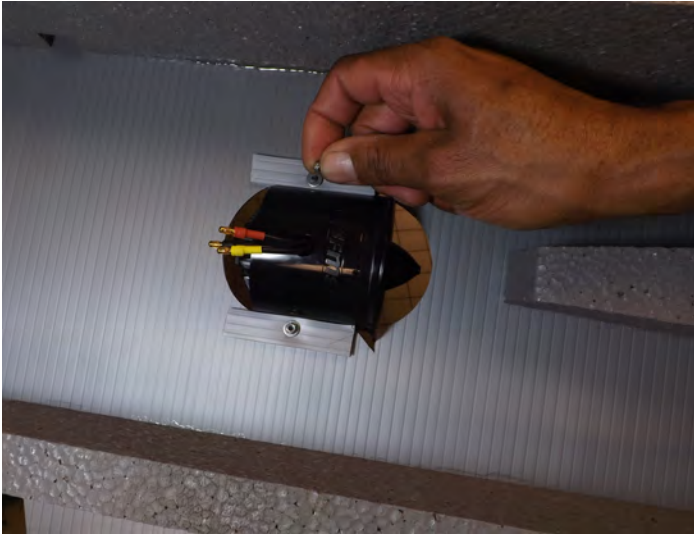
Line up motor straight and square. Mark location and drill holes.



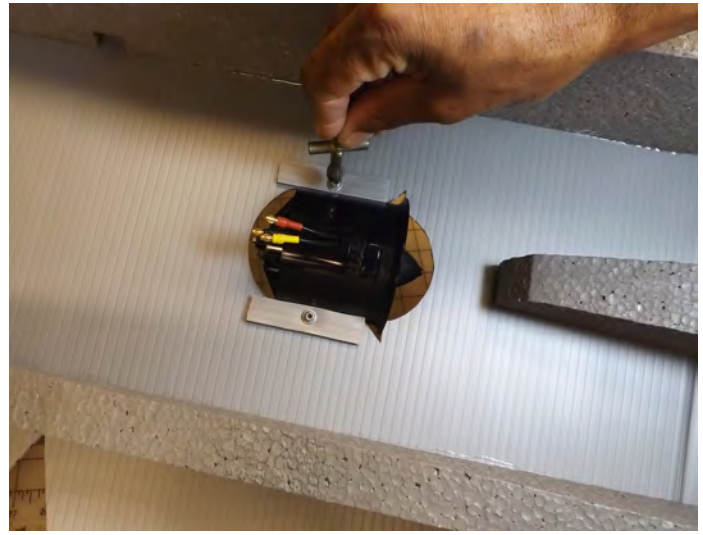
Bolt motor to mount with 3mm x 14mm bolts included.



