



CASSUTT 3M RACER

MS: 164

ASSEMBLY MANUAL

“Graphics and specifications may change without notice”.



Specifications:

Wing span	-----	65in (165cm)
Wing area	-----	1038.5sq.in (67.0sq dm)
Weight	-----	16.8lbs (7.6kg)
Length	-----	70.8in (179.8cm)
Engine	-----	F1 Air race 60cc engine
Radio	-----	6 channels with 6 digital servos

INTRODUCTION

Thank you for choosing the **CASSUTT 3M RACER** ARTF by **SG MODELS**. The **CASSUTT 3M RACER** 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 **CASSUTT 3M RACER** is simply a joy.

This instruction manual is designed to help you build a great flying aeroplane. Please read this manual thoroughly before starting assembly of your **CASSUTT 3M RACER**. Use the parts listing below to identify 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 & RESPONSIBILITY.

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 procedures 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

SEA164 CASSUTT 3M RACER

1. Fuselage
2. Wing set (2)
3. Tail set (2)
4. Cowling
5. Canopy
- 6 Wing Tube
7. Main landing gear
8. Tailwheel
9. Fiberglass wheel pants
10. Wheels
11. Pilot
12. Hardware bag included

ADDITIONAL ITEMS REQUIRED

- F1 Air race 60cc engine
- Computer radio 6 channel with 6 servos.
- Glow plug to suit engine.
- Propeller to suit engine.
- Protective foam rubber for radio system.

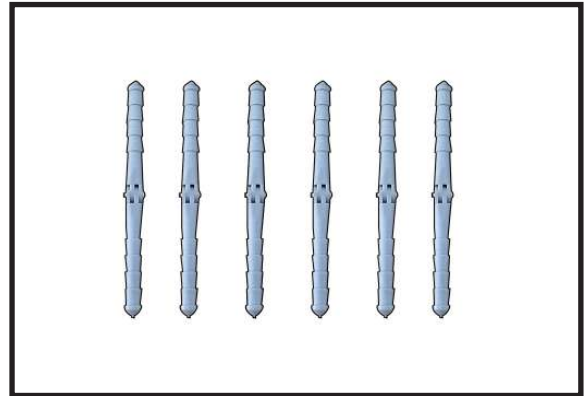
TOOLS & SUPPLIES NEEDED

- 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.

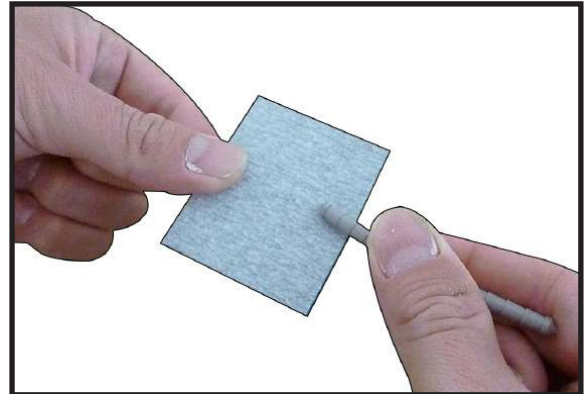
INSTALL THE AILERONS

Please see pictures below.

1.



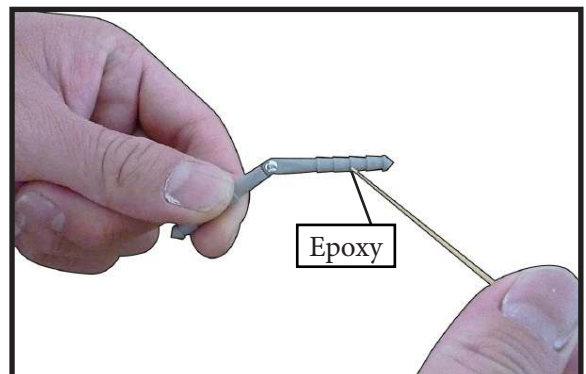
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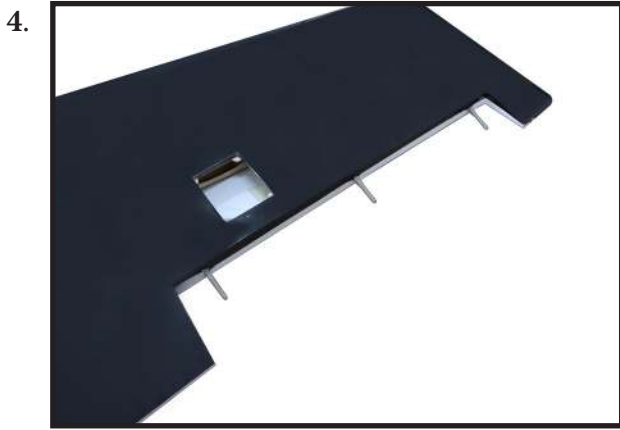
Remove the ailerons from the wing and remove the hinges.

Use a small piece of rough sandpaper to scuff the hinges for better epoxy adhesion. Do this to all aileron hinges.

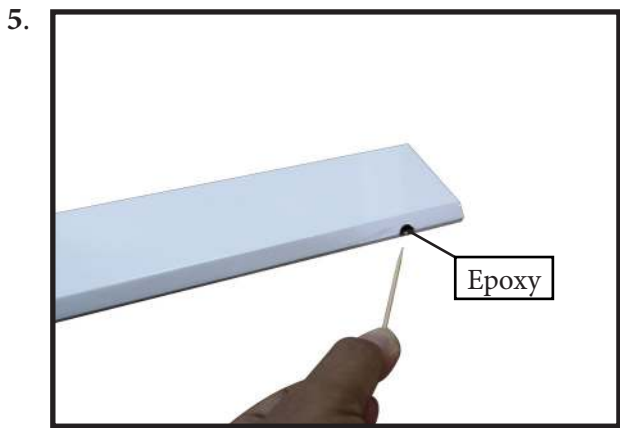
3.



Apply epoxy to each hinge where it will be inserted into the ailerons. Tip: Apply some petroleum jelly to the metal pin hinge area to keep epoxy from interfering with smooth operation of hinge.



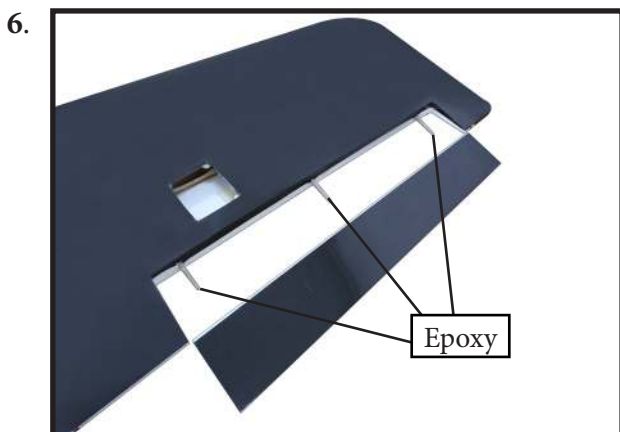
Insert all four hinges in the ailerons at this time. Make sure hinges move up and down in right direction and not side to side !



