



Giant Thunder Stick Aerobatic Sport **96.5" ARF 55-65cc**

Code : SEA405

ASSEMBLY MANUAL

“Graphics and specifications may change without notice”.



Specifications:

| | | |
|--|---------------------------|--------------|
| Wingspan----- | 245 cm----- | 96.5 inches. |
| Length----- | 204.3 cm----- | 80.4 inches. |
| Wing area----- | 129.7 sq.dm----- | 2010 sq.in. |
| Weight----- | 8.2 kg----- | 18.1 lbs. |
| Engine----- | 55 - 65cc. | |
| Radio----- | 7 channels with 7 servos. | |
| Motor 360/ 6000watt// ESC 160A-200A/ Lipo 12s. | | |



INTRODUCTION

Thank you for choosing the **Giant Thunder Stick Aerobatic Sport 96.5" ARF 55-65cc** ARTF by **SG MODELS** . The **Giant Thunder Stick Aerobatic Sport 96.5" ARF 55-65cc** was designed with the intermediate/advanced sport flyer in mind. It is a semi scale airplane which is easy to fly and quick to assemble. The airframe is conventionally built using balsa, plywood to make it stronger than the average ARTF, yet the design allows the aeroplane to be kept light. You will find that most of the work has been done for you already. The motor mount has been fitted and the hinges are pre-installed. Flying the **Giant Thunder Stick Aerobatic Sport 96.5" ARF 55-65cc** is simply a joy.

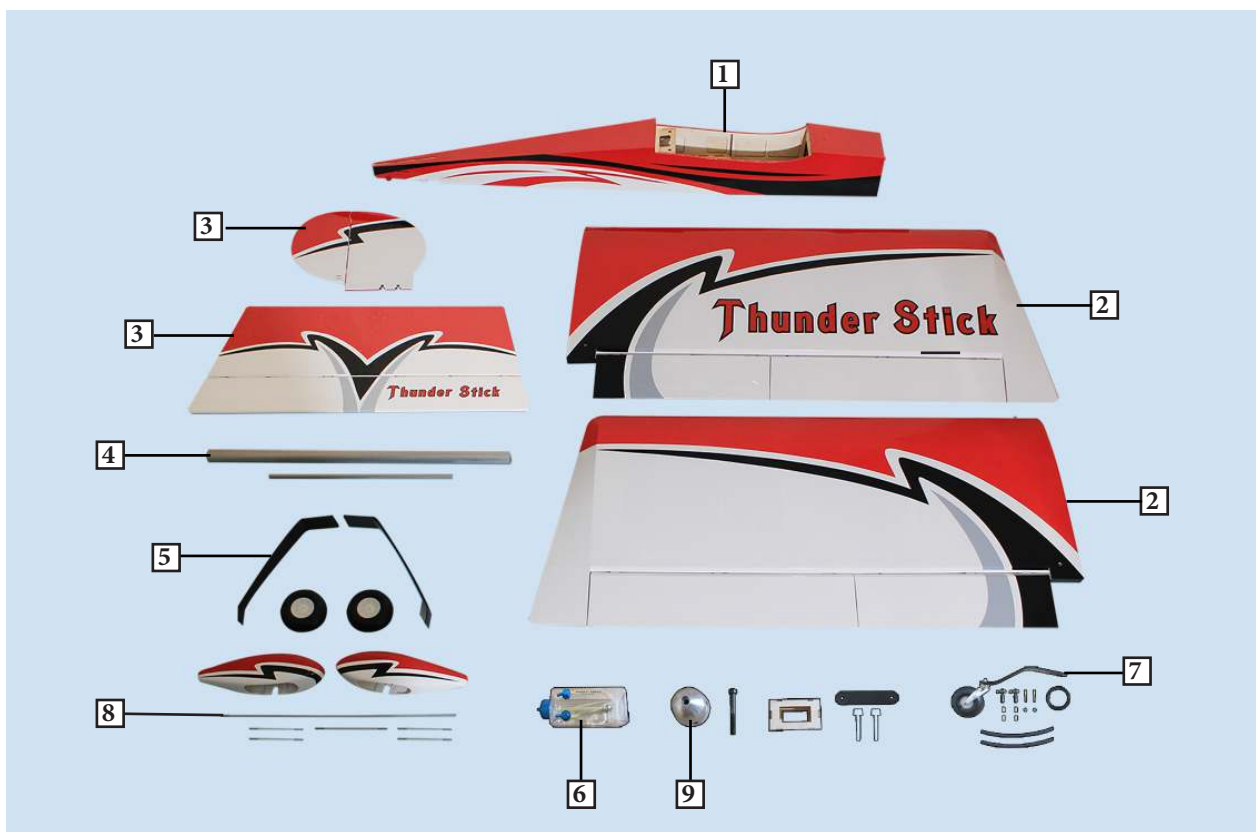
This instruction manual is designed to help you build a great flying aeroplane. Please read this manual throughly before starting assembly of your **Giant Thunder Stick Aerobatic Sport 96.5" ARF 55-65cc** Use the parts listing below to indentify all parts.

WARNING

Please be aware that this aeroplane is not a toy and if assembled or used incorrectly it is capable of causing injury to people or property. WHEN YOU FLY THIS AEROPLANE YOU ASSUME ALL RISK & REPONSIBILITY.

If you are inexperienced with basic R/C flight we strongly recommend you contact your R/C supplier and join your local R/C model Flying Club. R/C Model Flying Clubs offer a variety of training procedureds designed to help the new pilot on his way to successful R/C flight. They will also be able to advise on any insurance and safety regulations that may apply.

KIT CONTENTS



KIT CONTENTS

SEA405 Giant Thunder Stick Aerobatic Sport 96.5" ARF 55-65cc

1. Fuselage
2. Wing set (2)
3. Tail set (2)
4. Wing tube
5. landing gear
6. Fuel tank
7. Tail wheel
8. Pushrod
9. Spinner

ADDITIONAL ITEMS REQUIRED

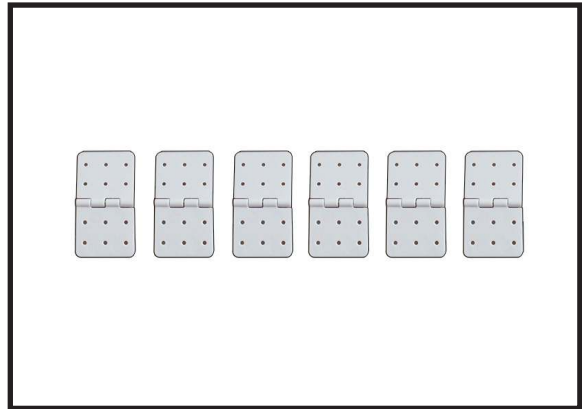
- 55-65cc gasoline engine.
- Computer radio 7 channel with 7 servos.
- Glow plug to suit engine.
- Propeller to suit engine.
- Protective foam rubber for radio system.

TOOLS & SUPPLIES NEEDED

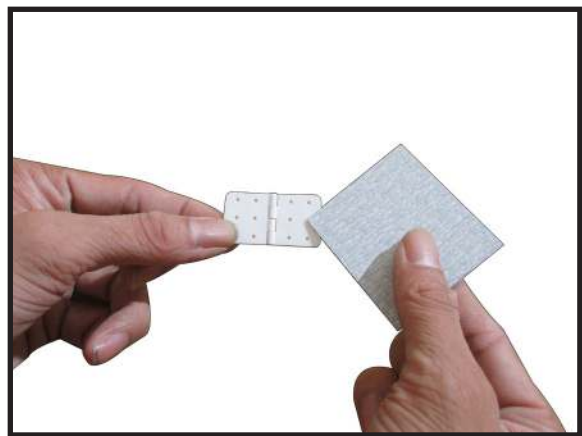
- Thin cyanoacrylate glue.
- Medium cyanoacrylate glue.
- 30 minute epoxy.
- 5 minute epoxy.
- Hand or electric drill.
- Assorted drill bits.
- Modelling knife.
- Straight edge ruler.
- 2mm ball driver.
- Phillips head screwdriver.
- 220 grit sandpaper.
- 90° square or builder's triangle.
- Wire cutters.
- Masking tape & T-pins.
- Thread-lock.
- Paper towels.

HINGING THE FLAP

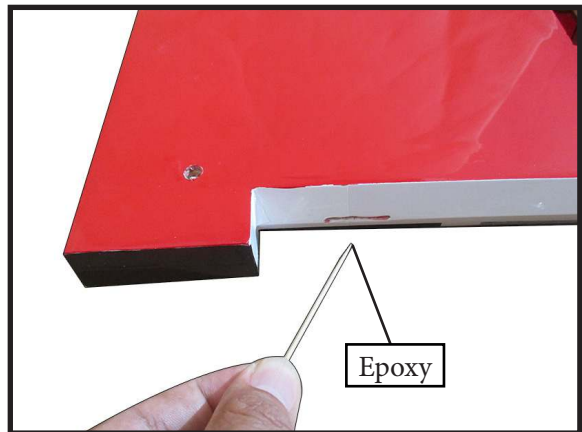
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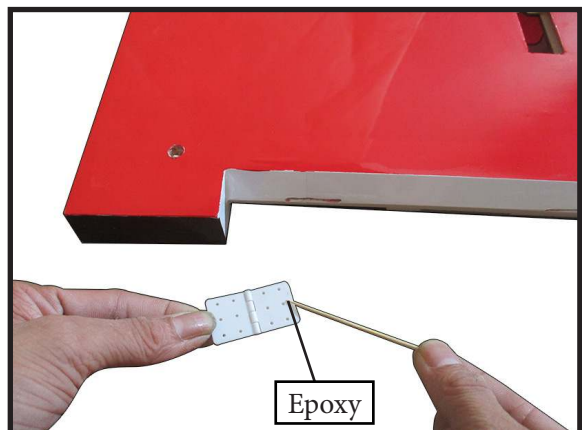
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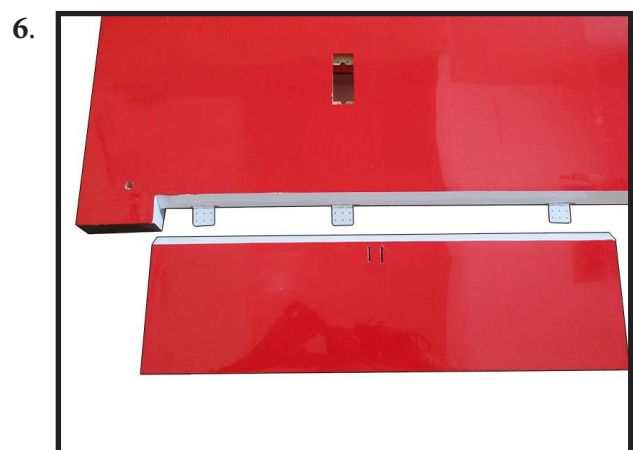


3.



4.

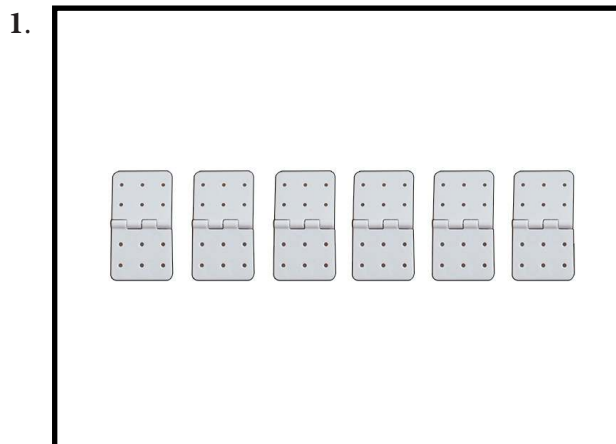




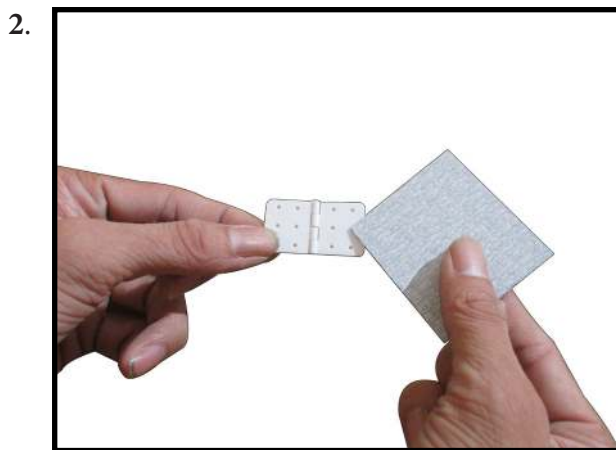
HINGING THE AILERON

Note : *The control surfaces, including the ailerons, elevators, and rudder, are prehinged with hinges installed, but the hinges are not glued in place. It is imperative that you properly adhere the hinges in place per the steps that follow using a high-quality thin C/A glue.*

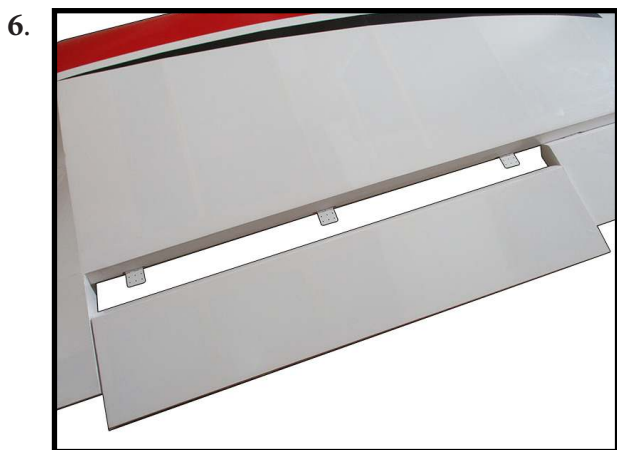
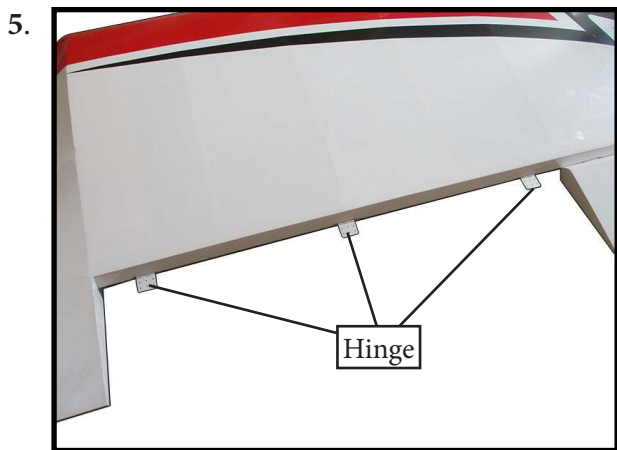
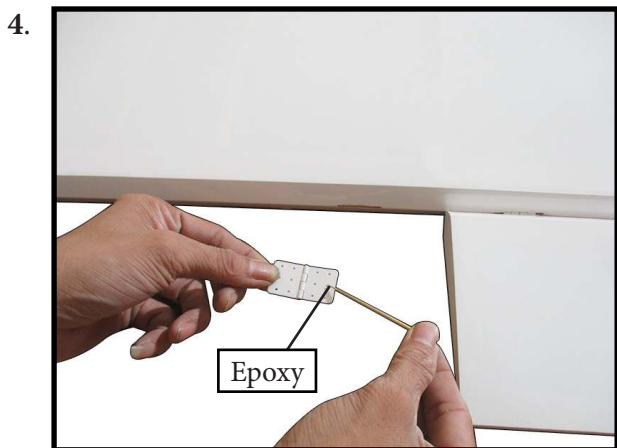
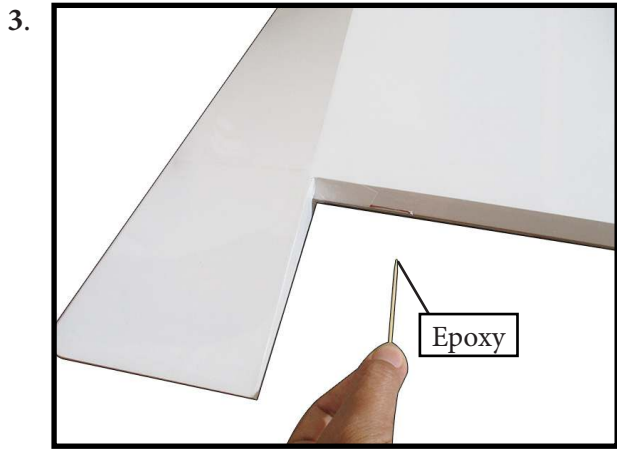
Carefully remove the aileron from one of the wing panels. Note the position of the hinges.



Prepare the aileron hinges by scuffing the area that will be inserted into the wing or flying surface with medium grit sand paper. Be careful not to remove too much material. Use isopropyl alcohol, and a paper towel to remove any excess debris that remains on the hinges.



Mix a sufficient amount of 30-minute epoxy in a cup, and with a toothpick, smear epoxy in the hinge pockets of the wing panel and aileron. Slowly and carefully, insert each hinge into the wing panel. Partially remove and re-install the hinge to ensure that you've completely coated it with glue. Clean up any excess epoxy with isopropyl alcohol, and tape the aileron in place to cure.



Press the aileron and wing together such that less than a 1/64" hinge line gap exists between the aileron and wing. The bevels should virtually touch. Use a paper towel and rubbing alcohol to wipe away any visible epoxy around the hinges.

Allow the glue to fully cure for at least 6 hours.