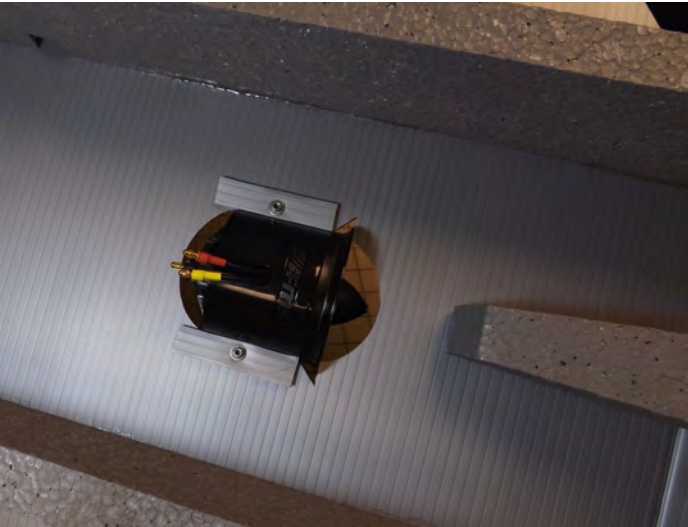




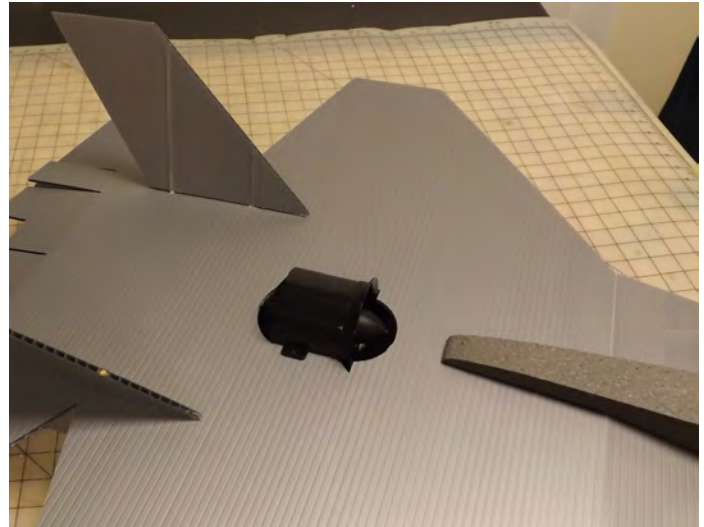
Bolt mount through wing and Coroplast® stiffener don't over tighten bolts.  
(BOTTOM VIEW)



Place washer and nut on bolt do not over tighten. (BOTTOM VIEW)



(BOTTOM VIEW)

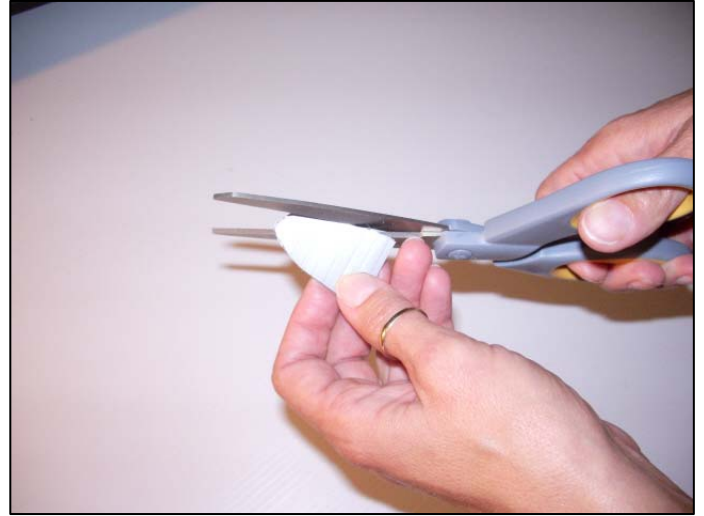


(TOP VIEW)

## CANOPY / BATTERY BOX ASSEMBLY



Carefully trim the canopy to fit the fuselage.



Cut the small piece of Coroplast® to fit the rear part of the canopy.

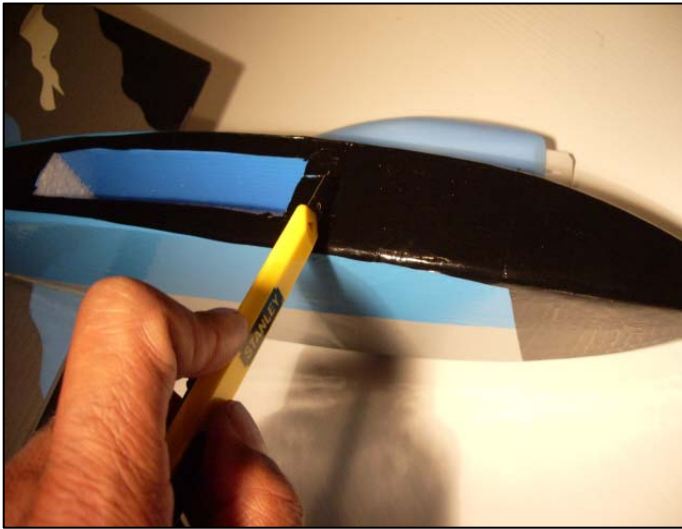


Fit the Coroplast® to the canopy.