Apply epoxy into each of the holes in the ailerons using a spare piece of pushrod wire or toothpick.

Make sure to use enough epoxy so it securely adheres the hinge to the surfaces.

Do not use an excessive amount of epoxy when gluing the hinges so that it expels from the hinge area.



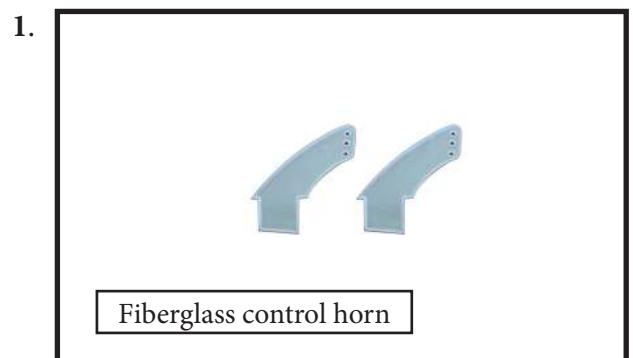
Be sure to test the aileron hinges once you insert them. Ensure that the hinge pockets line up, and that the hinges move freely before the epoxy dries.

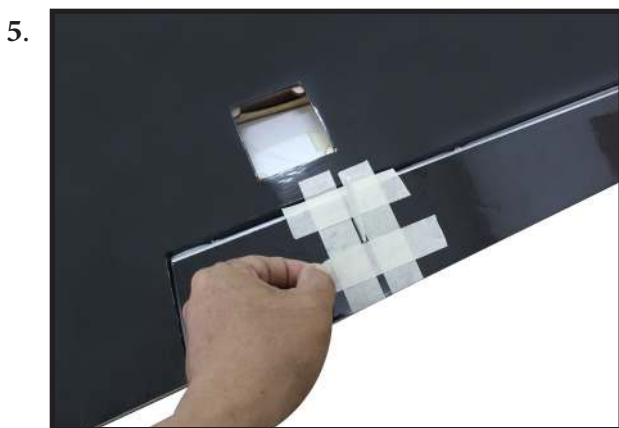
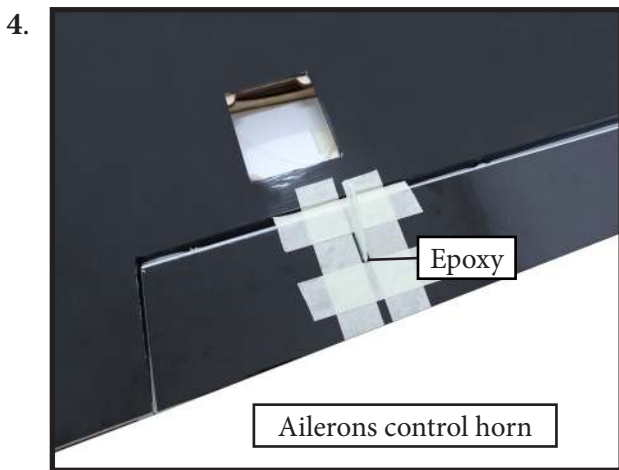
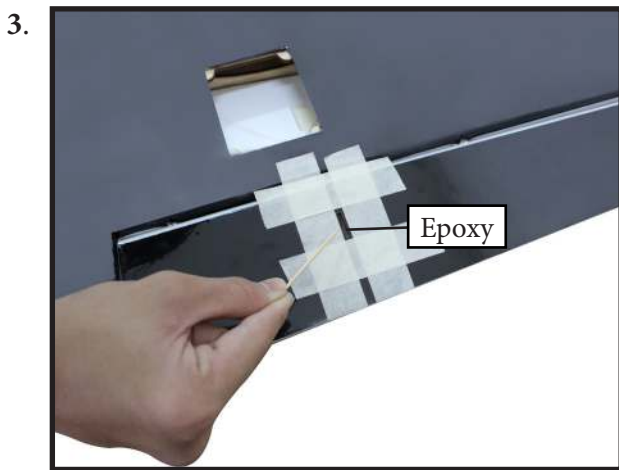
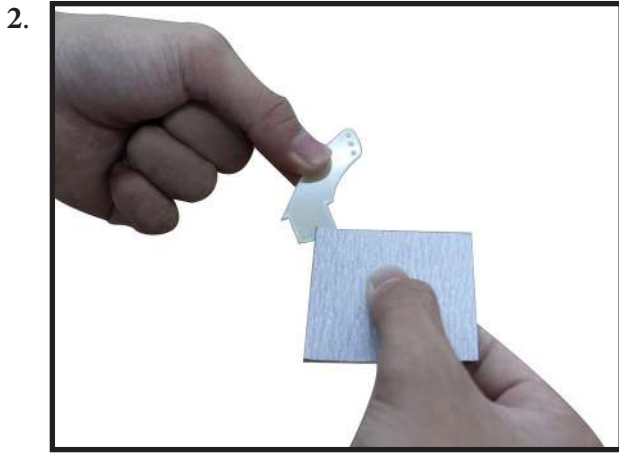


Check the fit of the aileron to the wing. The top of the ailerons will align to the top of the wing. Make sure movement is smooth and bind free.

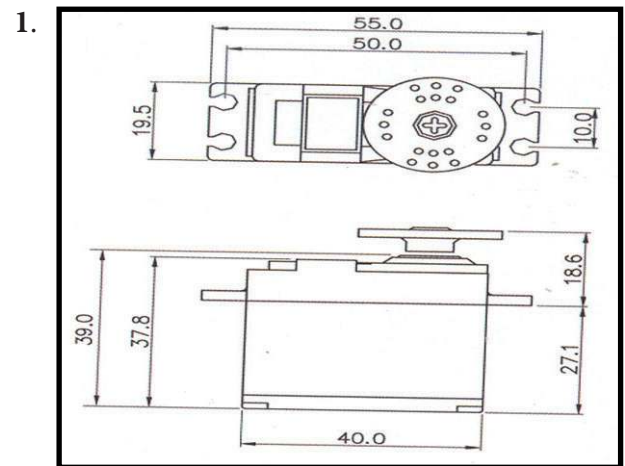
We prefer 30-minute epoxy to allow enough working time during the hinge installation.