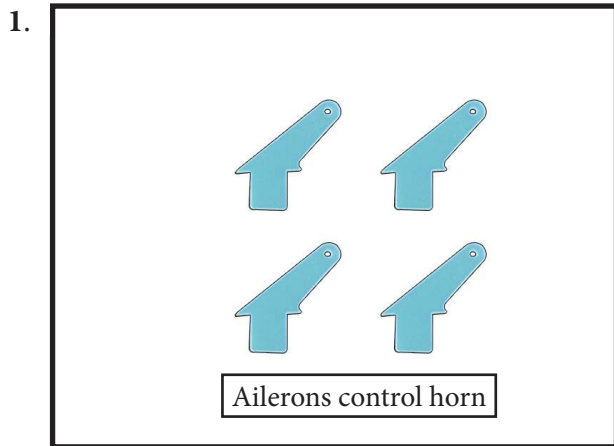
When fully cured, move each control surface throughout its travel range several times to break away any epoxy in the hinge. Be sure to deflect the surface fully.



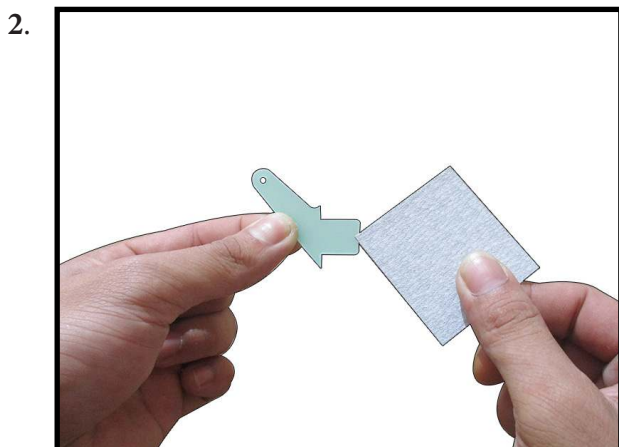
Note : *Work the aileron up and down several times to "work in" the hinges and check for proper movement.*

INSTALL THE AILERONS CONTROL HORN

Locate the aileron and flap control horns. The taller control horn is used for the ailerons, and the shorter horn for the flaps.



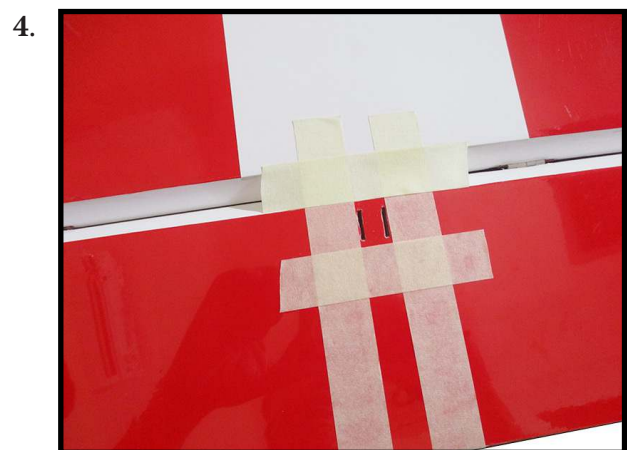
Use sandpaper to scuff the bottom of the aileron and flap control horns. Use a paper towel and isopropyl alcohol to remove any oils or debris from the control horns.



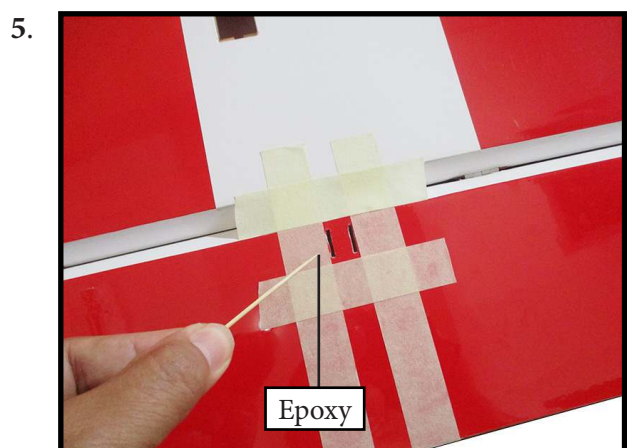
Check the fit of the control horns to the aileron and flap. They should rest flush against the control surface as shown.



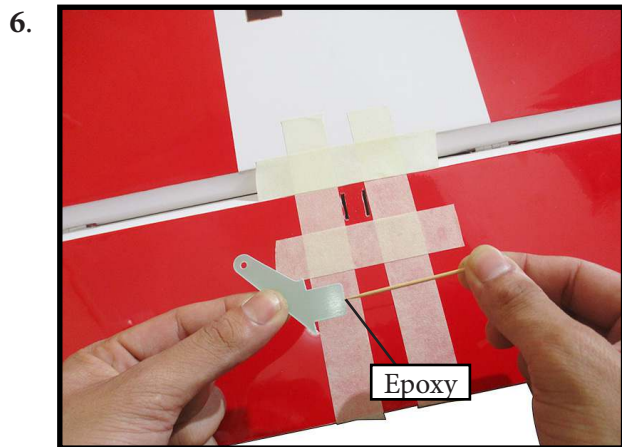
Place low-tack tape 1/32 inch (1mm) from the control horn slot. This will prevent epoxy from getting on the control surface when the control horns are glued in place.



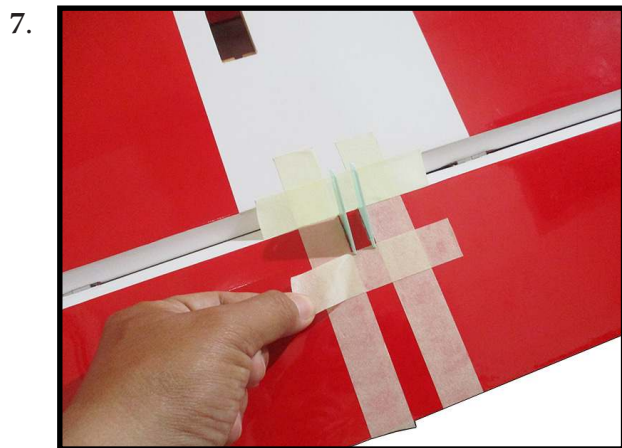
Remove the control horns from the control surfaces. Apply epoxy to the slot in the aileron and flap. Make sure the epoxy gets into the slot for a good bond between the surfaces and control horn.



Apply epoxy to the area of the control horns that fist into the slots. Use enough epoxy so the control horns will be fully bonded to the fied surfaces.

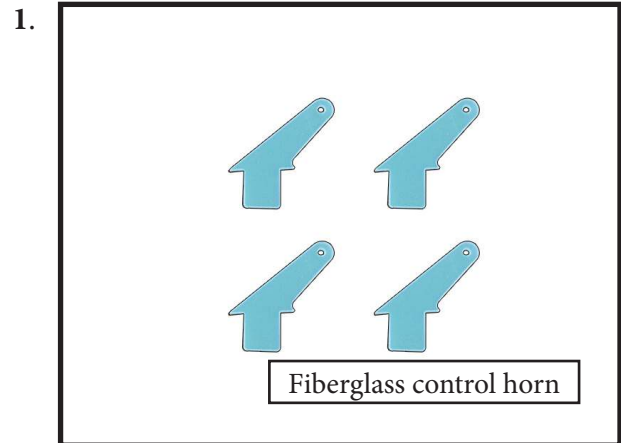


Before the epoxy fully cures, remove the tape from around the control horn. This will allow the epoxy to flow around the control horn, creating a small fillet between the control horn and surface for a finished look and secure bond.

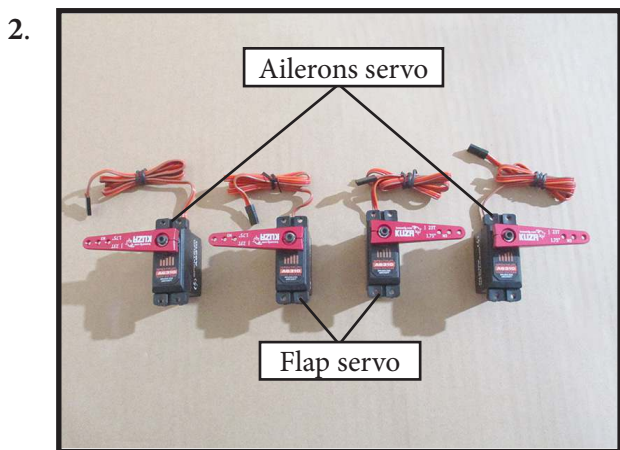
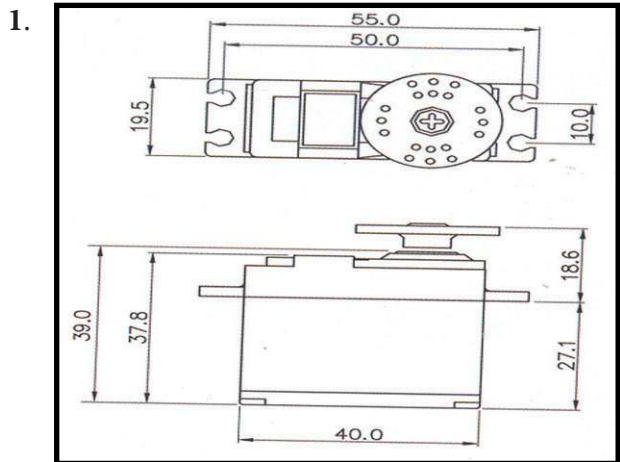


INSTALL FLAP CONTROL HORN

Install the flap control horn using the same method as same as the aileron control horns.



INSTALLING THE AILERON SERVOS

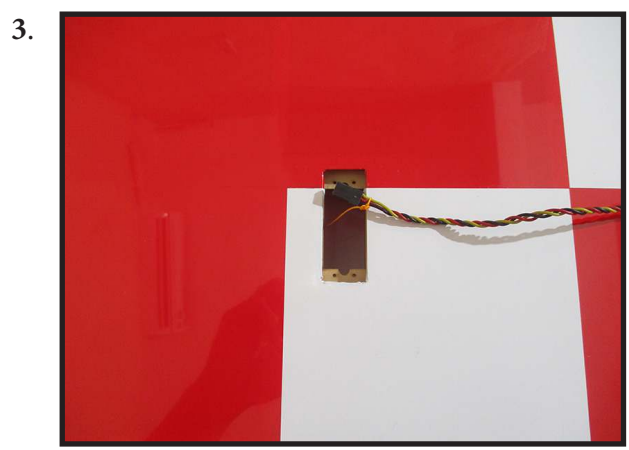


Minimum servo spec.
Torque : 27.3 kg-cm (378 oz-in) @6.0V
 33.7 kg-cm (467 oz-in) @7.4V
 38.2 kg-cm (530 oz-in) @8.4V
Transit Speed : 0.14 sec/60° @6.0V
 0.11 sec/60° @7.4V
 0.10 sec/60° @8.4V

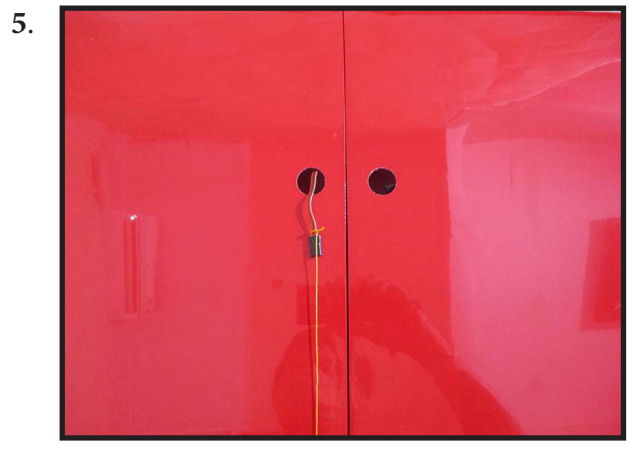
Install the rubber grommets and brass collets onto the aileron servo. Test fit the servo into the aileron servo mount.

Because the size of servos differ, you may need to adjust the size of the precut opening in the mount. The notch in the sides of the mount allow the servo lead to pass through.

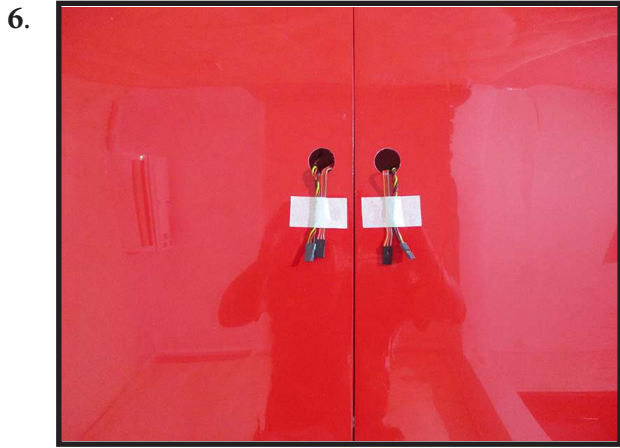
Using a small weight (Weighted fuel pickup works well) and thread, feed the string through the wing as indicated.



Attach servo lead to the aileron servo. Attach the string to the servo lead and carefully thread it through the wing. Once you have thread the lead through the wing, remove the string so it can use for the other servo lead.



Tape the servo lead to the wing to prevent it from falling back into the wing.



Reinstall the servo into the servo mount and secure the servo in place using the wood screws provided with your radio system.

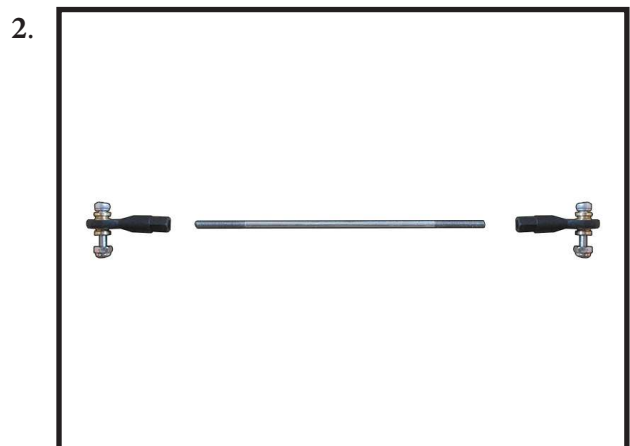
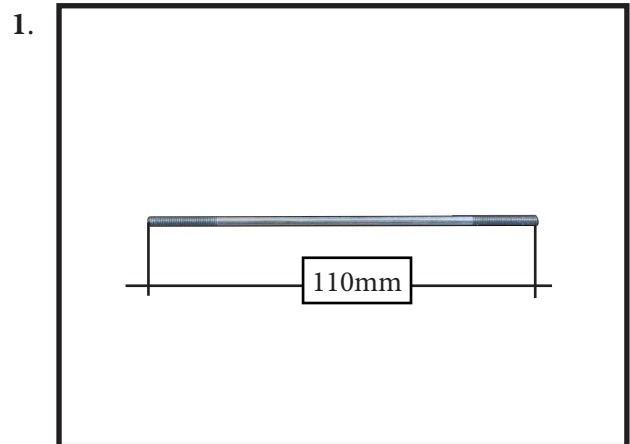


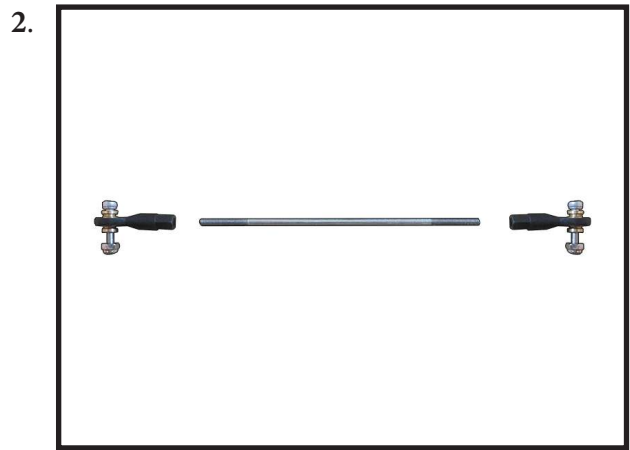
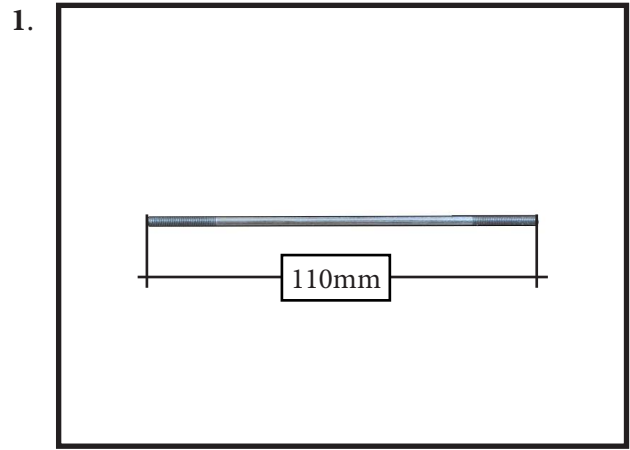
Install servo with servo mounting screws.



AILERON PUSHROD INSTALLATION

Please see below pictures.





INSTALLING THE FLAP SERVO

Repeat the procedure for the flap servo.