Epoxy the Coroplast® piece and CA glue canopy hinge into place to the inside of the canopy, after painting the outside of the canopy.





Cut a slit ½ " in front of the battery box for the canopy hinge.



Test fit the hinge. Then glue into place.



The hinged canopy will cover the battery box.



Drill a small hole and glue magnet to the Coroplast at the rear of the canopy.



Drill a hole the same size as the magnet near the battery box, position it such that it will align with the magnet on the canopy. Ensure the polarity of the magnet is such that they are attracted when the canopy is closed.  
Epoxy the magnet in place

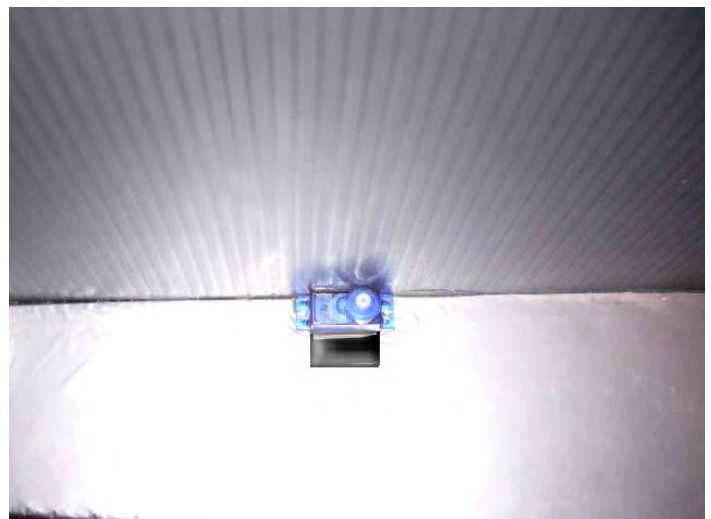


The canopy is now complete.

## RADIO SYSTEM INSTALLATION



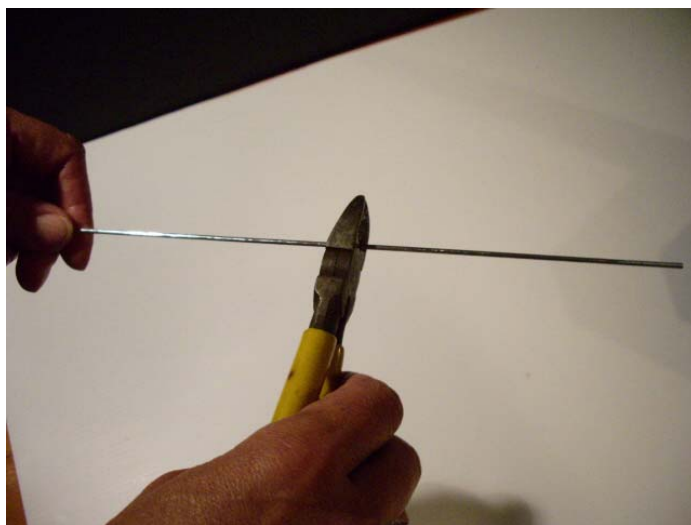
It may be necessary to trim the servo-mounting hole to accommodate the servos.



Install the outboard servo into the mounting hole and glue in place, stacked on top of inboard servo. We recommend 9 gram sub micro or similar type servo.



Attach the control horn to the right elevon, don't over tighten.



Measure and cut the push rod to fit between the servo arm and control horn.



Bend the cut end to accommodate the push rod keeper.