INSTALL THE AILERONS CONTROL HORN





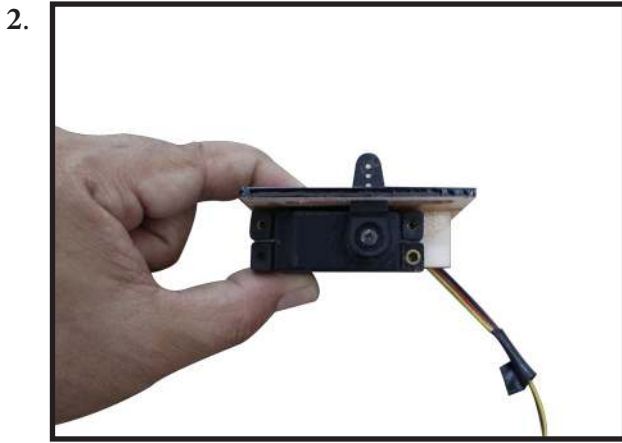
INSTALLING THE AILERON SERVOS



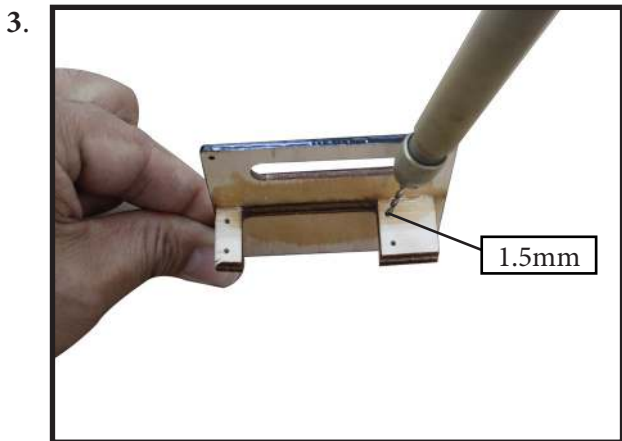
Minimum servo spec.
Torque : 6.0V: 192.4 oz-in (13.8 kg-cm)
 7.4V: 350.0 oz-in (25.2 kg-cm)

! 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.

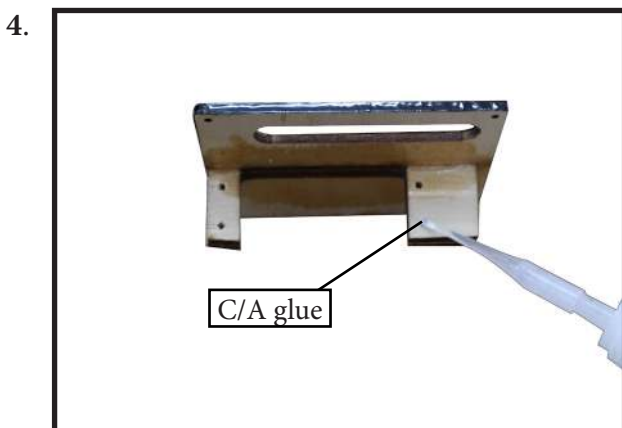
Place the servo between the mounting blocks and space it from the hatch. Use a pencil to mark the mounting hole locations on the blocks.



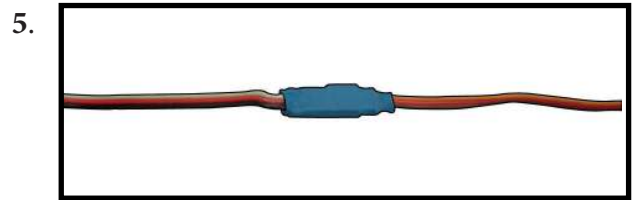
Use drill bit in a pin vise to drill the mounting holes in the blocks.



Apply 2-3 drops of thin C/A to each of the mounting holes. Allow the C/A to cure without using accelerator.



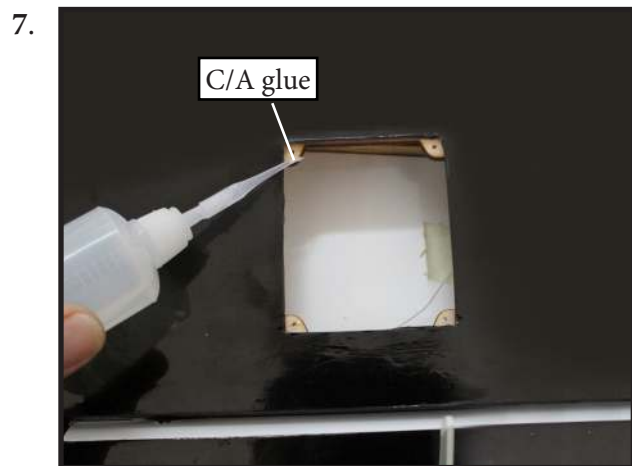
Use dental floss or heat shrink tubing to secure the connection between the servo and extension wire so they cannot become unplugged accidentally.



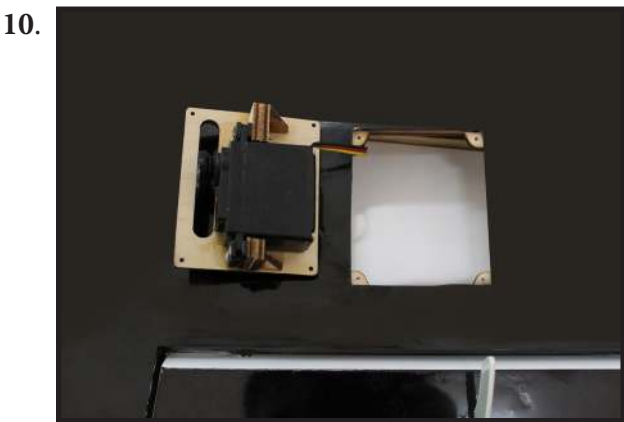
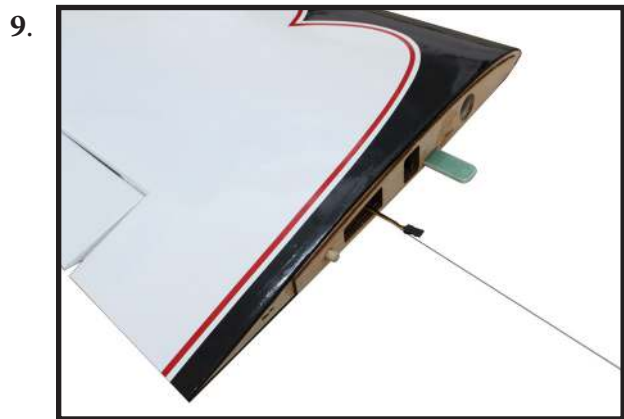
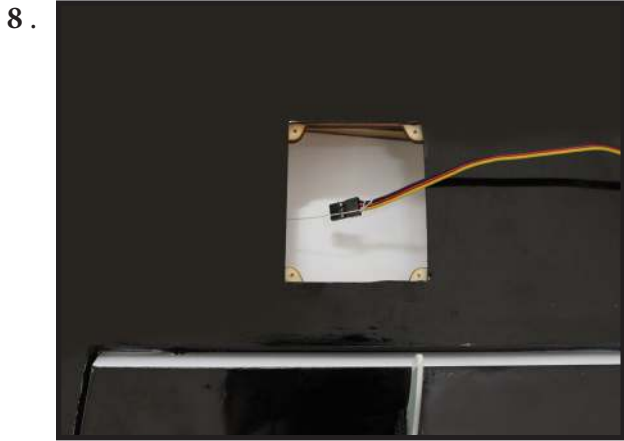
Secure the servo to the aileron hatch using a proper driver and the screws provided with the servo.