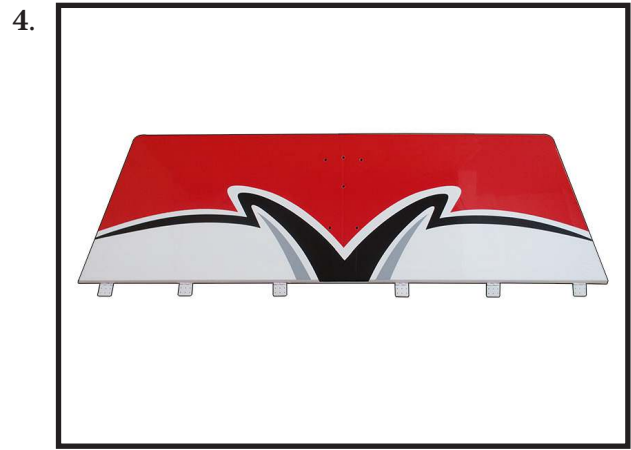
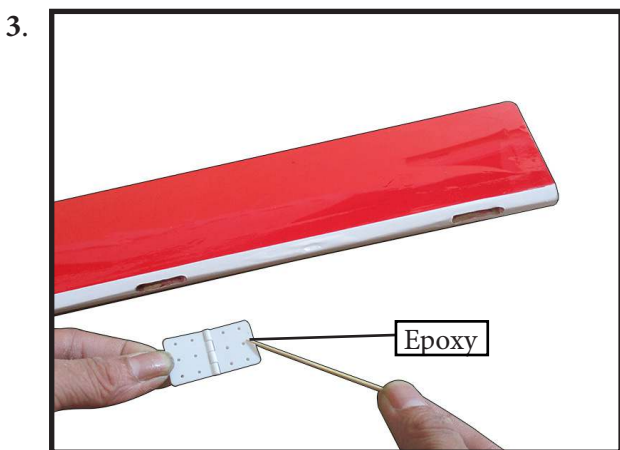
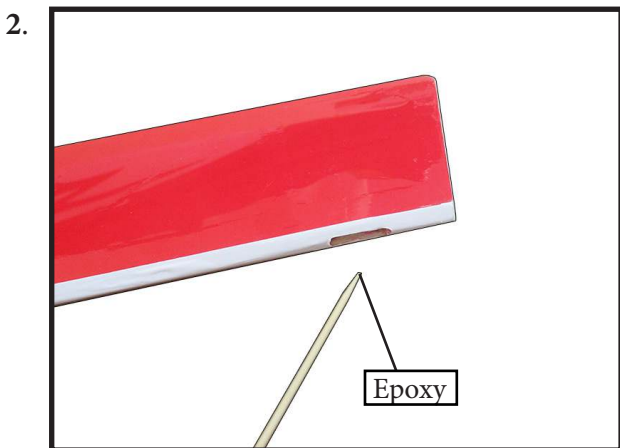
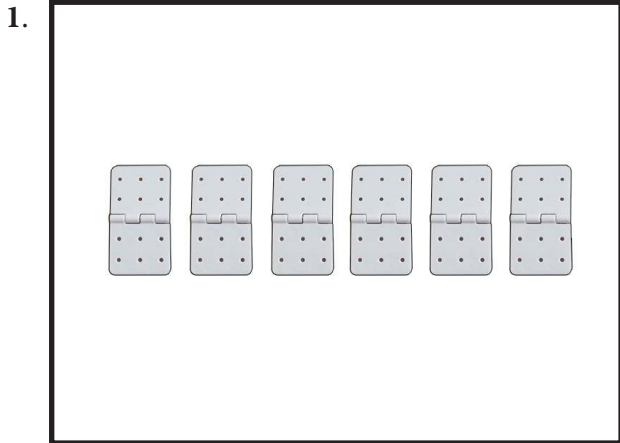
INSTALLING THE FLAP PUSHROD

Repeat the procedure for the aileron pushrod.



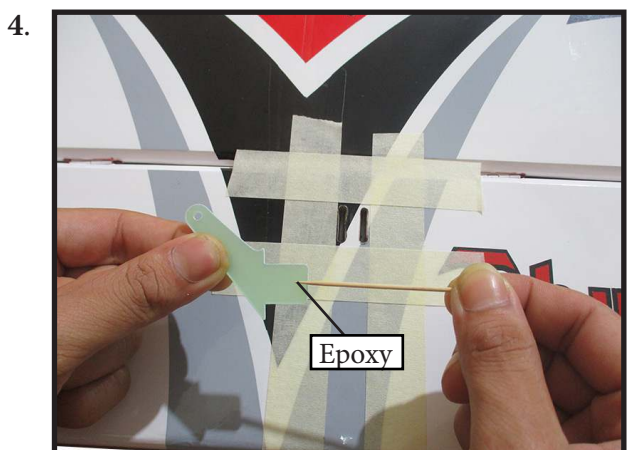
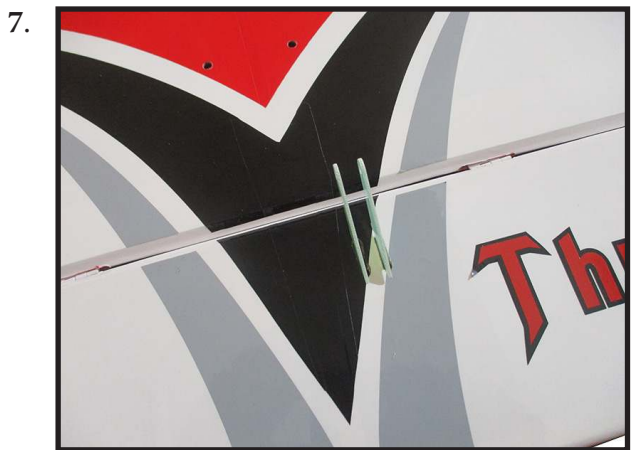
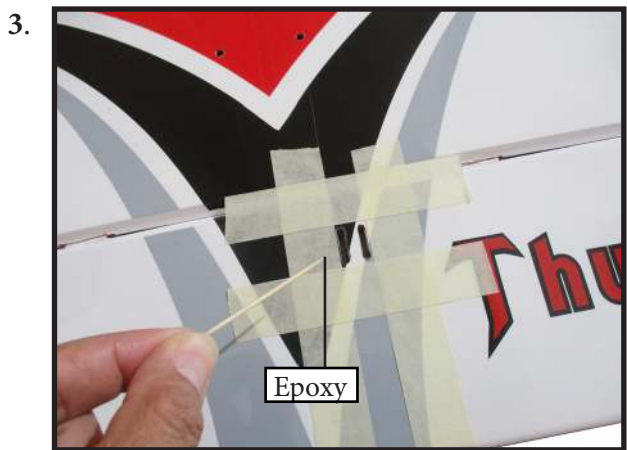
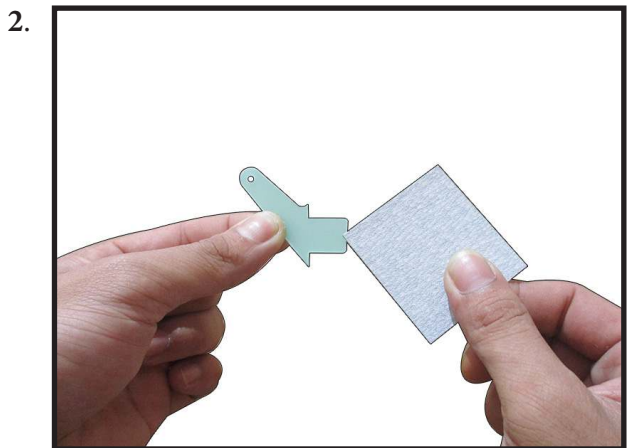
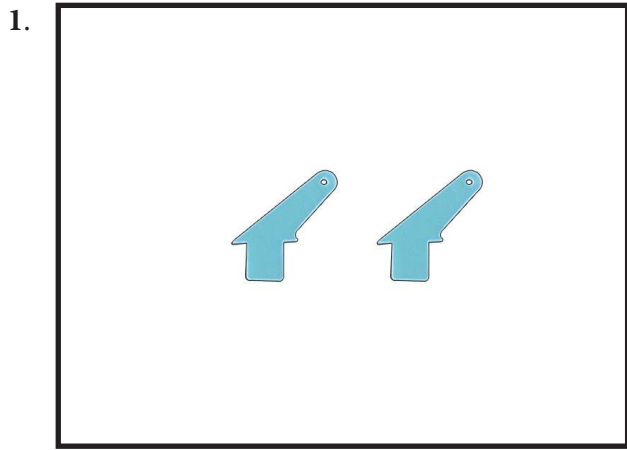
INSTALL NAIL HINGE ELEVATOR

Test fit the hinges into the elevator, and then the hinges into the tail. Ensure that the hinge pockets line up, and that the hinges move freely.

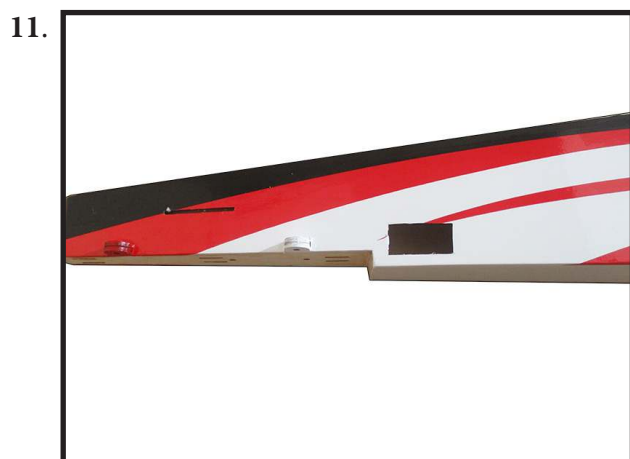
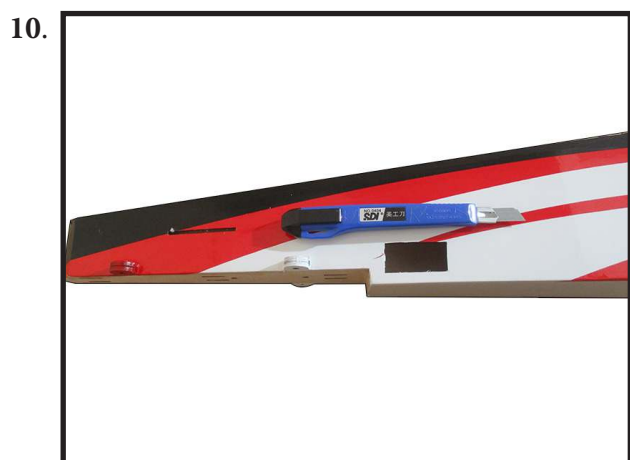


INSTALL ELEVATOR CONTROL HORN

Install the elevator control horn using the same method as same as the elevator control horns.



You cut horizontal tail sever hole.



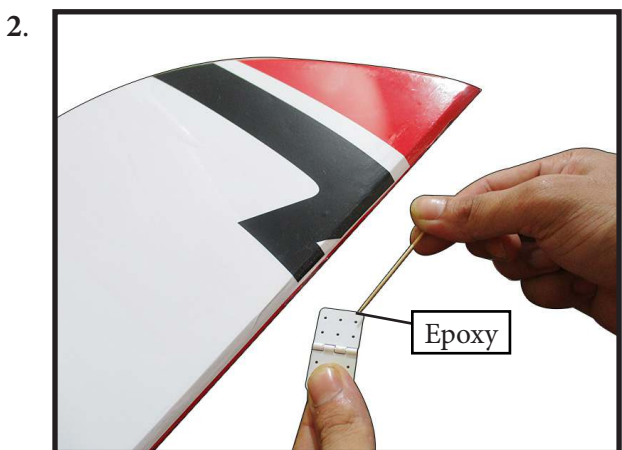
Maximum Servo spec.
Torque : 126.6 oz-in (9.11 kg-cm) @ 6.0V;
178 oz-in (12.82 kg-cm) @ 7.4V; 248 oz-in (17.86 kg-cm) @ 8.4V



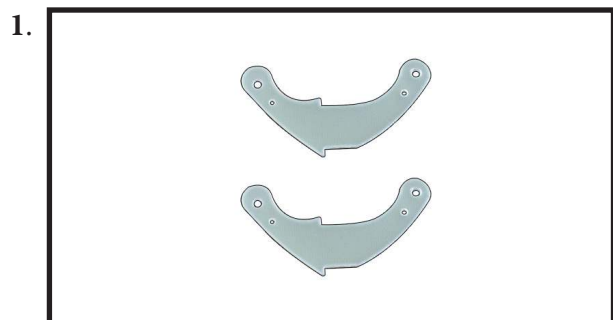


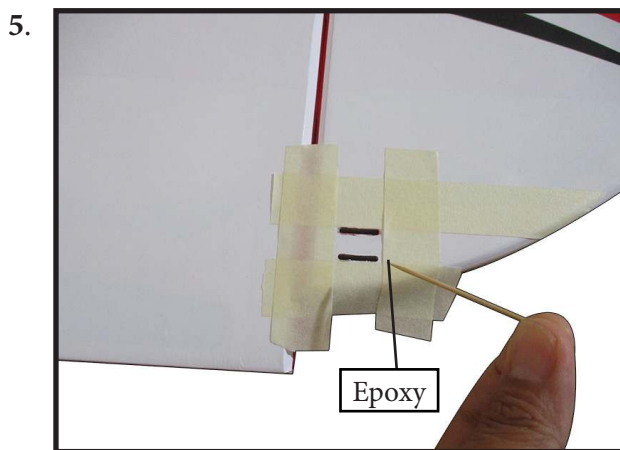
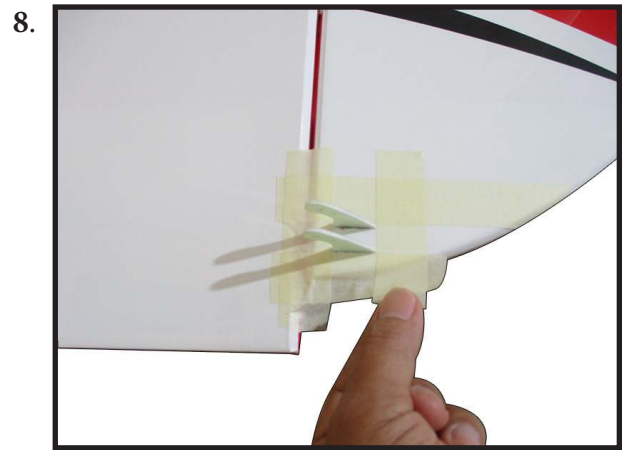
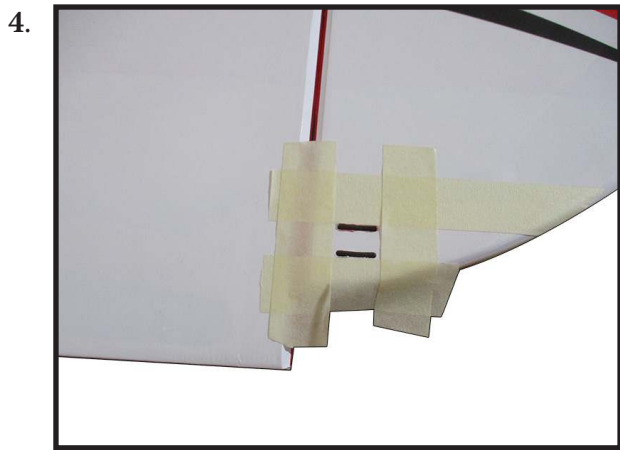
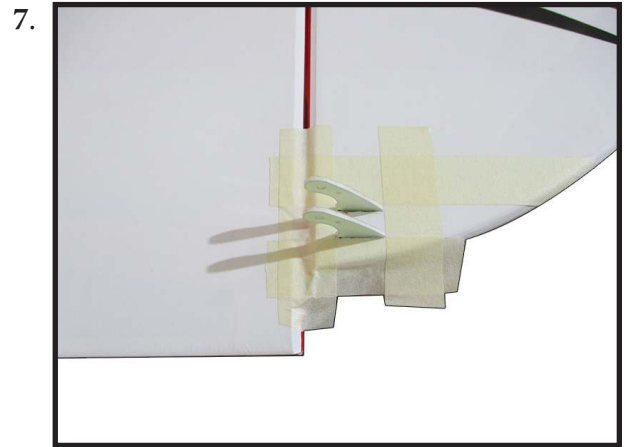
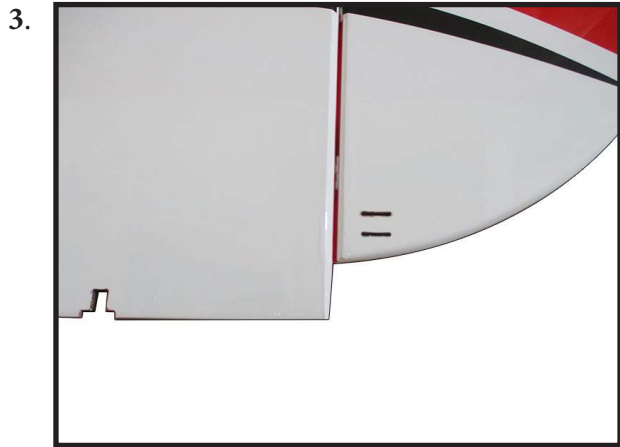
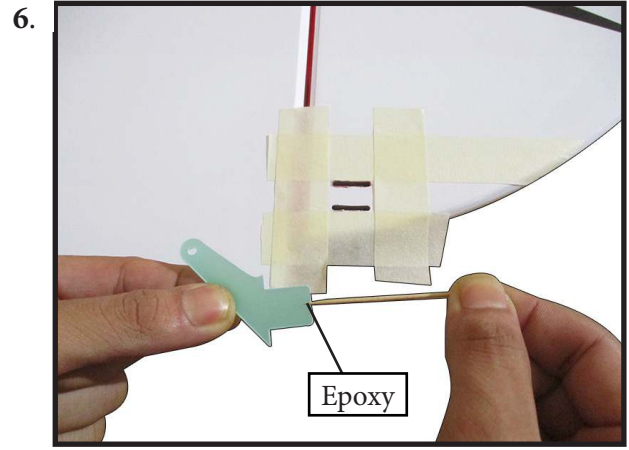
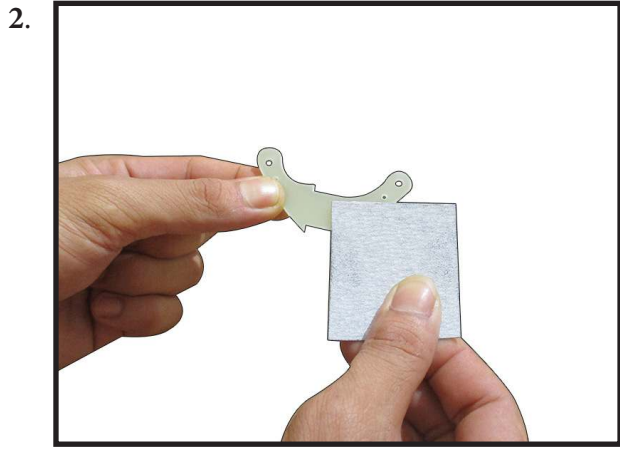
INSTALL HINGE FOR RUDDER AND FIN

Please study images below.