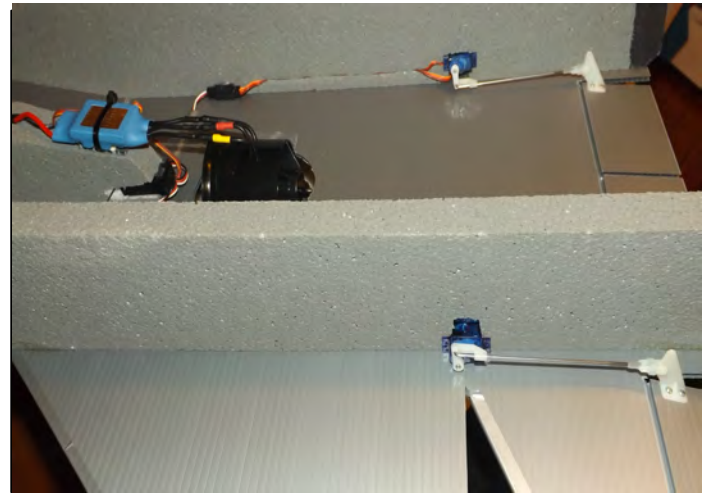
Connect the push rod to the servo arm 2<sup>nd</sup> hole from end and control horn middle hole.  
Repeat steps for left side.

**NOTE: WHEN SERVO IS IN NEUTRAL POSITION, THERE SHOULD BE APPROX. 5/8" OF UP DEFLECTION ON THE OUTBOARD FLIGHT CONTROLS TO MAINTAIN LEVEL FLIGHT.**





Two more servos are placed on the inboard side of the nacelles opposite and above outboard servos as seen on page 15 and 16.



The servos are connected with Y cords to outboard elevon servos.



### **Thrust Vectoring Flight Center Elevon Control Surface Throws**

**FULL UP: about 1 inch up**  
**NEUTRAL: about 3/32 up**  
**FULL DOWN: about 1/2 inch down**

**For Outboard Elevon**  
**(see page 16, 19 and 21)**



Cut slot in right nacelle for servo wire and extension, single knife cut is sufficient here.



Servo wire exits on inside of nacelle.

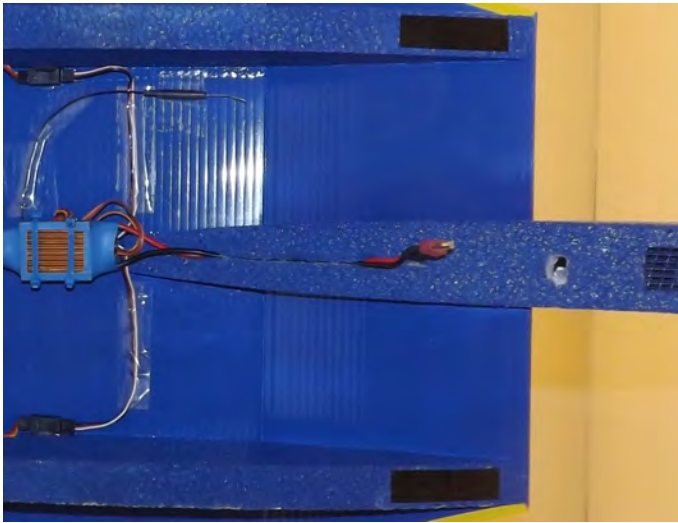


Embed servo wire and extension. Repeat steps for left side.