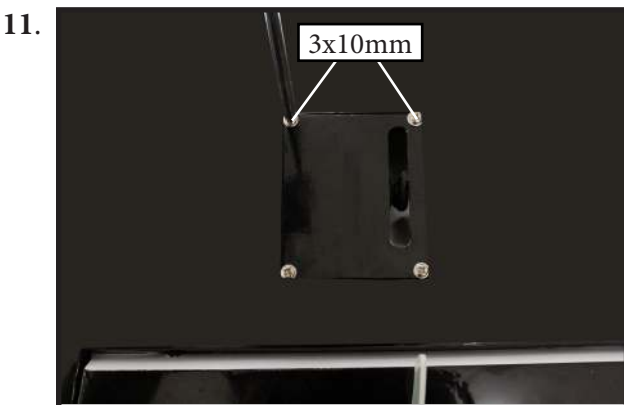
Apply 2-3 drops of thin C/A to each of the mounting aileron hatch mounting tabs in the wing. ***Allow the C/A to cure without using accelerator.***



Remove the string from the wing at the servo location and use the tape to attach it to the servo extension lead. Pull the lead through the wing and remove the string.



Set the aileron hatch in place and use a Phillips screw driver to install it with four wood screws.



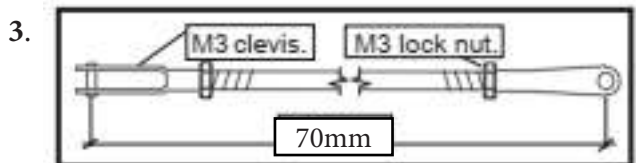
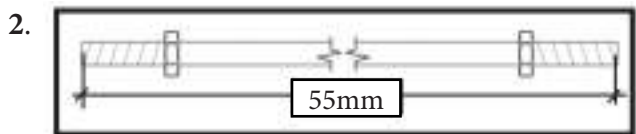
**AILERON PUSHROD HORN
INSTALLATION**

Required Parts

- Wing assembly(left and right)
- 2.6mmx50mm threaded rod(2)
- 3mm metal clevis with silicone tubing(4)
- Lock nut(4)

Required Tools and Adhesives

- Phillips screwdriver
- 30-minute epoxy





WHEEL AND WHEEL PANTS INSTALLATION

Required Parts

- Fuselage assembly
- Landing gear (2)
- Washer (2)
- Axle (2)
- Plywood washer (2)
- Wheel collar (4)
- Wheel pant(right and left)
- Wheel(2)

Required Tools and Adhesives

- Drill
- Drill bits:4mm
- Phillips screwdrive (large).

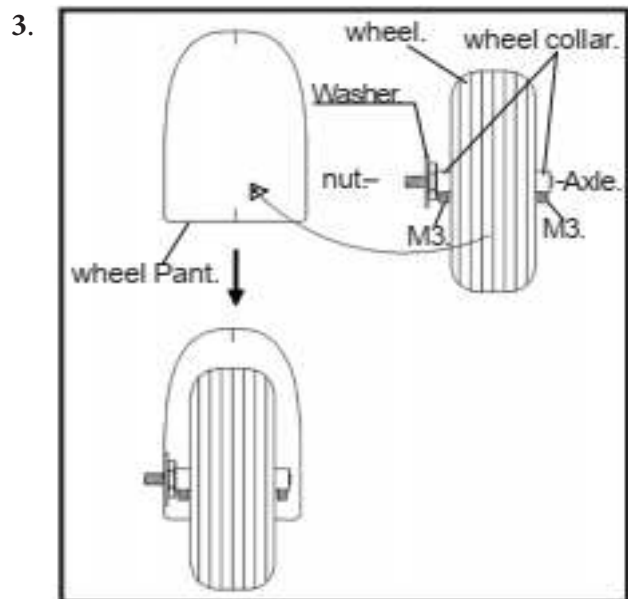
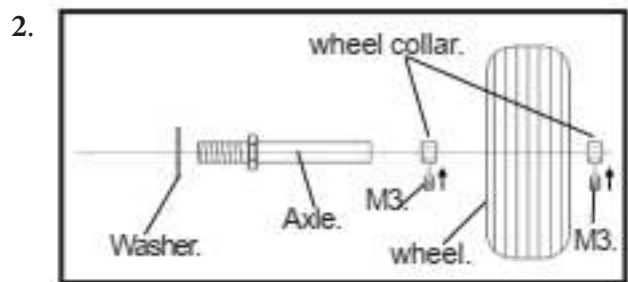
Locate the items necessary to install the wheel and wheel pants to the landing gear as shown.



You have to trim each axle using a tool cutting and cut-off wheel.

⚠ Caution when cutting the axles and wear protective goggles.

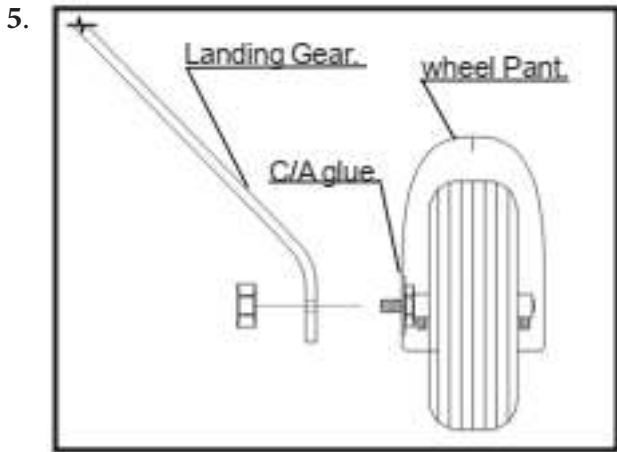
Slide the collar to the axle and setscrew the collars to secure the collar to the axle and then slider the wheel on the axle with a drop of oil on the axle so the wheel will spin freely when installed. Prepare a second collar and tighten the setscrew using hex wrench to secure the collar to the axle.