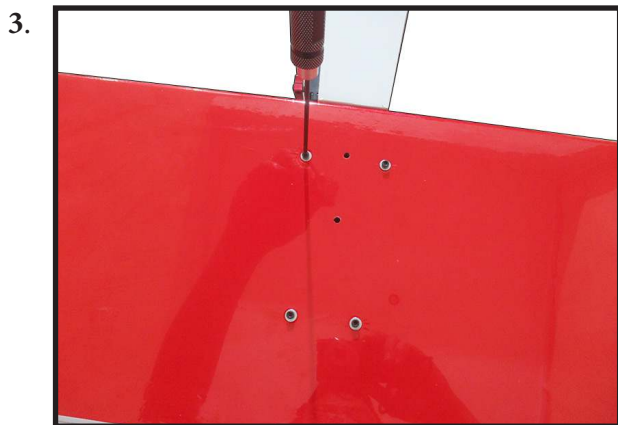
INSTALL RUDDER CONTROL HORN





HORIZONTAL TAIL INSTALLATION

Please study images below.



VERTICAL STABILIZER INSTALLATION

Slide the vertical stabilizer into the slot in the top of the fuselage. The rear edge of the stabilizer should be flush with the rear edge of the fuselage and the lower rudder hinge should engage the precut hinge slot in the lower fuselage. The bottom edge of the stabilizer should also be firmly pushed against the top of the horizontal stabilizer.

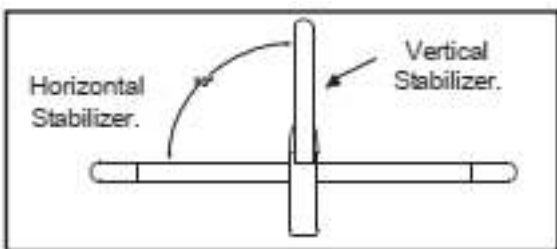


While holding the vertical stabilizer firmly in place, use a pen and draw a line on each side of the vertical stabilizer where it meets the top of the fuselage.





! When cutting through the covering to remove it, cut with only enough pressure to only cut through the covering itself. Cutting into the balsa structure may weaken it.



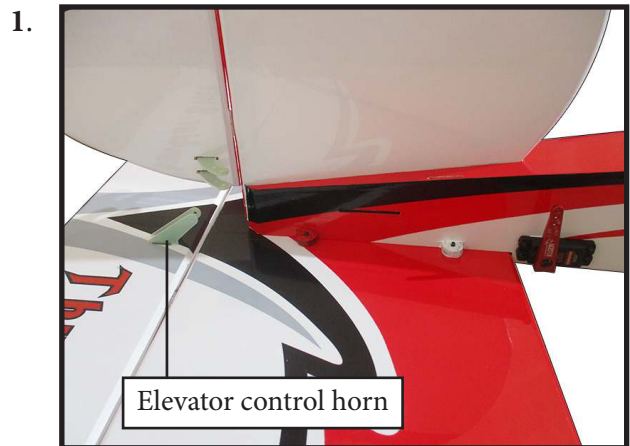
When you are sure that everything is aligned correctly, mix up a generous amount of 30 Minute Epoxy. Apply a thin layer to the mounting slot in the top of the fuselage and to the sides and bottom of the vertical stabilizer mounting area. Set the stabilizer in place and realign. Double check alignment once more before the epoxy cures. Hold the stabilizer in place with masking tape and remove any excess epoxy using a paper towel and rubbing alcohol. Allow the epoxy to fully cure before proceeding.



ELEVATOR PUSHROD HORN INSTALLATION

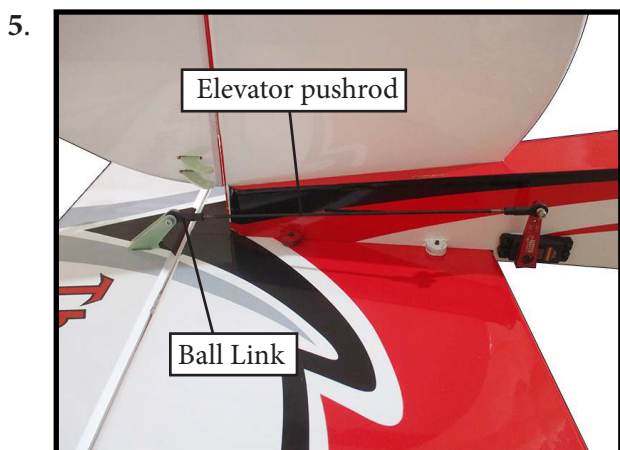
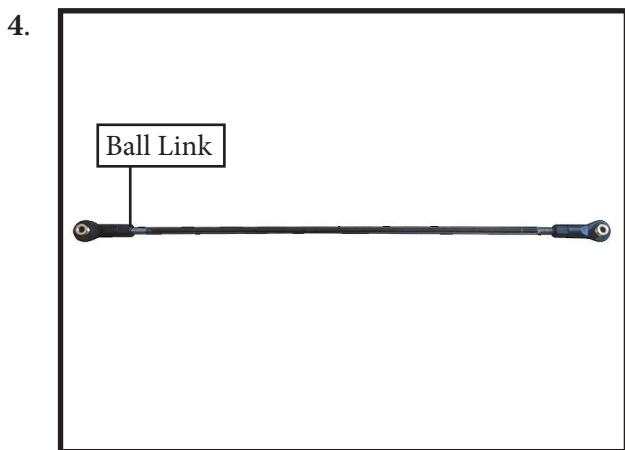
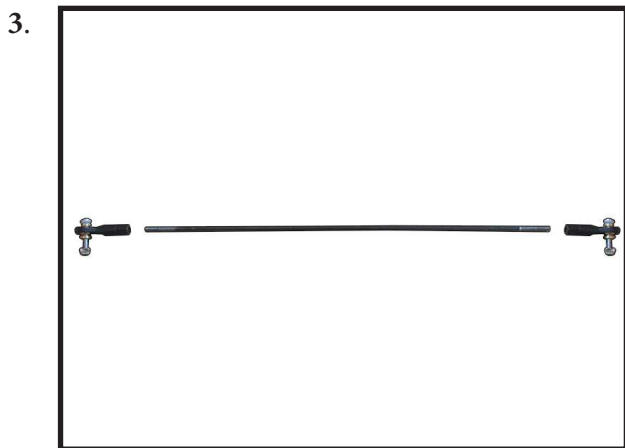
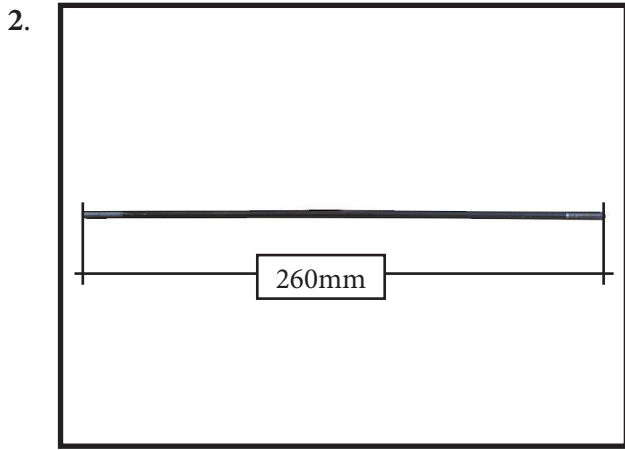
Install the elevator control horn using the same method as with the aileron control horns.

Position the elevator control horns on both side of the elevator.



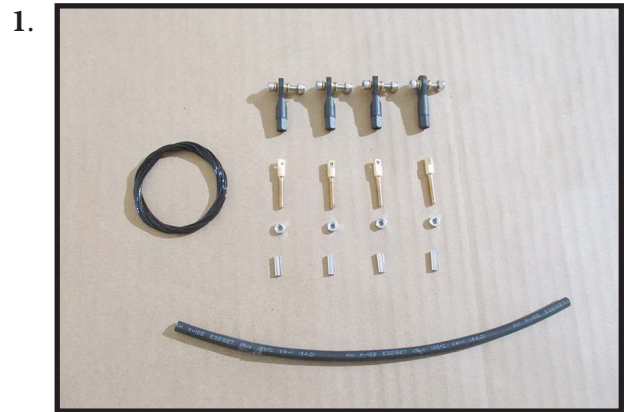
Thread one clevis and M3 lock nut on to each elevator control rod. Thread the horns on until they are flush with the ends of the control rods.

Assemble the elevator and rudder pushrods as shown in images below.



INSTALL RUDDER CABLE AND SERVO

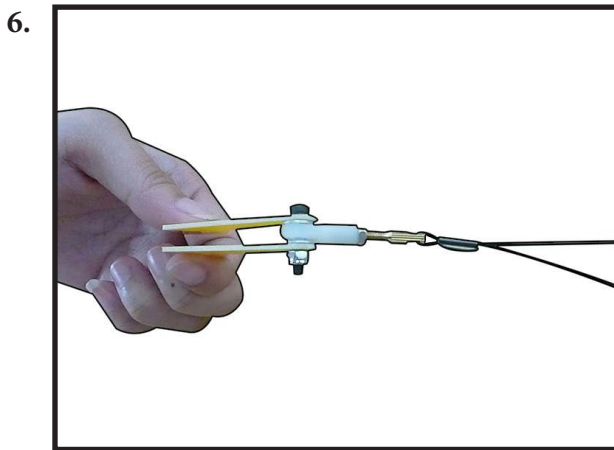
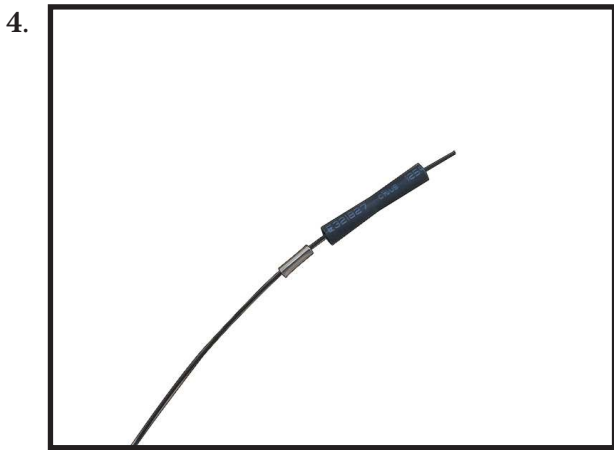
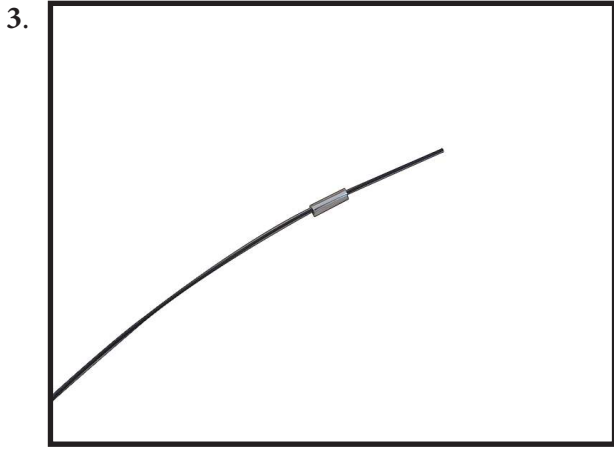
NOTE : servos arm is not provided from manufacturer.



Tape the rudder balance tab to the top leading edge of the vertical fin in the neutral position as shown. This ensures the rudder is straight when the cables are attached.



Thread the rudder cable through a brass swage tube, then the threaded coupler, and back through the brass swage tube on both sides. Pull light tension on the cable through the coupler on both sides as shown.



Loop the cable back through the brass swage tube and tighten the second loop through the brass swage tube as shown.



Crimp the brass tube with a crimping tool or pliers.



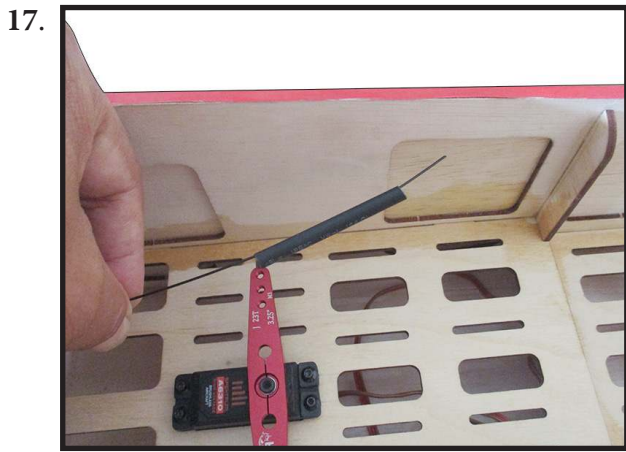
Cut off excess cable as shown.



Feed one rudder cable through the pre installed cable exit tube in the rear of the fuse toward the front of the fuse. Repeat for other side.

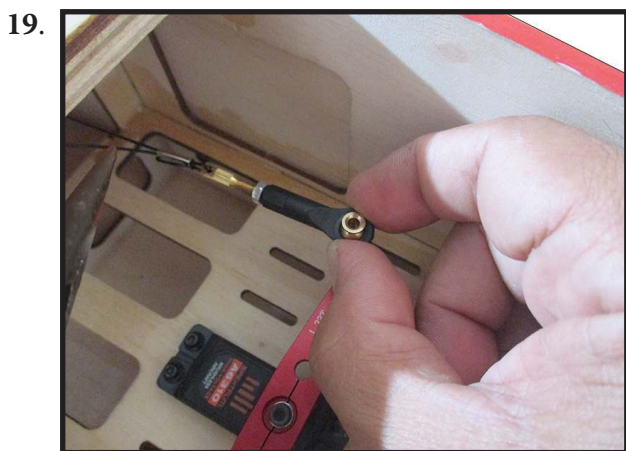
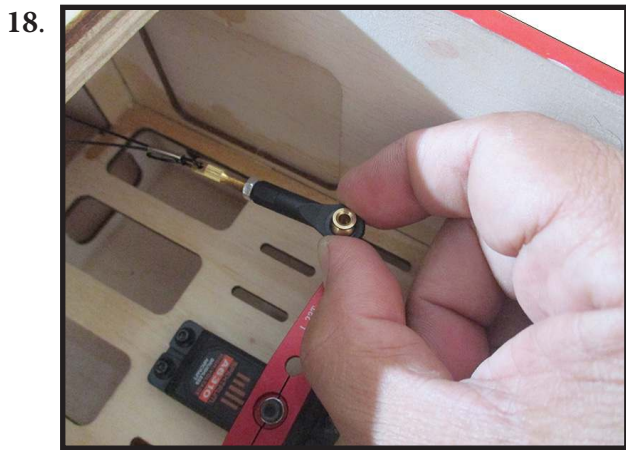


Thread cable through brass swage tube.



Thread cable through the threaded coupler hole, and back through the brass swage tube as shown.

Loop the cable back through the brass swage tube and pull tight.



Crimp the brass swage tube with a crimping tool or pliers.