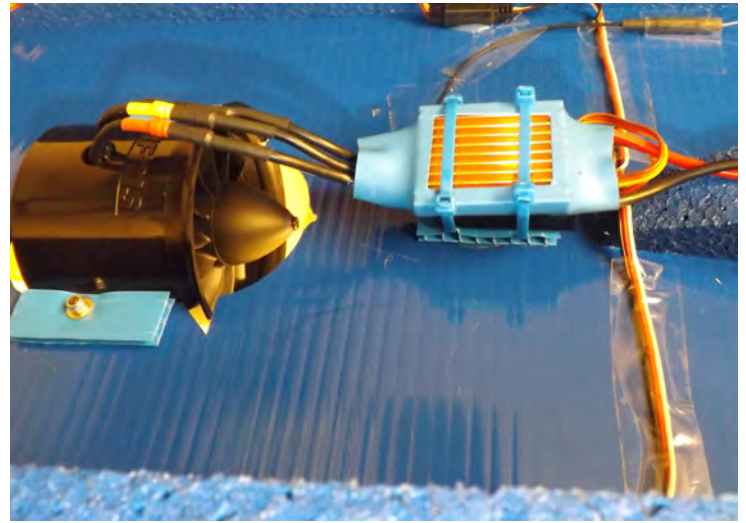


Cut slot for electronic speed control wires, it may be necessary to extend you electronic speed control battery wires in order to reach battery connector exit. Single knife cut is sufficient here, then use flat tip screw driver to open slot.

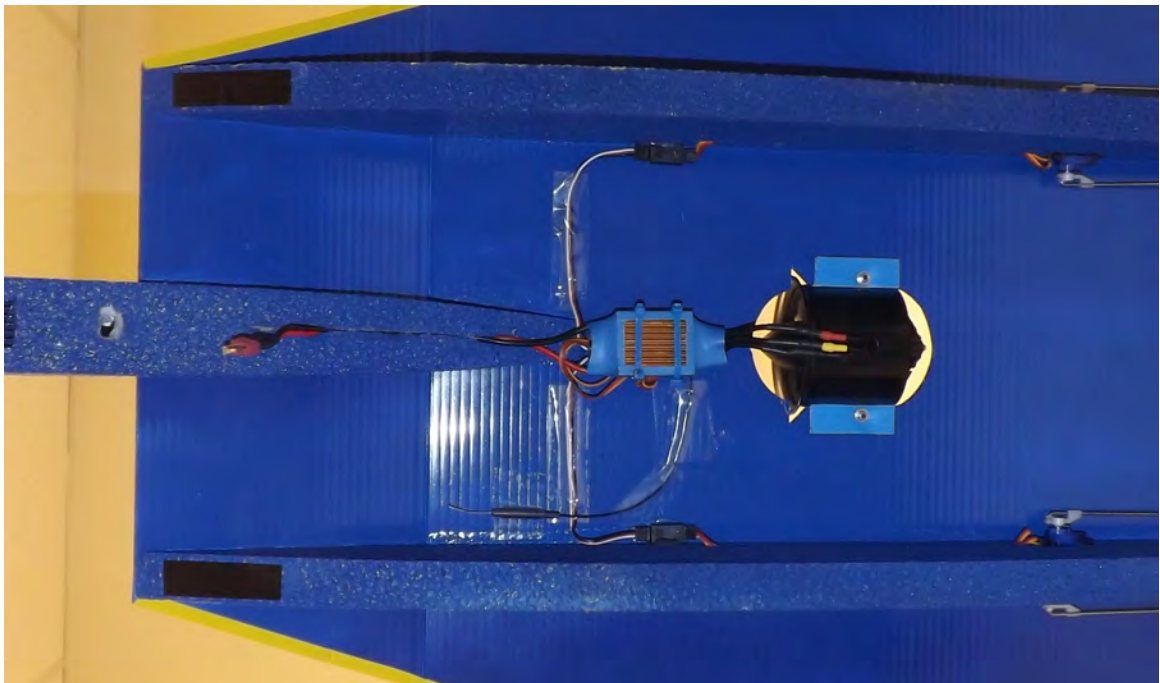




Embed electronic speed control battery wires in slot. Use double sided tape to hold speed control and receiver in place.



you can mount your receiver under or next to your electronic speed control as shown in photo



Use servo Y leads to route wires as shown in photo. Once wires are neatly placed they can be taped in place in the slots and to bottom of wing with clear packaging tape or vinyl tape to match the color of the wing. Care must be taken that the wires and receiver antenna are do become entangle or severed by the fan.