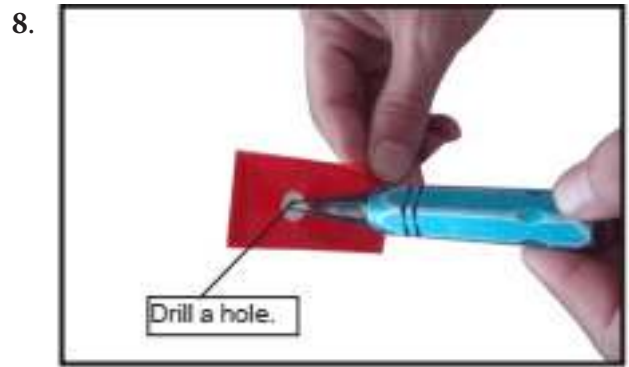
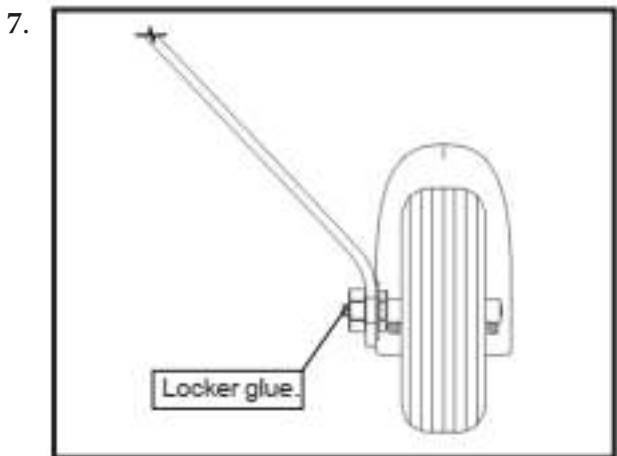
Place the wheel assembly in the wheel pants. The threaded portion of the axle will fit the notch of the wheel pant as shown.



Slide the threaded end of the axle through the hole in the bottom of the landing gear leg. Use a washer and lock-nut to tighten the axle to the landing gear. Make sure to use threadlock on the nut so it won't vibrate loose in flight as shown.



Tighten the setcrews using a hex wrench to secure the collars on the axle over the flat spot to retain the wheel as shown.



Repeat steps as above to attach remaining wheel pants to the landing gear.


INSTALLING THE FUSELAGE SERVOS

Required Parts

- Fuselage assembly

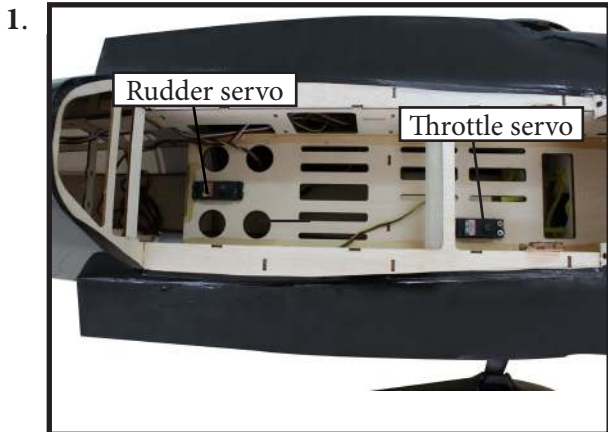
Required Tools and Adhesives

- Drill
- Drill bits:2mm
- Phillips screwdriver (small)

 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.

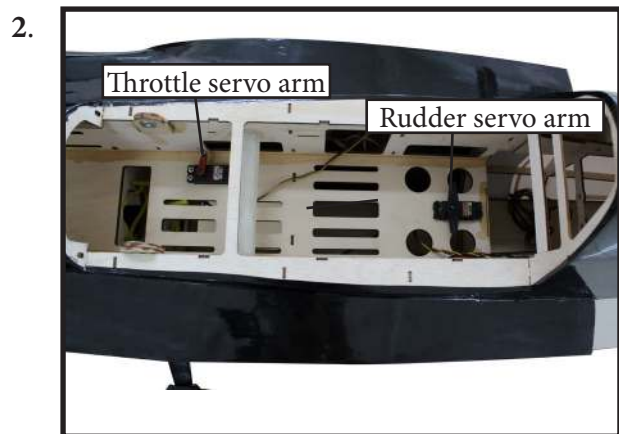
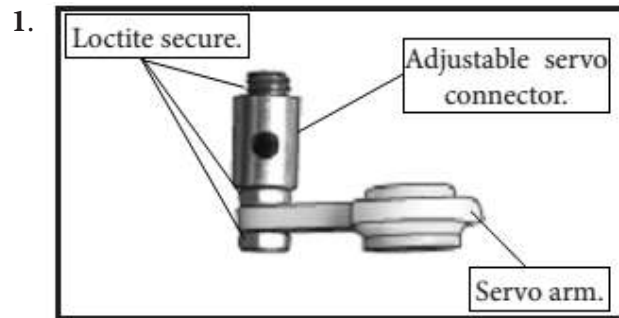
Install the rubber grommets and brass collets into all servos. Test fit the servos into the fuselage servo mounts.

Secure the servos with the screws provided with your radio system.

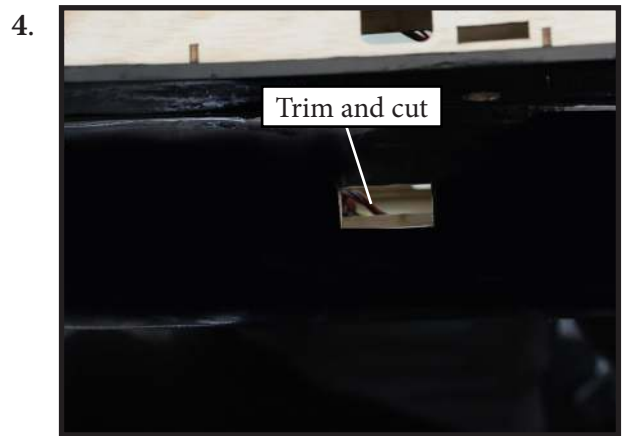
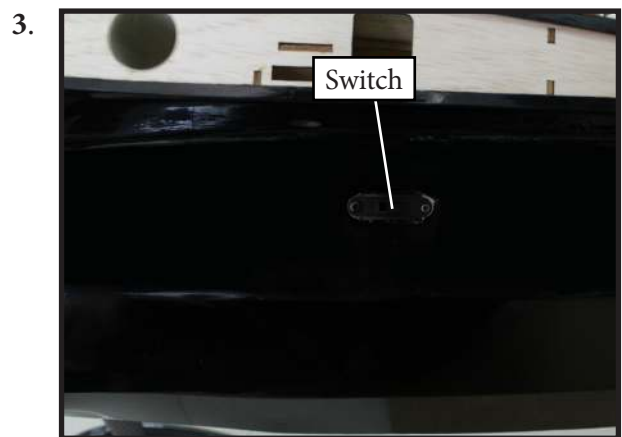
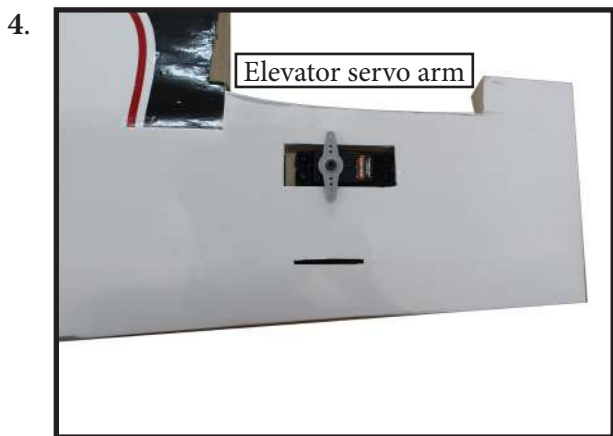