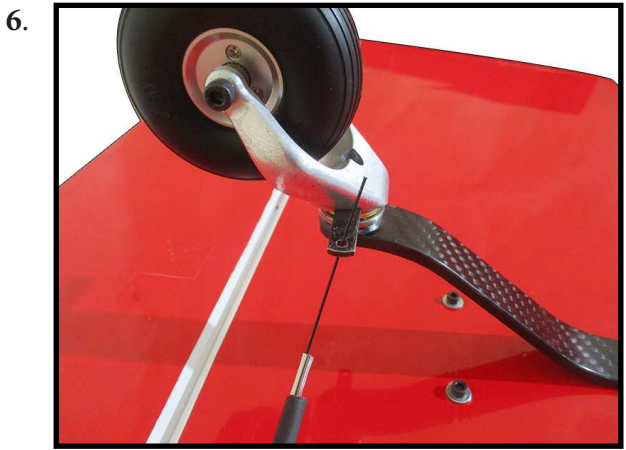
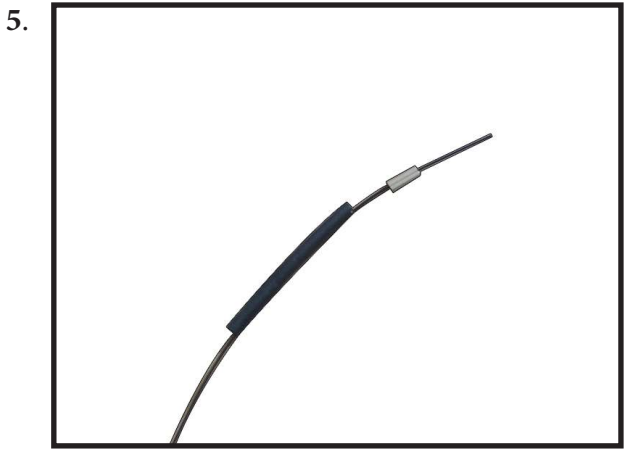
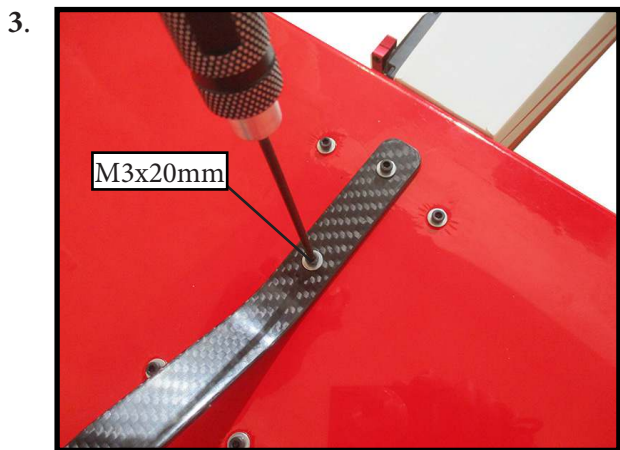
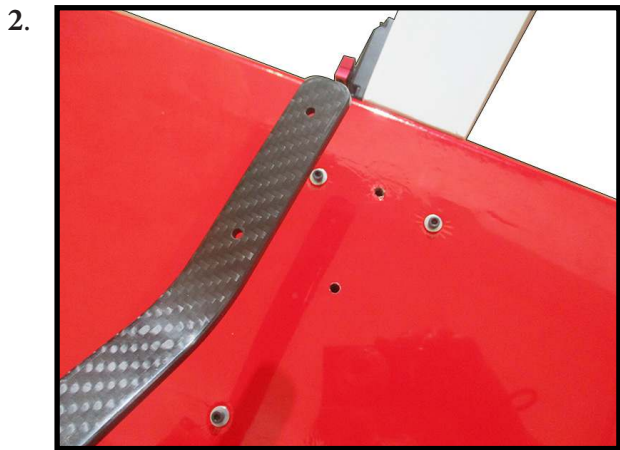
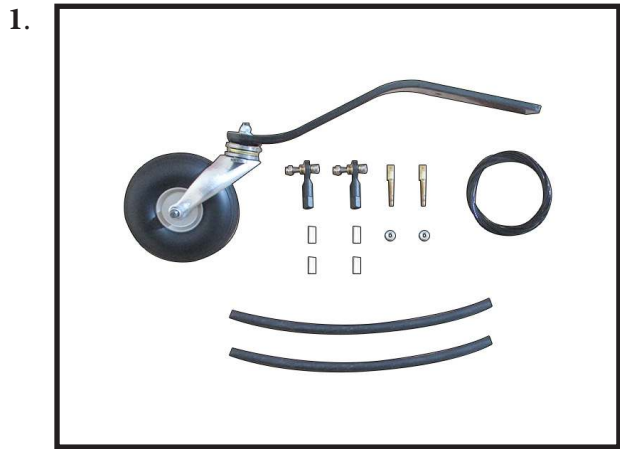


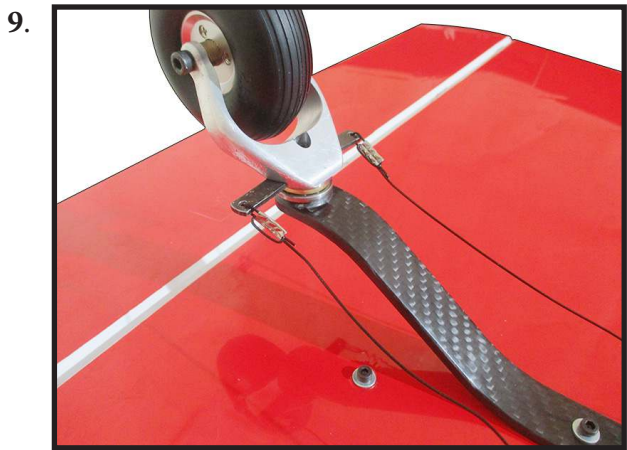
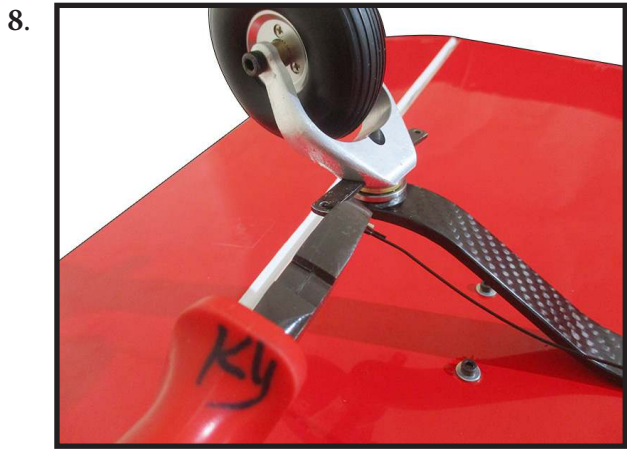
Cut off excess cable as shown.



MOUNTING THE TAIL WHEEL

Locate items necessary to install tail wheel.

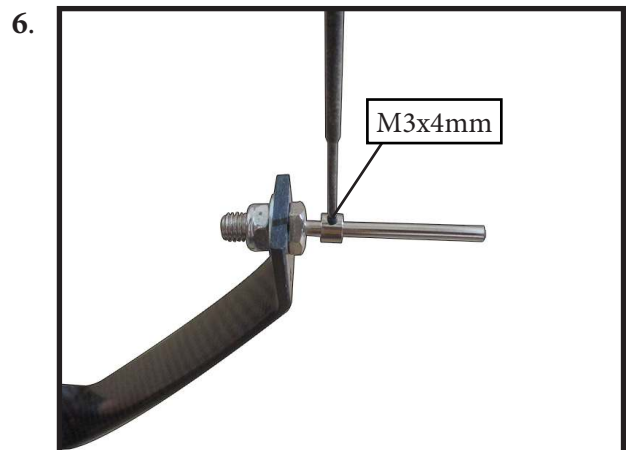
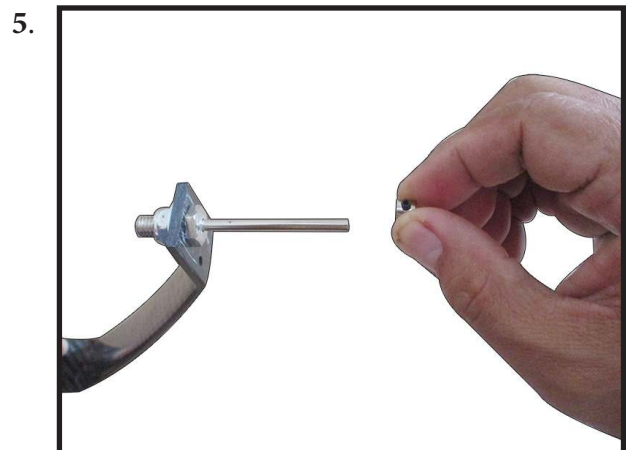
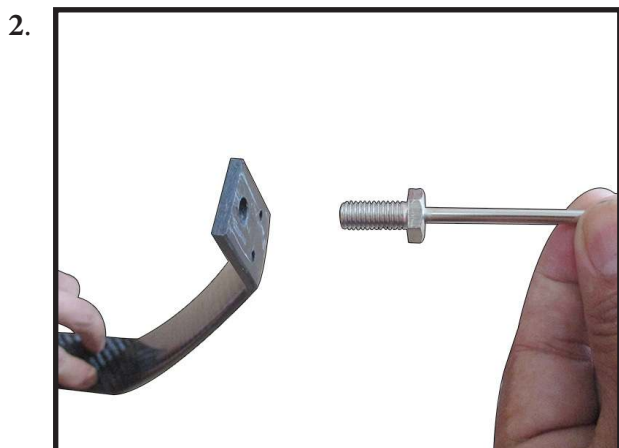
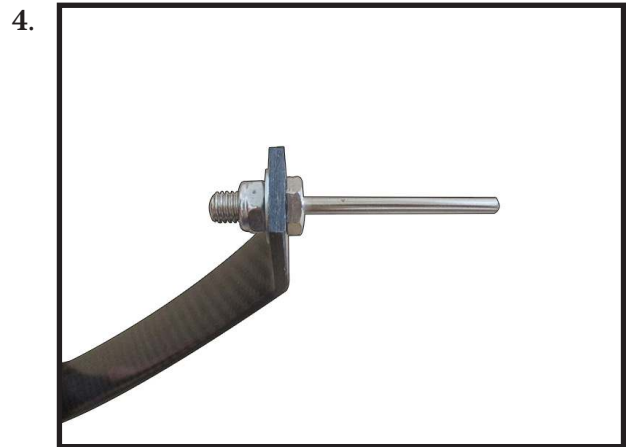


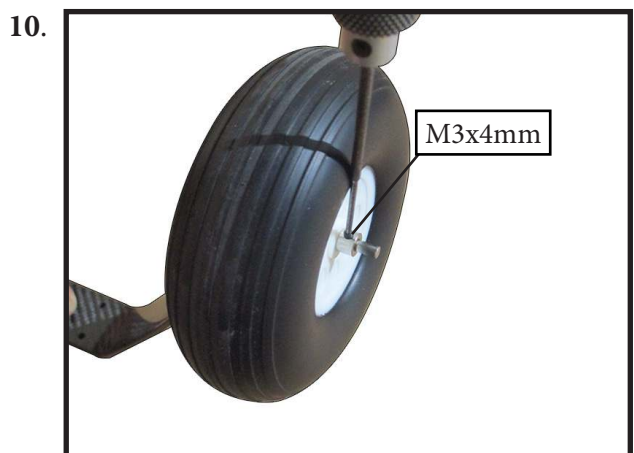
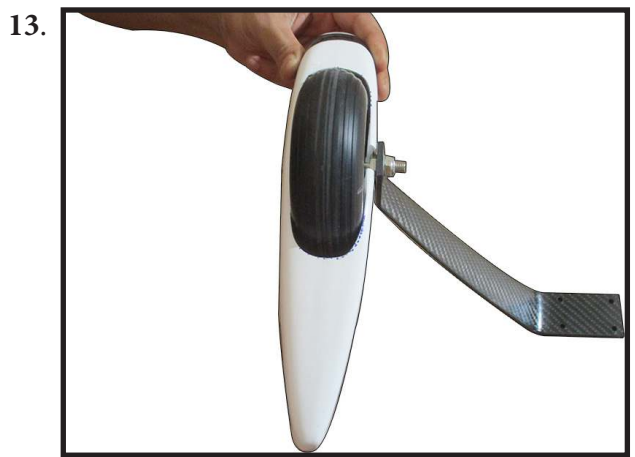
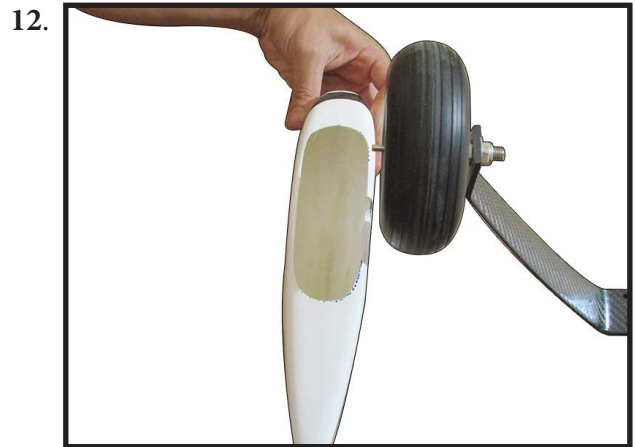
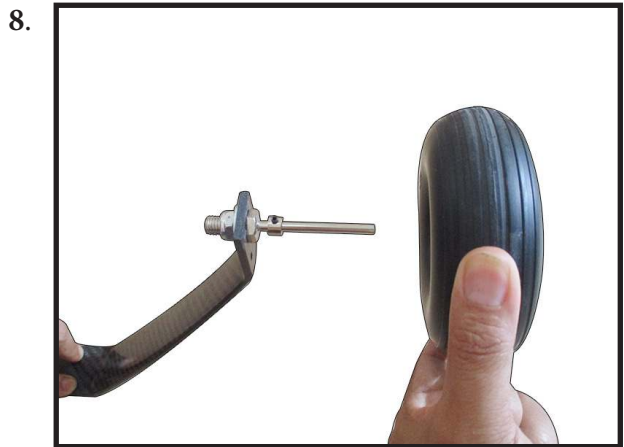
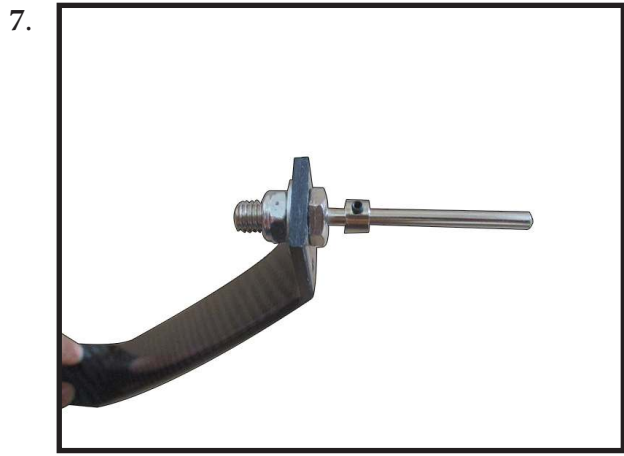


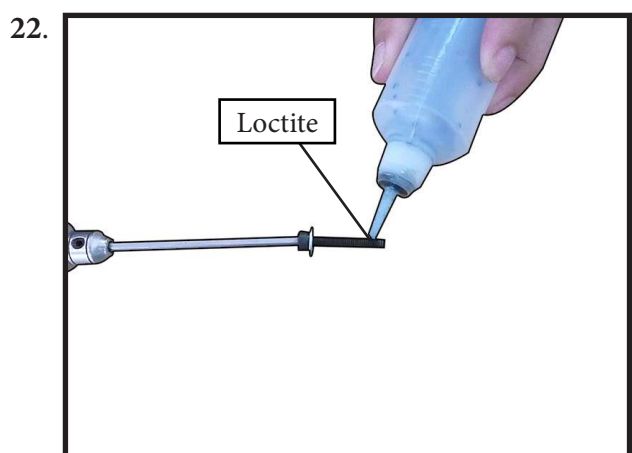
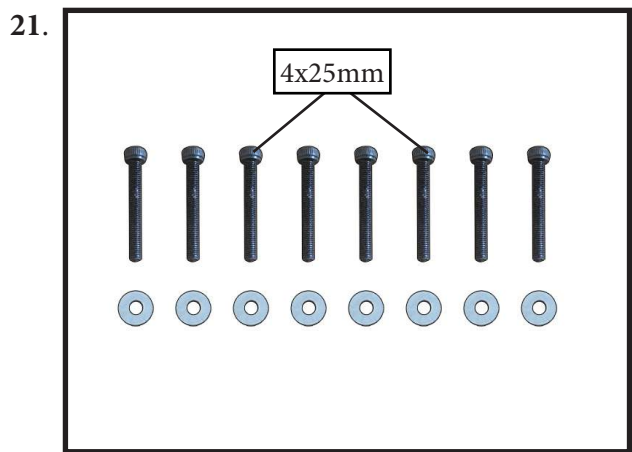
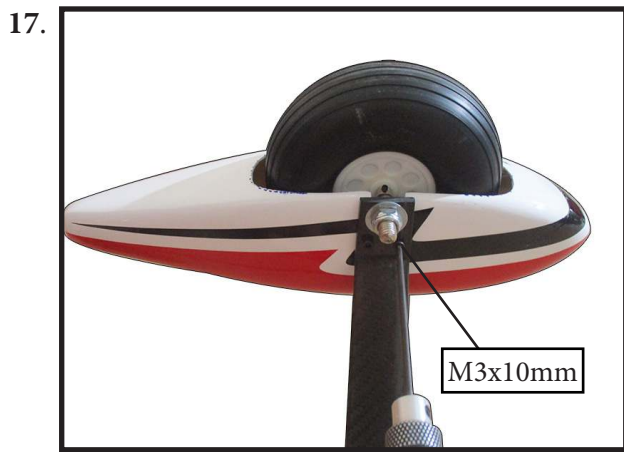
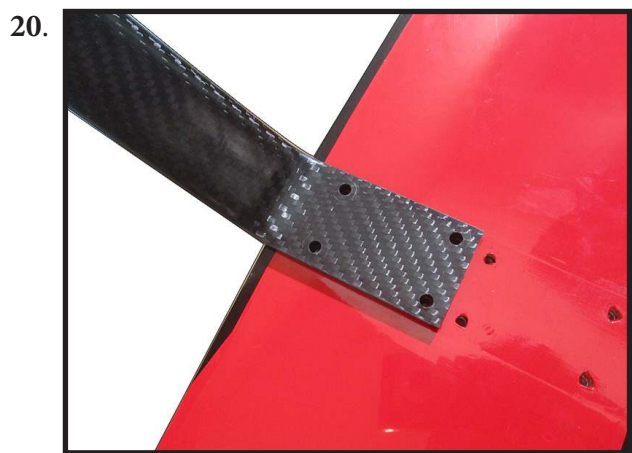
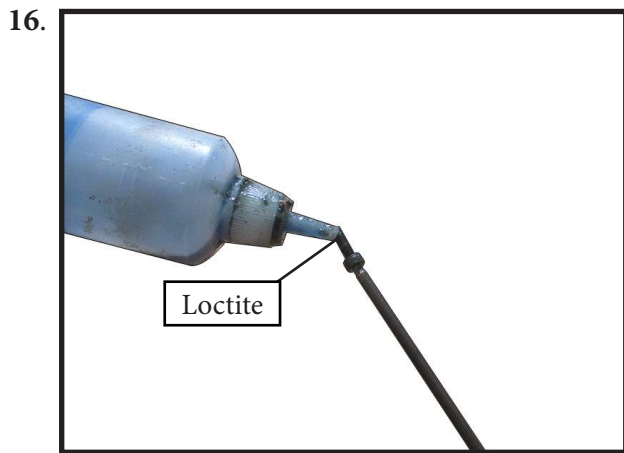
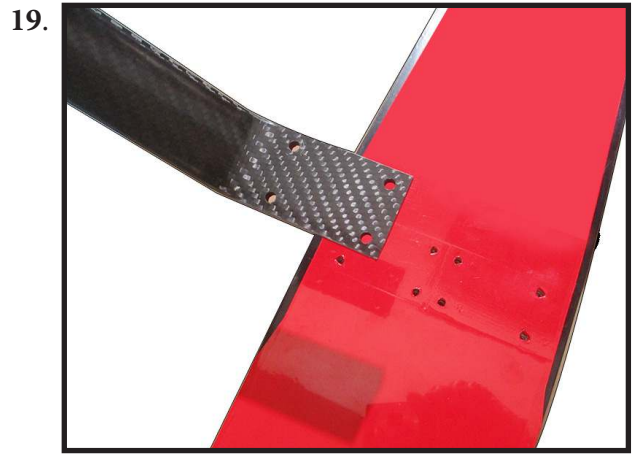
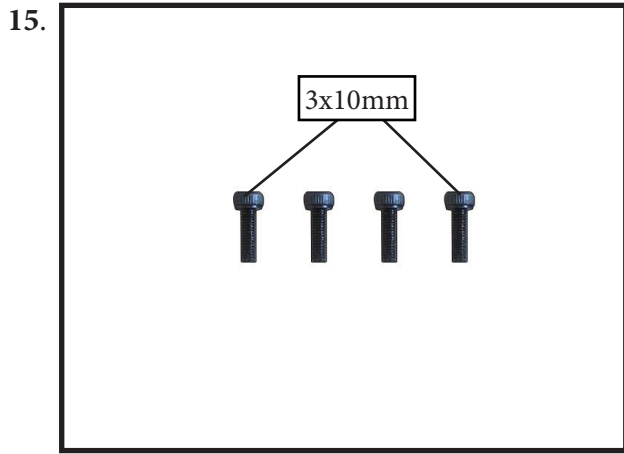