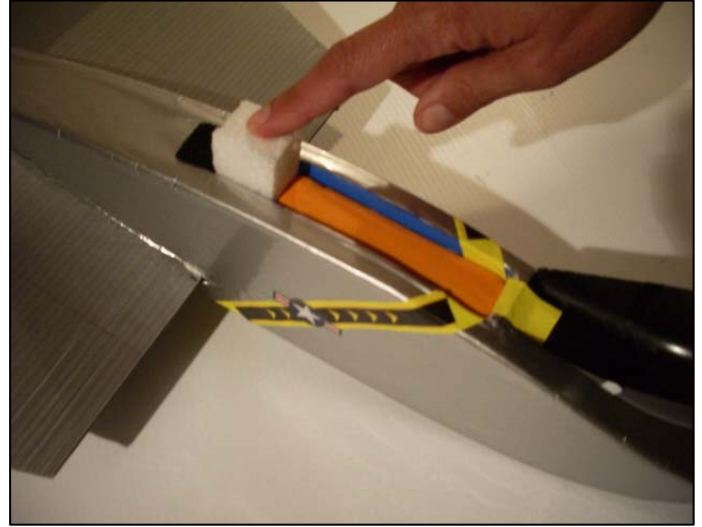


Now you have a complete airplane that can be customized with decals tape or paint to your liking. You may want to cover the exposed flute holes in the leading edge of the wing and tail surfaces with tape. This does not affect the plane's performance.

**NOTE: WHEN ELEVATOR STICK IS IN THE NEUTRAL POSITION THERE SHOULD BE APPROX. 5/8" OF UP DEFLECTION (OR REFLEX) ON BOTH OUTBOARD FLIGHT CONTROL SURFACES BOTH INBOARD SURFACES SHOULD BE 3/16" UP TO MAINTAIN LEVEL FLIGHT.**



The battery box located on the front of the plane is designed to accept 4-cell lipo 14.8 volt 2200 mah or 2600 mah battery.



The foam filler block that is included uses the rest of the space and locks the battery in place. Place it behind the battery for flying in wind. You also may want to use this placement for the first few flights to get used to the plane.



Place the foam filler in front of the battery for flying on non-windy days. You will find if you use the recommended equipment to complete this plane, it will not require any further balancing. Center of Gravity to be 10" to 11.50" from leading edge of wing



# BEFORE YOU FLY

Now you are ready to fly your pride and joy. I highly recommend that if this is your first RC model, you find someone who will be able to instruct you on RC flight. Check out your local AMA clubs at [www.modelaircraft.org](http://www.modelaircraft.org) to find a club near you.

So now that you are at the flying field with your helper. Perform all necessary radio and equipment checks. (Refer to your radio owner's manual) Turn the transmitter on. Connect the Lipo battery to the speed control, with Deans connector (following the instructions for your electronic speed control). Both elevons should be deflected up approx. 5/8". Moving the aileron stick to the right on your transmitter, right elevon should deflect up 1" and left elevon should be deflected down flush with wing. Moving the aileron stick to the left on your transmitter, the left elevon should be deflected up 1" and the right elevon should be deflected down flush with wing. Now pull back on elevator stick both elevons should deflect up 1" on each side. Now push forward on the elevator stick and both elevons should deflect down flush with wing. Have your helper hold the plane keeping clear of the propeller move the throttle stick slowly forward the propeller should spin clockwise standing behind the plane looking from the tail forward. Check that full power and power off match the stick position on your transmitter.

## FIRST FLIGHT

For your first flight have your helper hand launch the plane, tossing the plane at a very slight upward angle with 3/4 throttle. Once the plane is clear of her or his hand apply full throttle and climb to a comfortable altitude to get use to how this plane handles. You will find it's very stable and can fly very slow yet it's very aerobatic. Landing is very simple, point it into the wind throttle back and the plane will settle into a nice comfortable controllable decent.



The T-14 is very rugged and can take a lot of abuse however in extreme heat, the plastic can warp. Avoid leaving it in a hot car or storing it in a manner that distorts the wing or tail. Also in extreme cold this plastic may become stiff and brittle and lose some of its impact resistance.

HAPPY FLYING AND SMOOTH LANDINGS.