THROTTLE SERVO ARM INSTALLATION

Install adjustable servo connector in the servo arm as same as picture below:

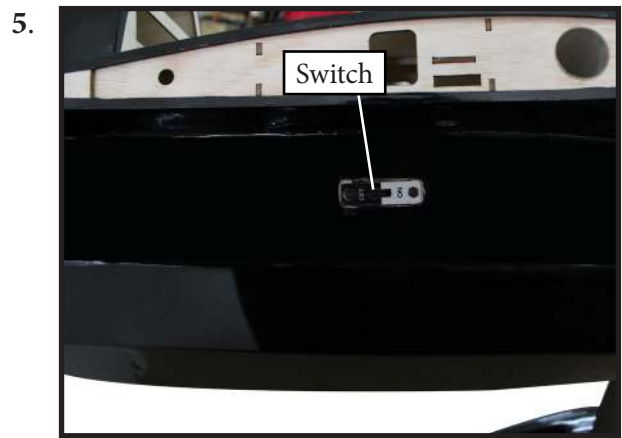
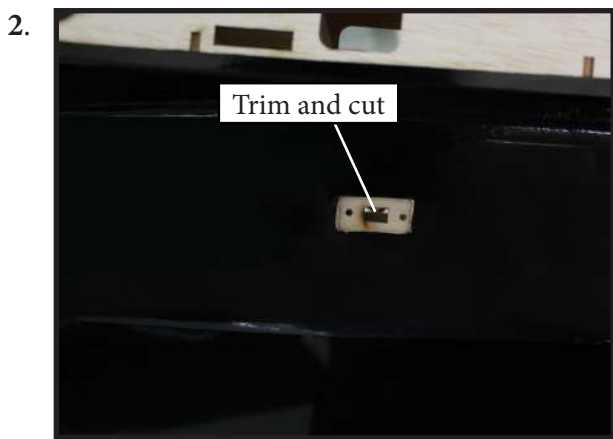
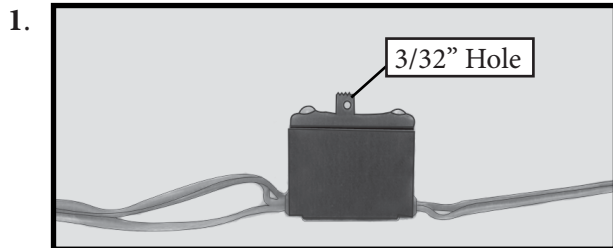


Minimum servo spec.
Torque : 6.0V: 192.4 oz-in (13.8 kg-cm)
 7.4V: 350.0 oz-in (25.2 kg-cm)



INSTALLING THE SWITCH

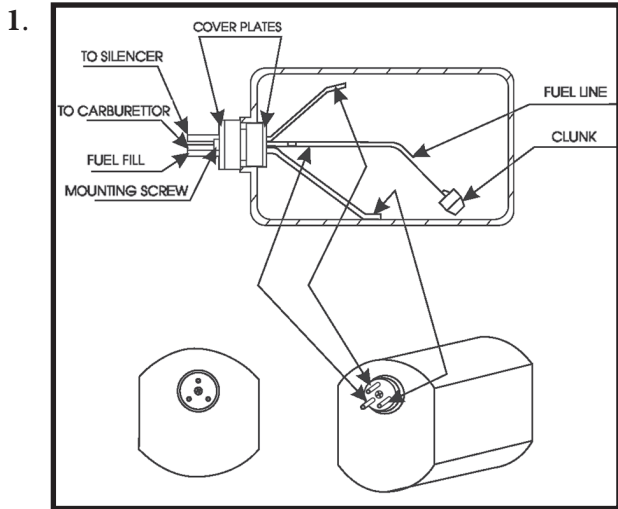
Install the switch into the precut hole in the side, in the fuselage.



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.

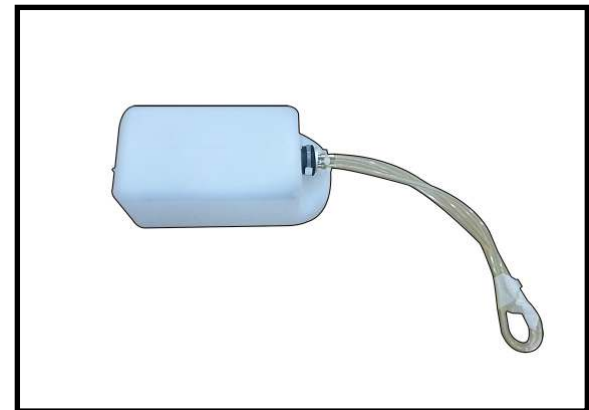
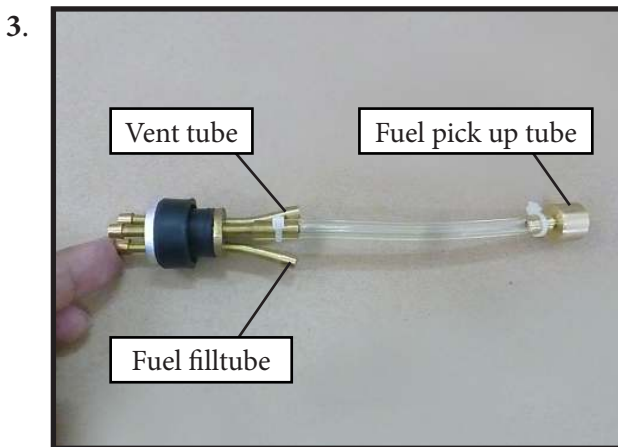


With the stopper assembly in place, the weighted pick-up should rest away from the rear of the tank and move freely inside the tank. The top of the vent tube should rest just below the top of the tank. It should not touch the top of the tank.