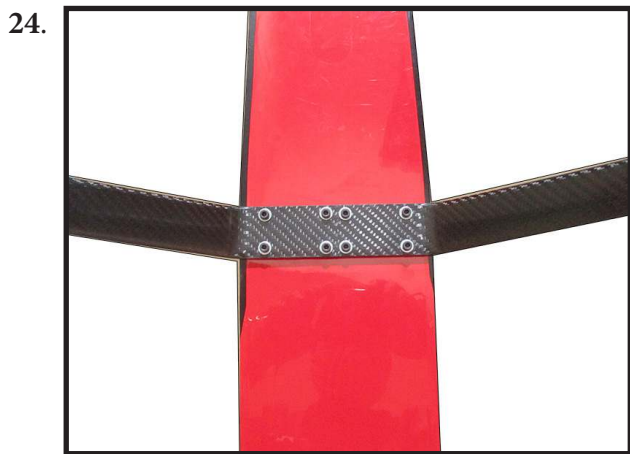
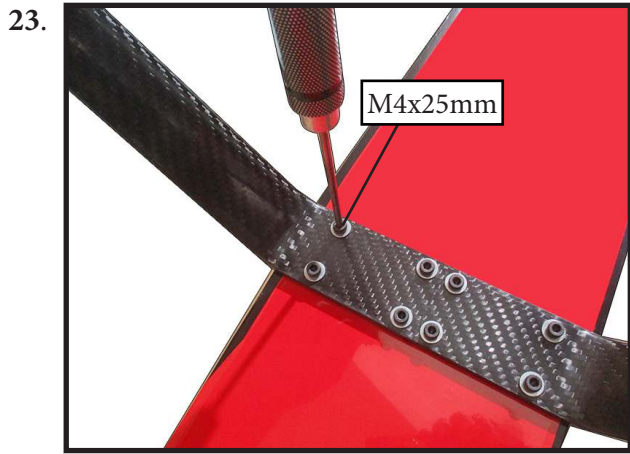
INSTALLING THE MAIN LANDING GEAR TO FUSELAGE

Please study images below.



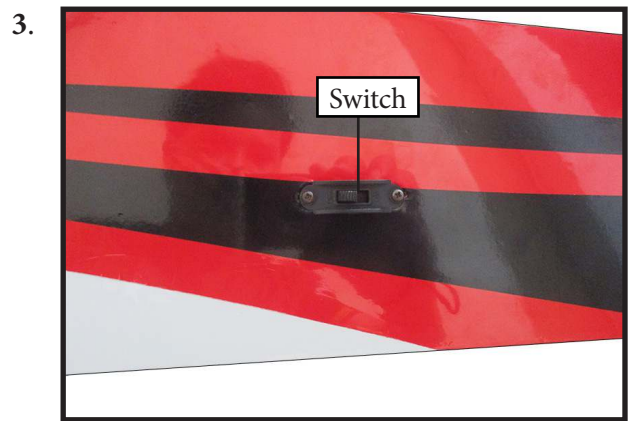
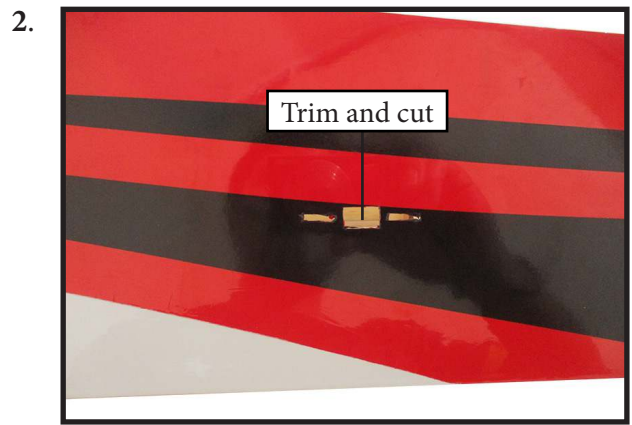
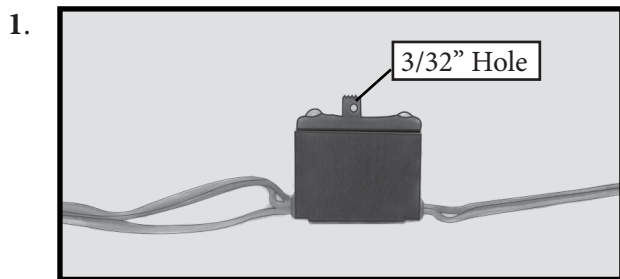




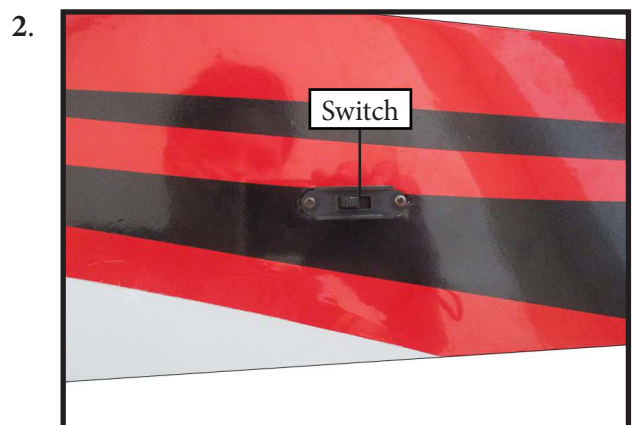
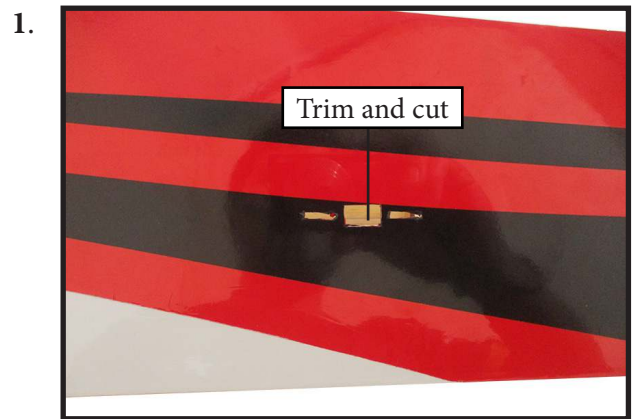


INSTALLING THE RECEIVER SWITCH

Install the switch into the precut hole in the side of fuselage, or you may hide switches under main hatch on a custom home made switch plate as desired.



INSTALLING THE ENGINE SWITCH



INSTALLING THE STOPPER ASSEMBLY

Using a modeling knife, carefully cut off the rear portion of one of the 3 nylon tubes leaving 1/2" protruding from the rear of the stopper. This will be the fuel pick up tube.

Using a modeling knife, cut one length of silicon fuel line. Connect one end of the line to the weighted fuel pick up and the other end to the nylon pick up tube.



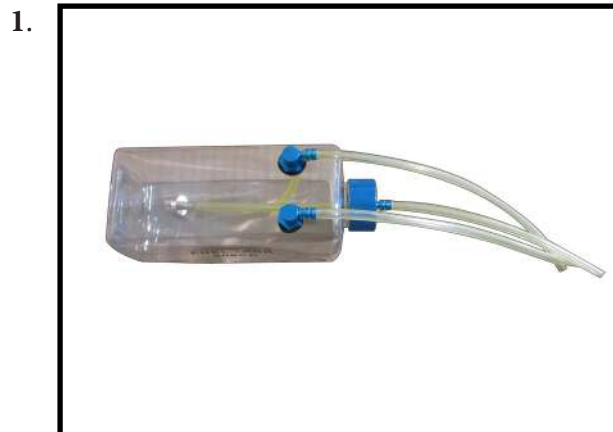
Carefully bend the second nylon tube up at a 45° angle. This tube is the vent tube.


Test fit the stopper assembly into the tank. It may be necessary to remove some of the flashing around the tank opening using a modeling knife. If flashing is present, make sure none falls into the tank.

With the stopper assembly in place, the weighted pick-up should rest away from the rear of the tank and move freely inside the tank. The top of the vent tube should rest just below the top of the tank. It should not touch the top of the tank.

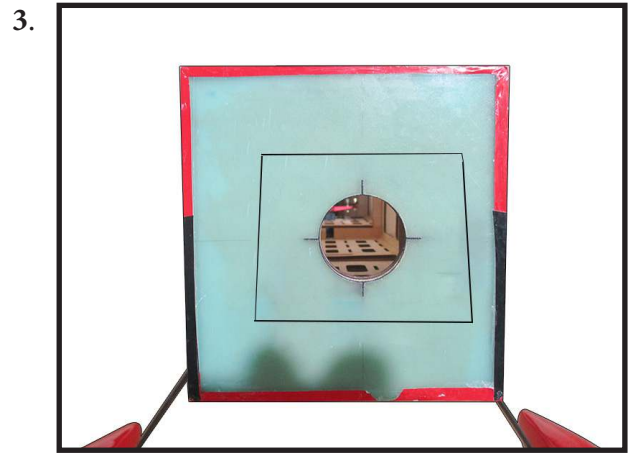
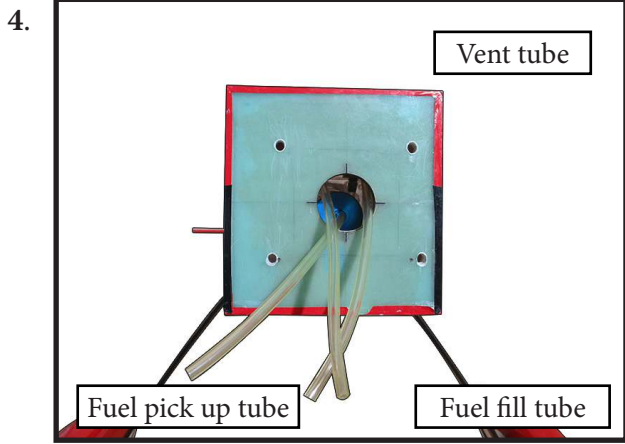
When satisfied with the alignment of the stopper assembly tighten the 3 x 20mm machine screw until the rubber stopper expands and seals the tank opening. Do not over-tighten the assembly as this could cause the tank to split.

FUEL TANK INSTALLATION

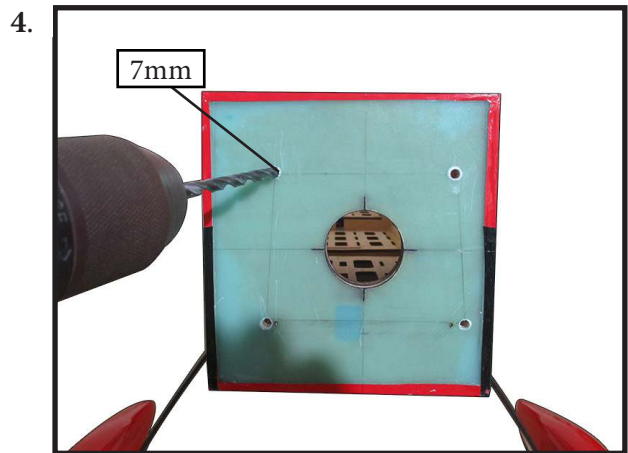


 *You should mark which tube is the vent and which is the fuel pickup when you attach fuel tubing to the tubes in the stopper. Once the tank is installed inside the fuselage, it may be difficult to determine which is which.*



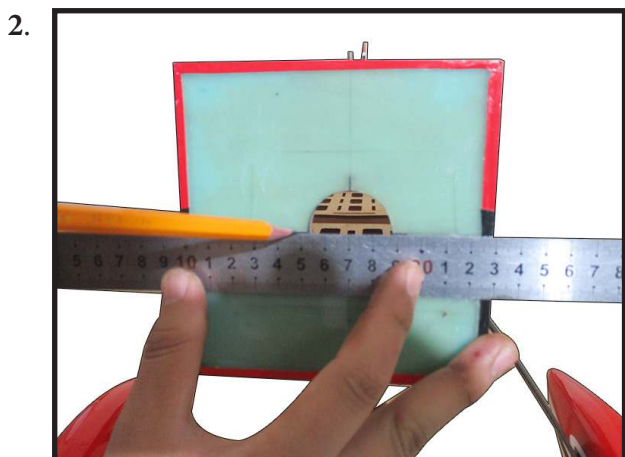
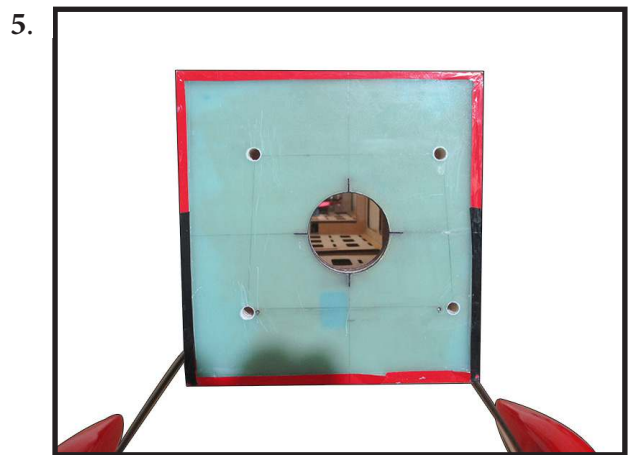
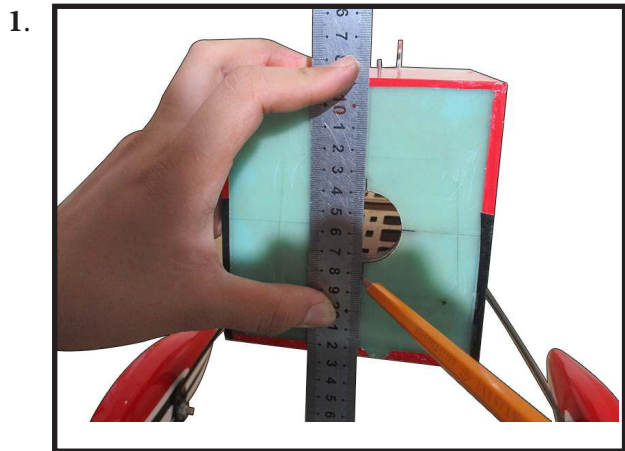


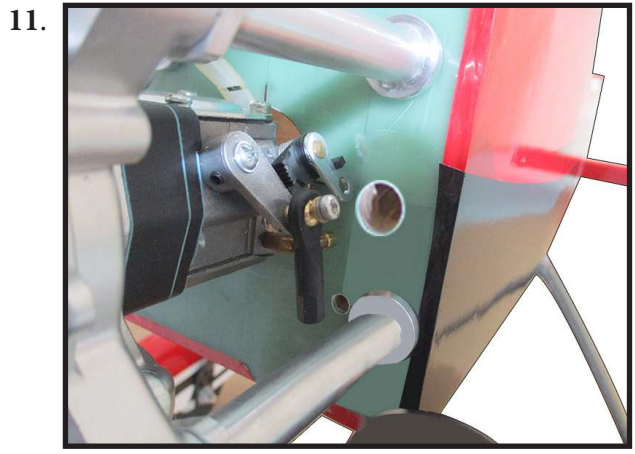
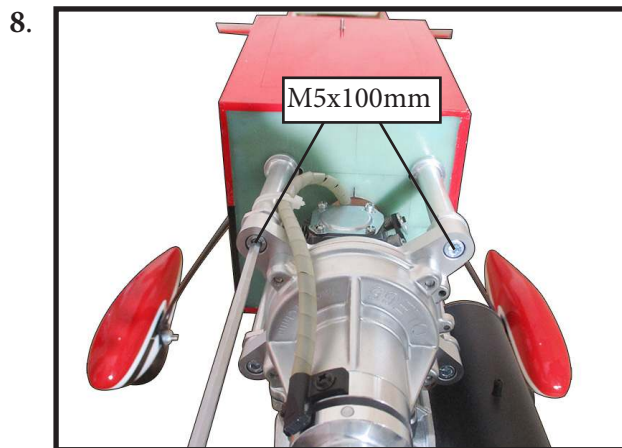
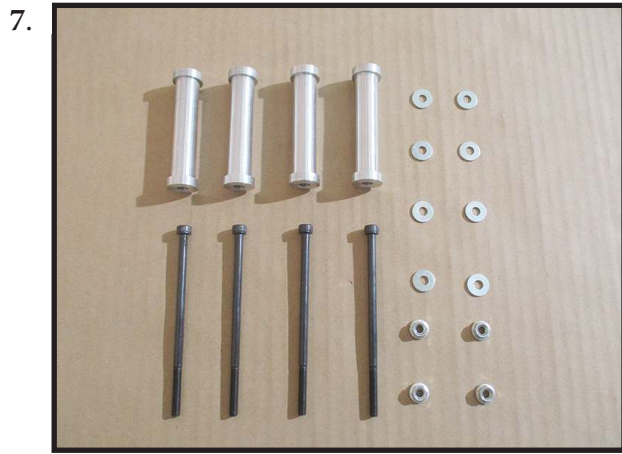
Later you will connect the lines from the tank to the engine and muffler. The vent line will connect to the muffler and the line from the clunk to the carburetor.



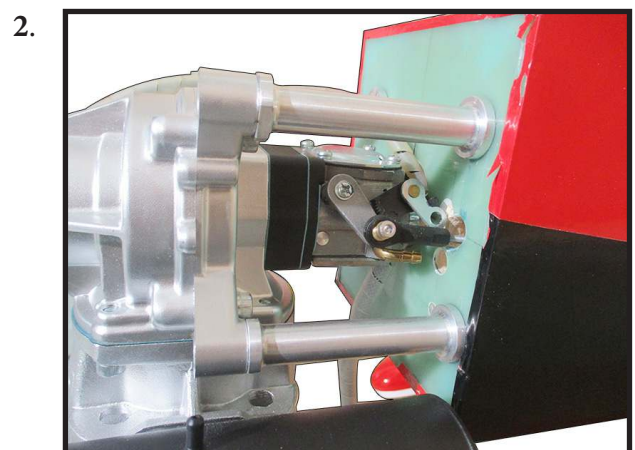
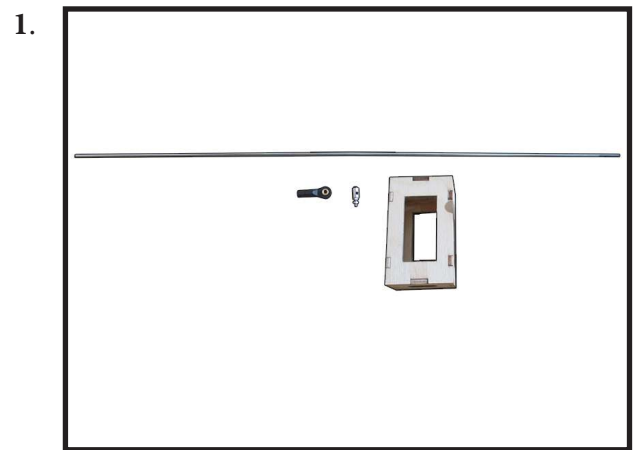
MOUNTING THE ENGINE

Please see below pictures.

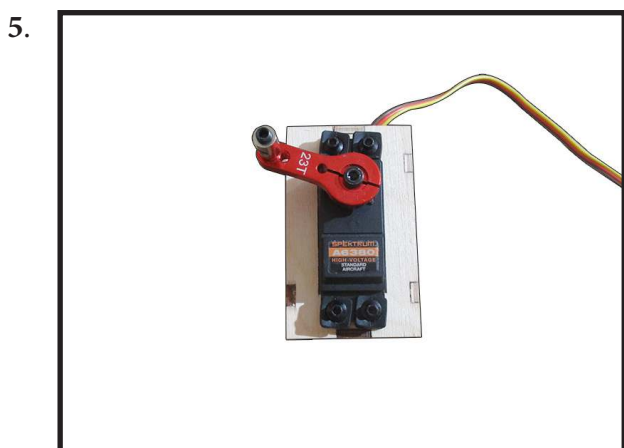
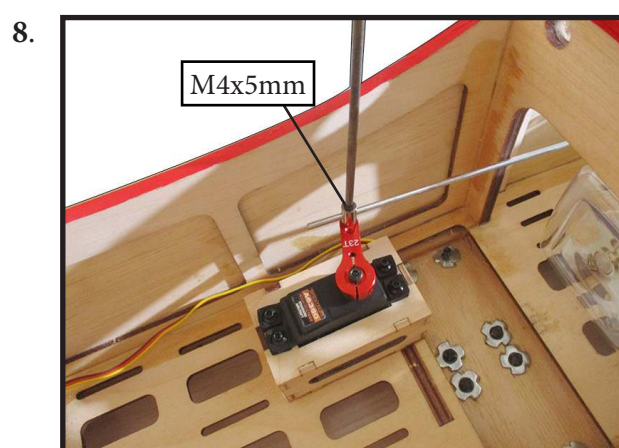
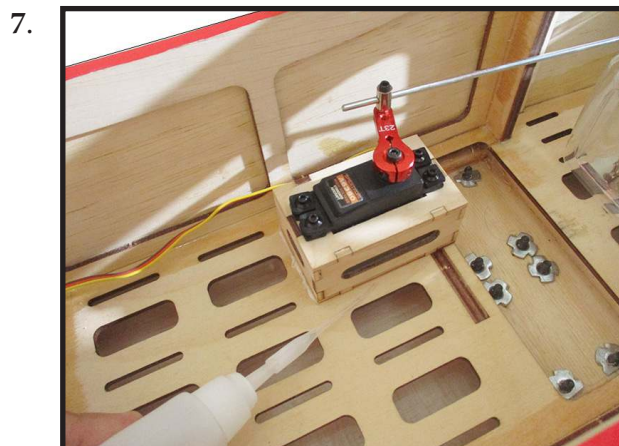
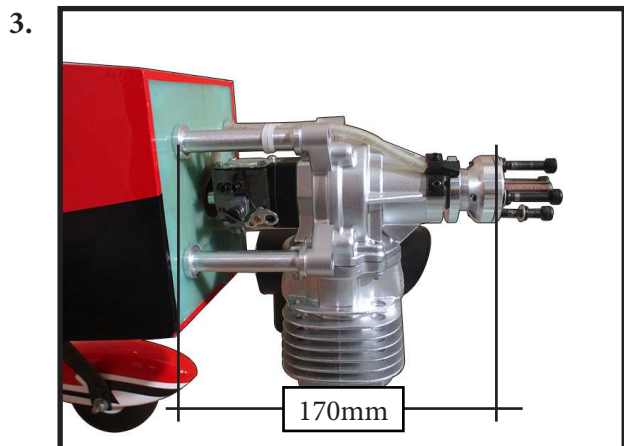




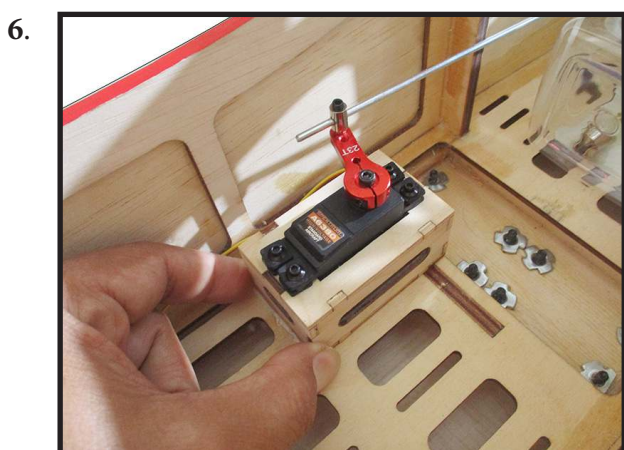
THROTTLE SERVO INSTALLATION



Attach throttle pushrod to the carburetor throttle arm with the ball link.

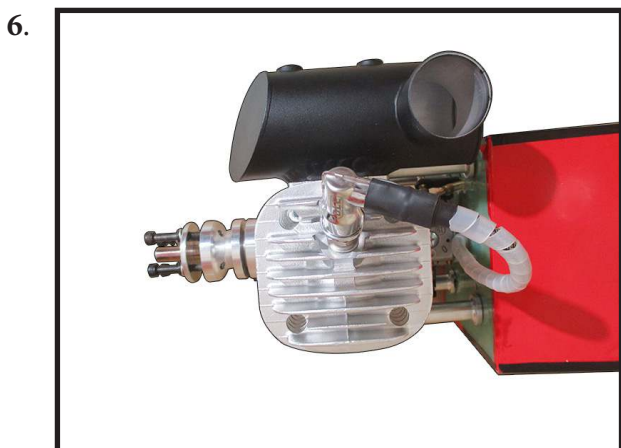
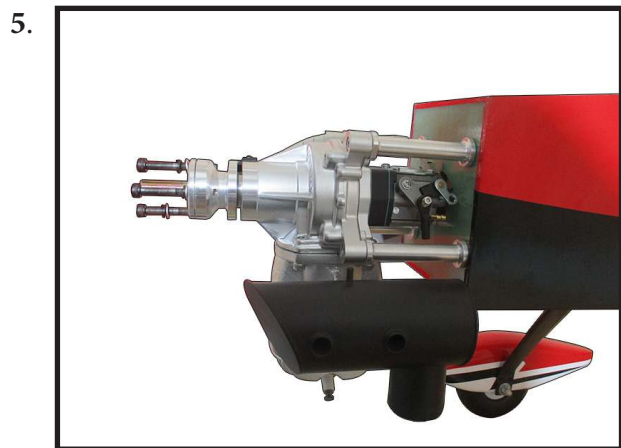
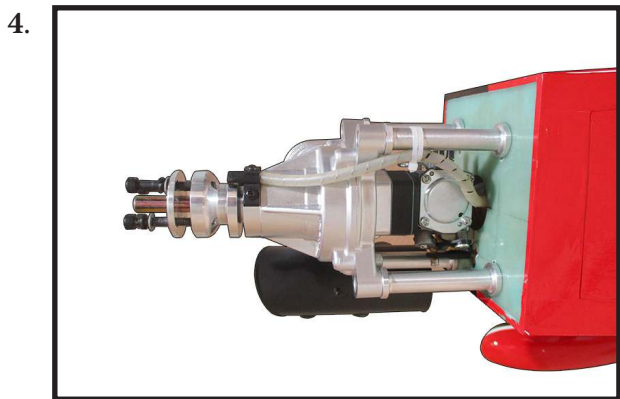
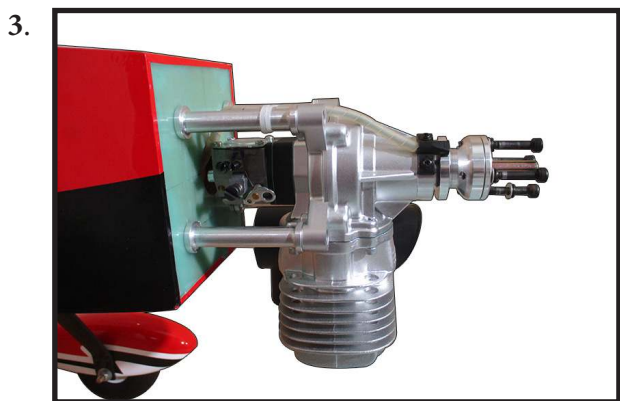


Move the throttle stick to the closed position and move the carburetor to closed. Use a 2.5mm hex wrench to tighten the screw that secures the throttle pushrod wire. Make sure to use threadlock on the screw so it does not vibrate loose.



IGNITION INSTALLATION

1 Thread nylon tie through mounting holes.

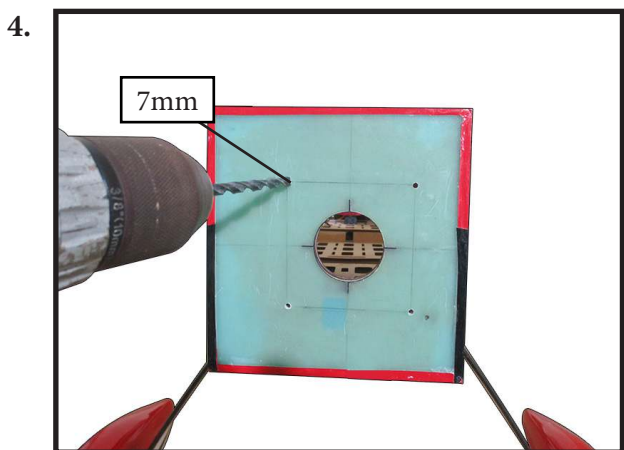
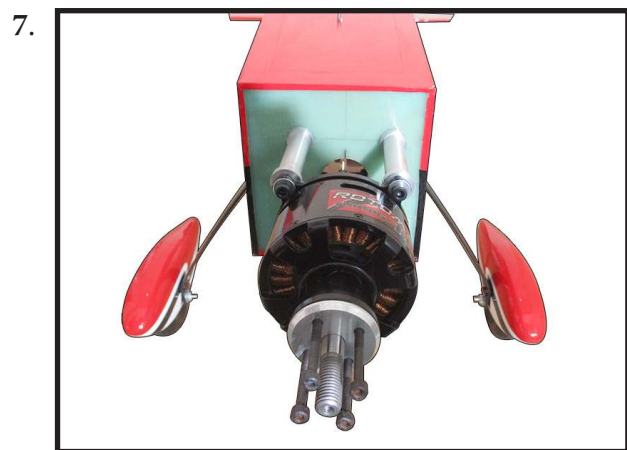
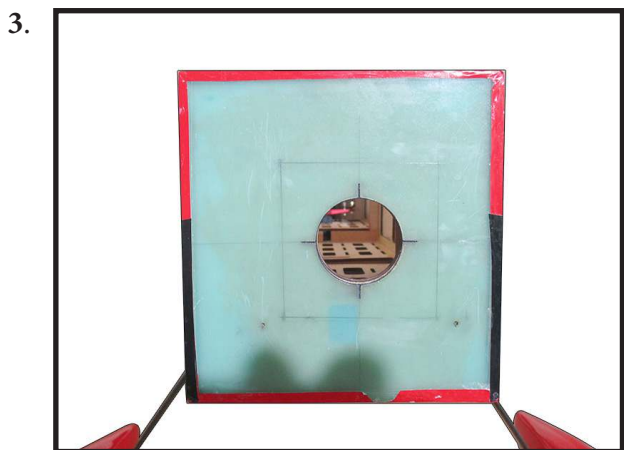
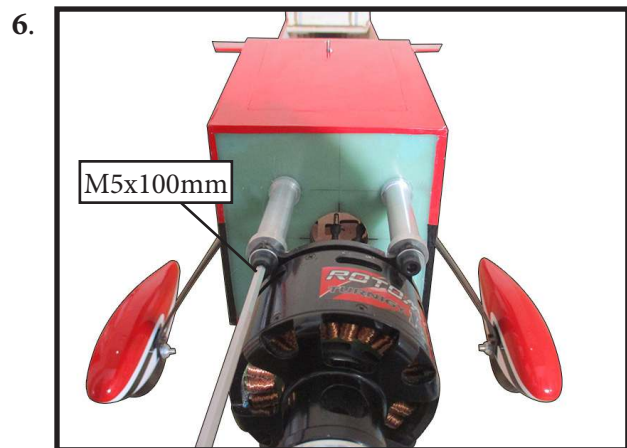
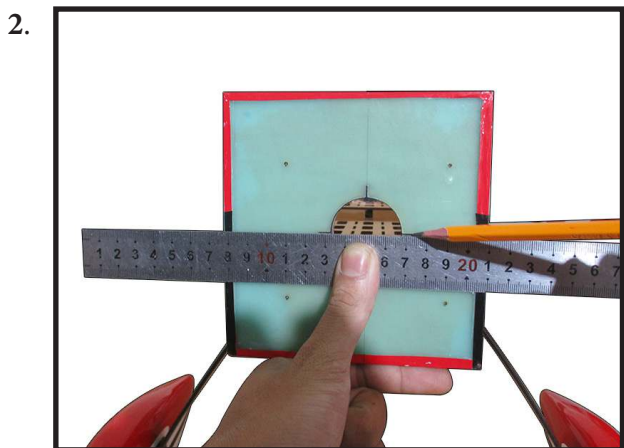
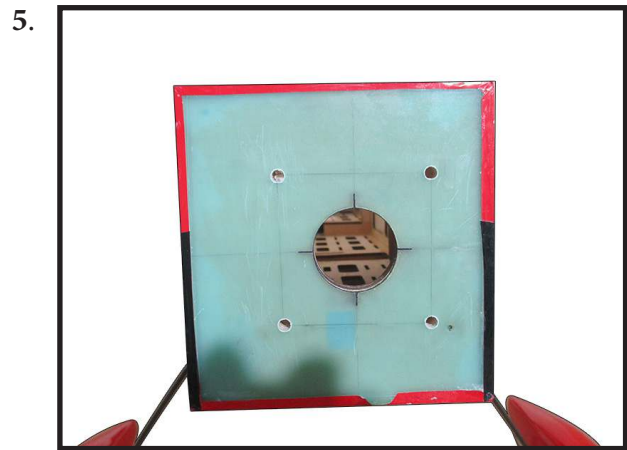
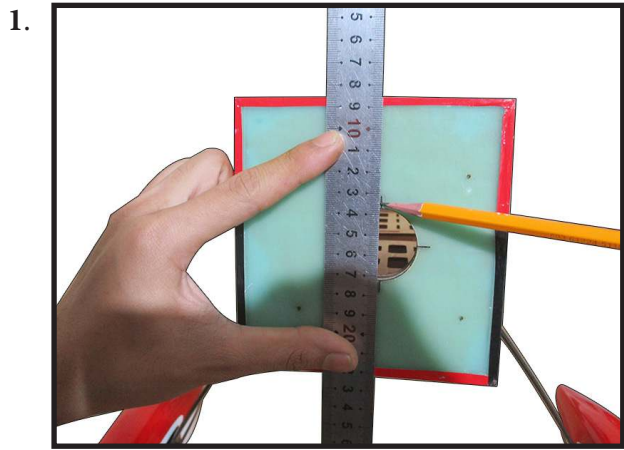


ELECTRIC POWER CONVERSION

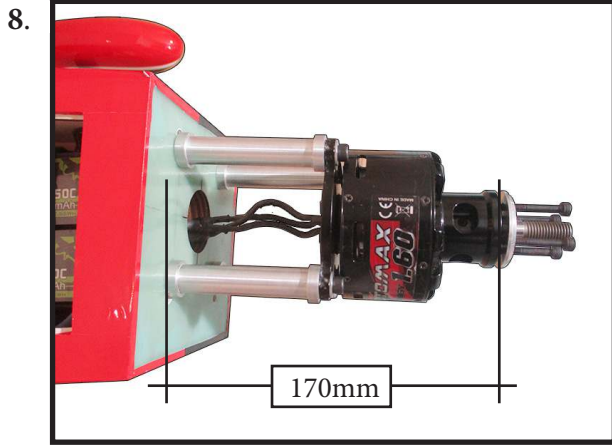
Recommend the items necessary to install the electric power conversion parts included with your model.