When satisfied with the alignment of the stopper assembly tighten the 3x20mm machine screw until the rubber stopper expands and seals the tank opening. Do not overtighten the assembly as this could cause the tank to split.

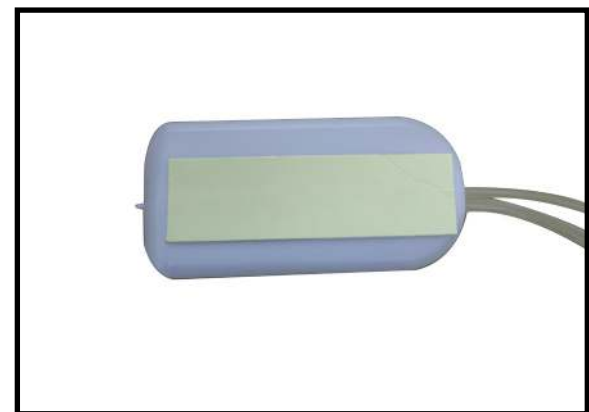


FUEL TANK INSTALLATION



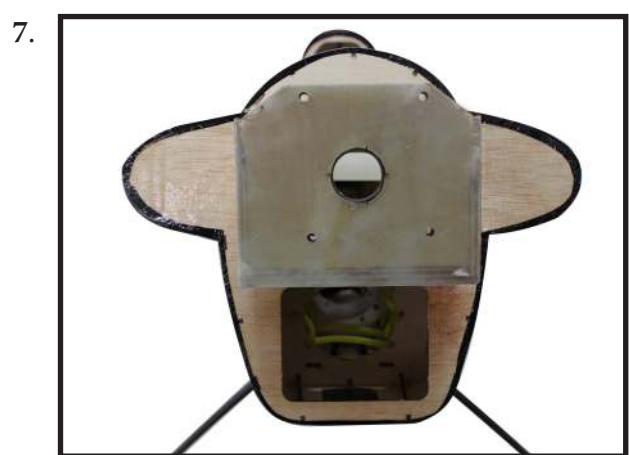
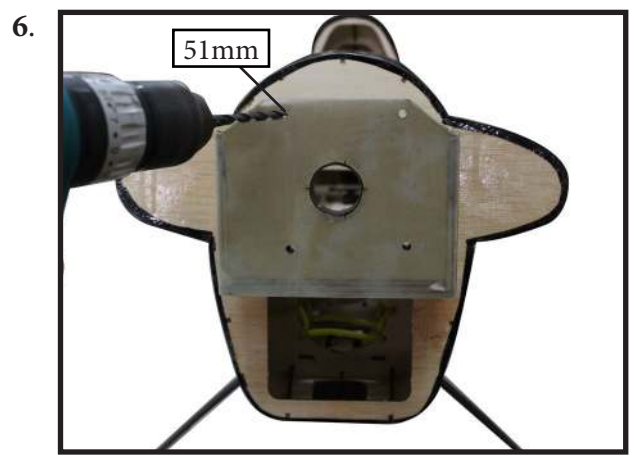
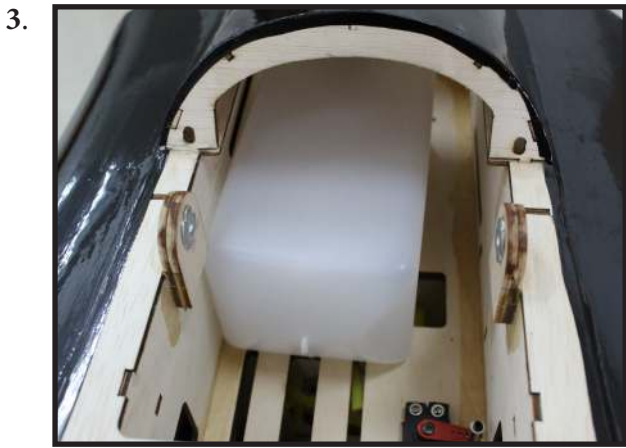
Carefully bend the second nylon tube up at a 45° angle. This tube is the vent tube.

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.



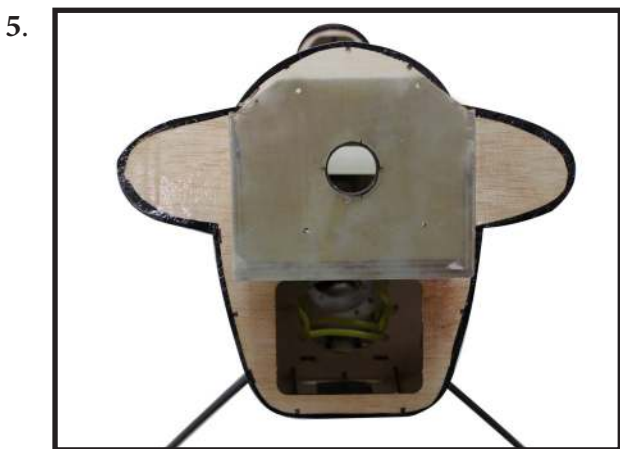
! You should mark which tube is the vent and which is the fuel pickup when you attach fuel tubing to the tubes in the stopper. Once the tank is installed inside the fuselage, it may be difficult to determine which is which.

Slide the fuel tank into the fuselage. Guide the lines from the tank through the hole in the firewall.



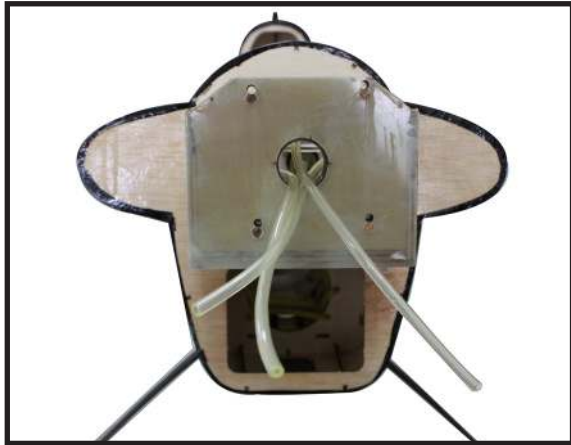
Use a 1/4 bit to drill the engine mounting holes. Remove mounting template from firewall. Firewall shown with mounting holes drilled ready for engine mounting.

Using mounting bolts and washers mount engine to firewall.



Drill a hole for the throttle pushrod.

10.