- **Motor: 360/ 6000watt**
- **ESC: 160A - 200A**
- **Lipo: 12S**

Attach the electric motor box to the firewall centered with the cross lines drawn on the electric motor box and firewall. Using M5x100mm to secure the motor box to the firewall. Please see pictures below.

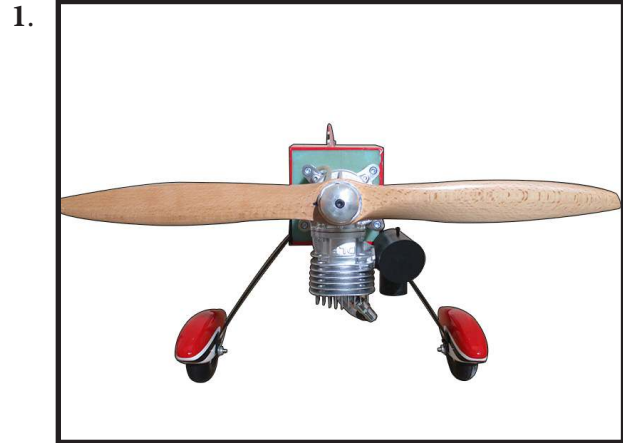



Attach the speed control to the side of the motor box using two-sided tape and tie wraps. Connect the appropriate leads from the speed control to the motor. Make sure the leads will not interfere with the operation of the motor.

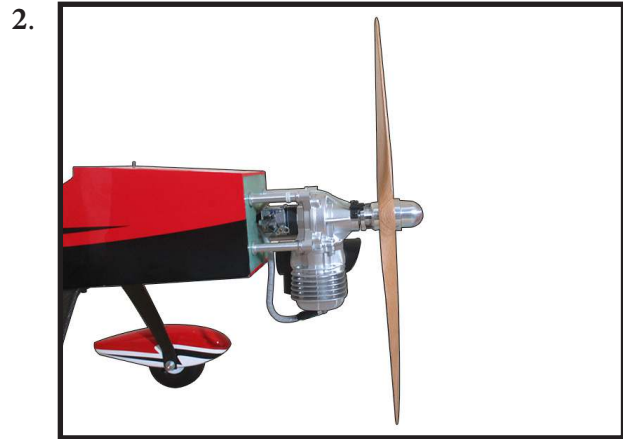
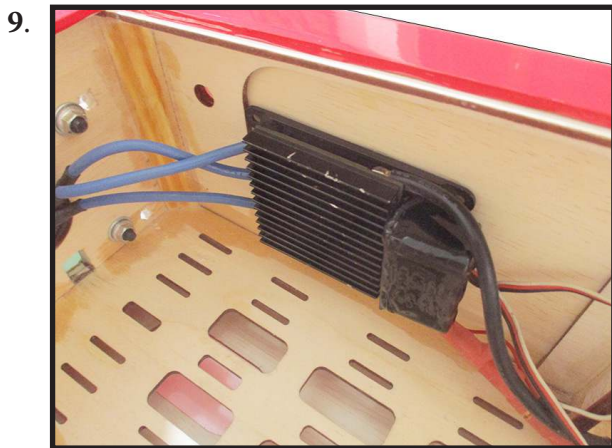


INSTALLING THE PROP/HUB

Install the spinner backplate, propeller and proper hub of your choice.



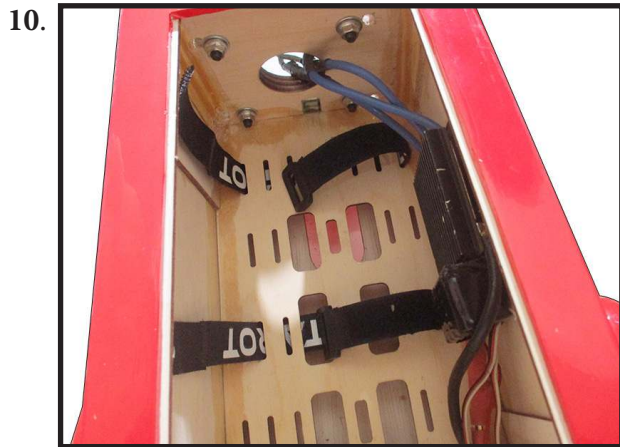
 The propeller should not touch any part of the cowling. If it does, check and adjust engine mounting/cowl spacing as needed to where the propeller will not come in contact with the cowling.

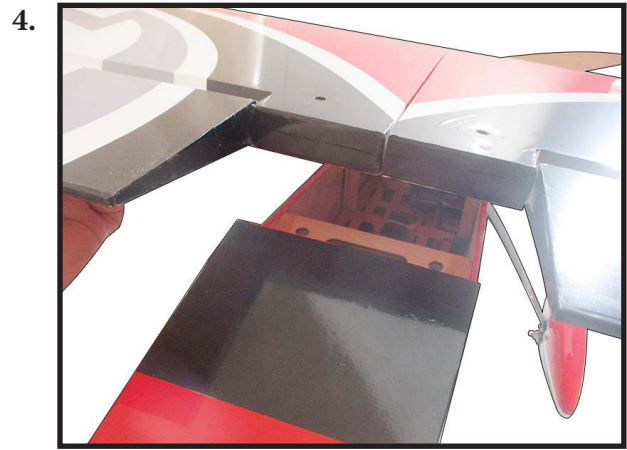
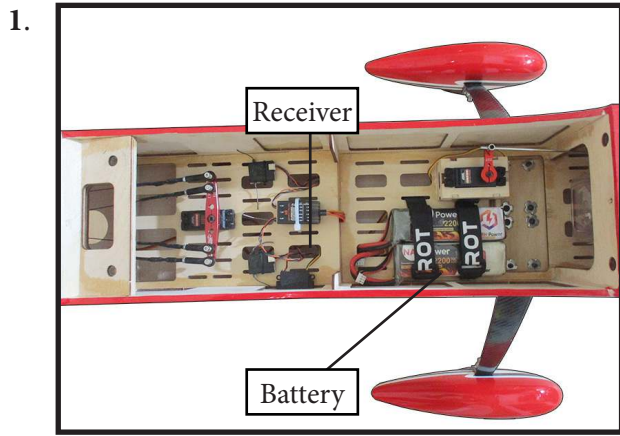


INSTALLING BATTERY - RECEIVER

Plug the servo leads and the switch lead into the receiver. Plug the battery pack lead into the switch also.

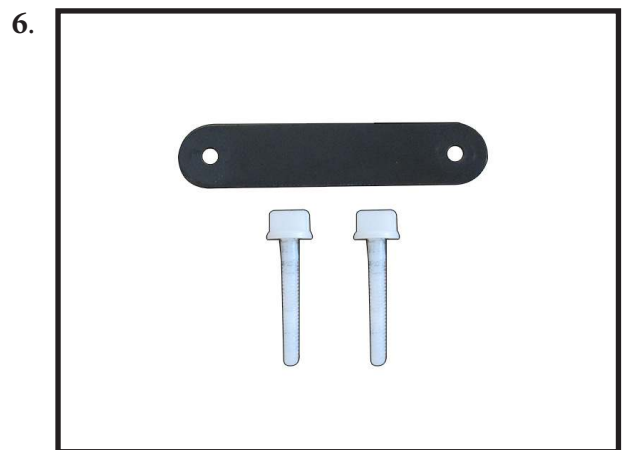
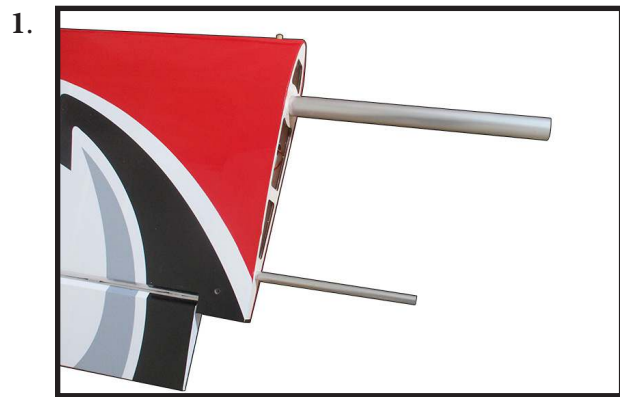
Wrap the receiver and battery pack in the protective foam rubber to protect them from vibration.





ATTCHMENT WING-FUSELAGE

Please see below pictures.



APPLY THE DECALS

If all the decals are precut and ready to stick. Please be certain the model is clean and free from oily fingerprints and dust. Position decal on the model where desired, using the photos on the box and aid in their location.

If all the decals are not precut, please use scissors or a sharp hobby knife to cut the decals from the sheet. Please be certain the model is clean and free from oily fingerprints and dust. Position decal on the model where desired, using the photos on the box and aid in their location.

BALANCING

It is critical that your airplane be balanced correctly. Improper balance will cause your plane to lose control and crash. THE CENTER OF GRAVITY IS LOCATED 150 MM BACK FROM THE LEADING EDGE OF THE WING AT THE WING ROOT

Mount the wing to the fuselage. Using a couple of pieces of masking tape, place them on the bottom of the wing 150mm back from the leading edge of the wing at the wing root.

With the model upright, place your fingers on the masking tape and carefully lift the plane.

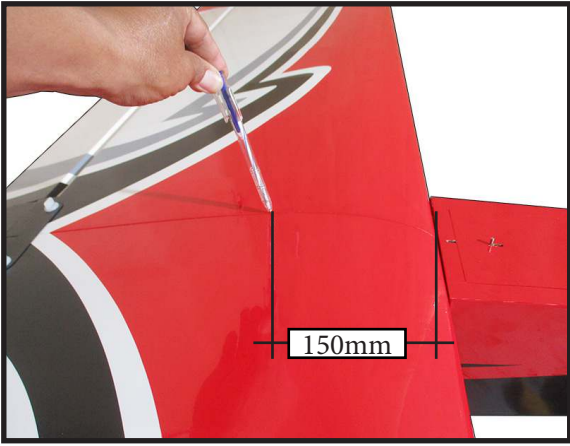
The balance point is located 150mm back from the leading edge of the wing at the wing root. This is the balance point at which your model should balance for your first flights. Later, you may wish to experiment by shifting the balance up to 10mm forward or back to change the flying characteristics. Moving the balance forward may improve the smoothness and arrow-like tracking, but it may then require more speed for take off and make it more difficult to slow down for landing. Moving the balance aft makes the model more agile with a lighter and snappier "feel". In any case, please start at the location we recommend.

With the wing attached to the fuselage, all parts of the model installed (ready to fly), and empty fuel tanks, hold the model at the marked balance point with the stabilizer level.

Lift the model. If the tail drops when you lift, the model is "tail heavy" and you must add weight* to the nose. If the nose drops, it is "nose heavy" and you must add weight* to the tail to balance.

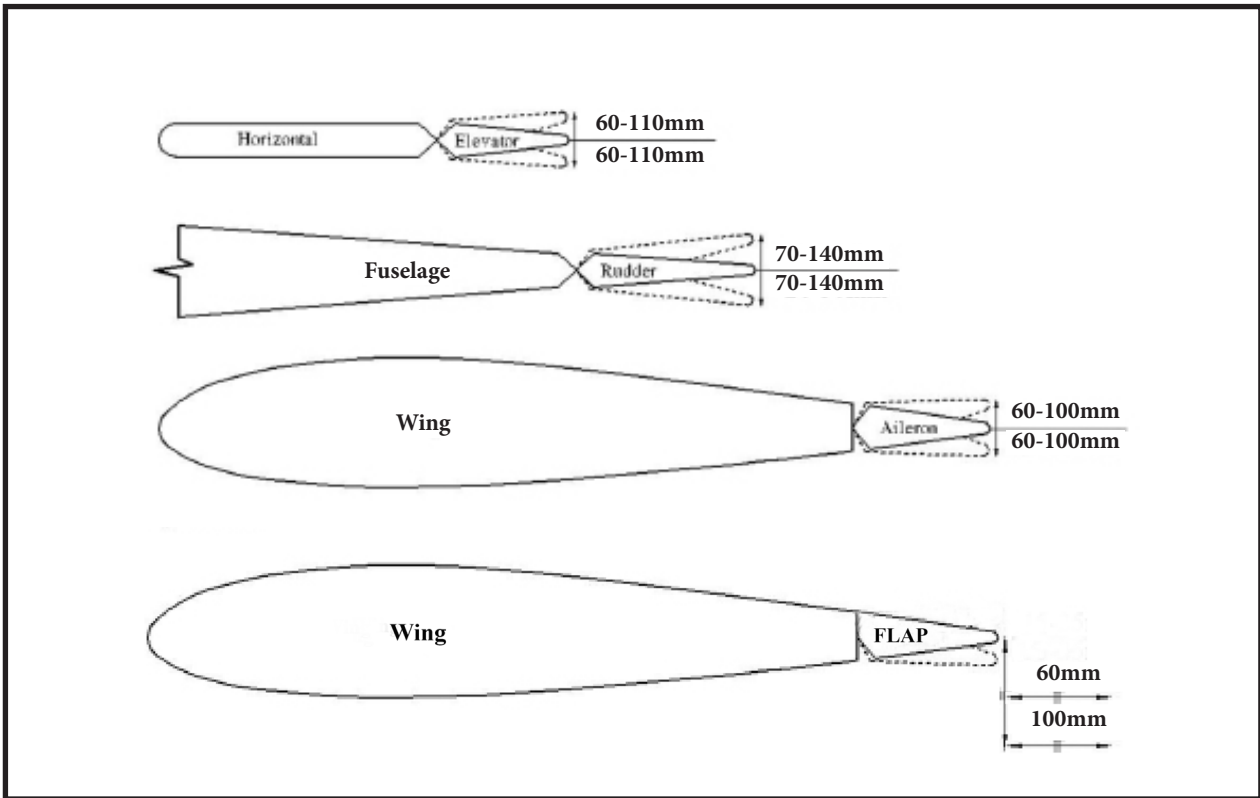
*If possible, first attempt to balance the model by changing the position of the receiver battery and receiver. If you are unable to obtain good balance by doing so, then it will be necessary to add weight to the nose or tail to achieve the proper balance point.

1.



CONTROL THROWS

| | |
|--|---|
| <p>Ailerons:</p> <p>High Rate : Up : 100mm Down : 100mm</p> <p>Low Rate : Up : 60mm Down : 60mm</p> | <p>Rudder:</p> <p>High Rate : Right : 140 mm Left : 140mm</p> <p>Low Rate : Right : 70 mm Left : 70 mm</p> |
| <p>Elevator:</p> <p>High Rate : Up : 110mm Down : 110mm</p> <p>Low Rate : Up : 60mm Down : 60mm</p> | <p>Flap:</p> <p>Mid : 60mm Full : 100mm</p> |



FLIGHT PREPARATION

Check the operation and direction of the elevator, rudder, ailerons and throttle.

- A) Plug in your radio system per the manufacturer's instructions and turn everything on.
- B) Check the elevator first. Pull back on the elevator stick. The elevator halves should move up. If it they do not, flip the servo reversing switch on your transmitter to change the direction.
- C) Check the rudder. Looking from behind the airplane, move the rudder stick to the right. The rudder should move to the right. If it does not, flip the servo reversing switch on your transmitter to change the direction.
- D) Check the throttle. Moving the throttle stick forward should open the carburetor barrel. If it does not, flip the servo reversing switch on your transmitter to change the direction.
- E) From behind the airplane, look at the aileron on the right wing half. Move the aileron stick to the right. The right aileron should move up and the other aileron should move down. If it does not, flip the servo reversing switch on your transmitter to change the direction.

PREFLIGHT CHECK

- 1) Completely charge your transmitter and receiver batteries before your first day of flying.
- 2) Check every bolt and every glue joint in the **Giant Thunder Stick Aerobatic Sport 96.5" ARF 55-65cc** to ensure that everything is tight and well bonded.
- 3) Double check the balance of the airplane. Do this with the fuel tank empty.
- 4) Check the control surfaces. All should move in the correct direction and not bind in any way.
- 5) If your radio transmitter is equipped with dual rate switches double check that they are on the low rate setting for your first few flights.
- 6) Check to ensure the control surfaces are moving the proper amount for both low and high rate settings.
- 7) Check the receiver antenna. It should be fully extended and not coiled up inside the fuselage.
- 8) Properly balance the propeller. An out of balance propeller will cause excessive vibration which could lead to engine and/or airframe failure.

*We wish you many safe and enjoyable flights
with your Giant Thunder Stick Aerobatic Sport 96.5" ARF 55-65cc.*

*If you have any queries, or are interested in our products,
please feel free to contact us*

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Hoc Mon District - Ho Chi Minh City - Viet Nam.

Office : 62/8 Ngo Tat To Street - Ward 19 - Binh Thanh District - Ho Chi Minh
City - Viet Nam

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Facebook : www.facebook.com/SeaGullModels.