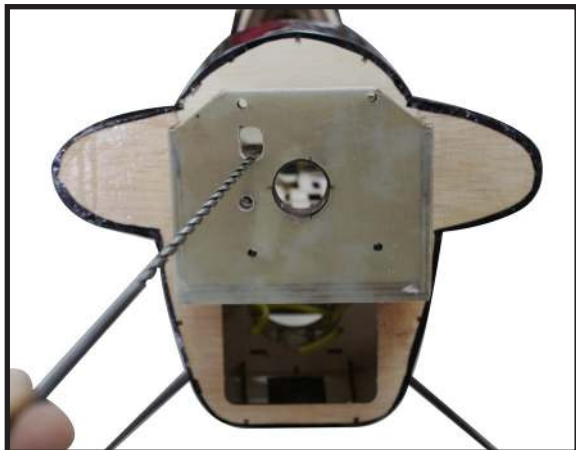
Connect the lines from the tank to the engine and muffler. The vent line will connect to the muffler and the line from the tank to the carburetor.

! *Blow through one of the lines to ensure the fuel lines have not become kinked inside the fuel tank compartment. Air should flow through easily.*

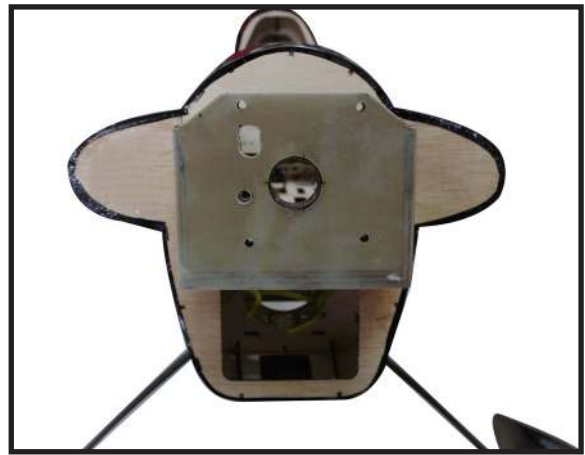
MOUNTING THE ENGINE

Please see below pictures.

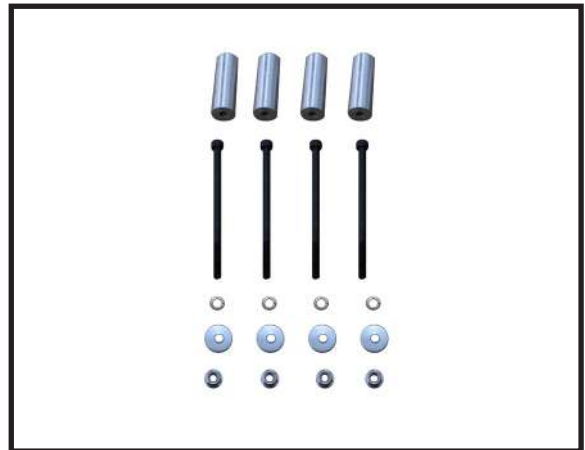
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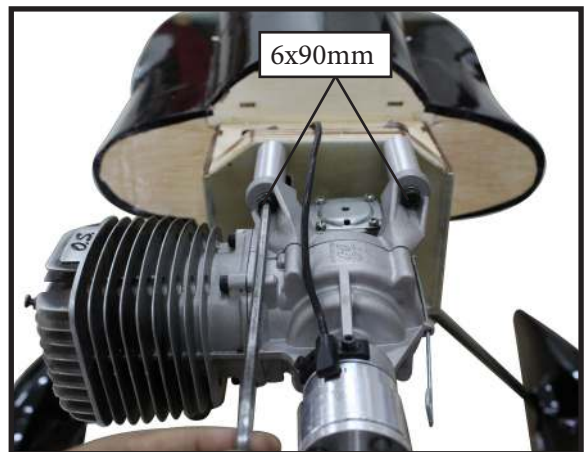
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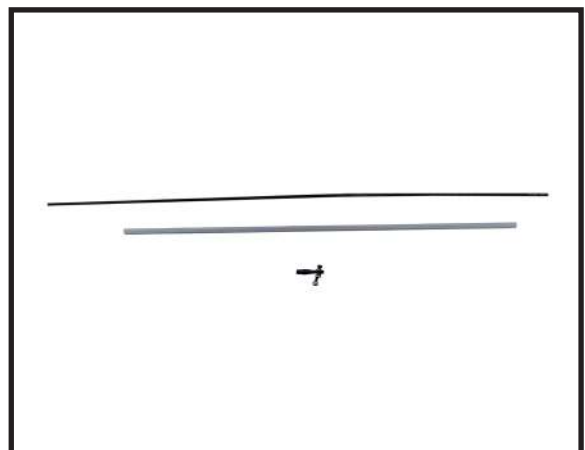
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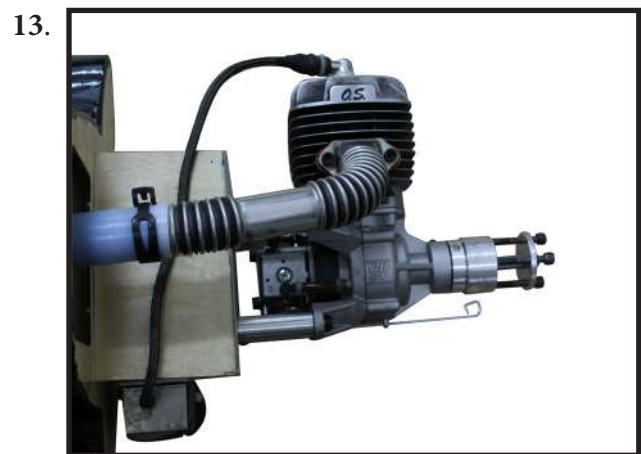
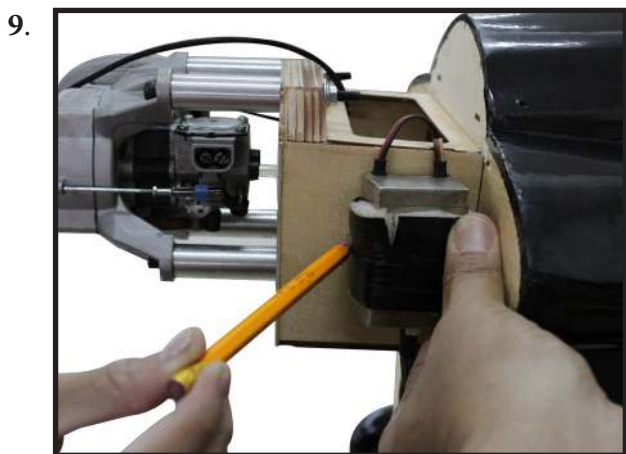
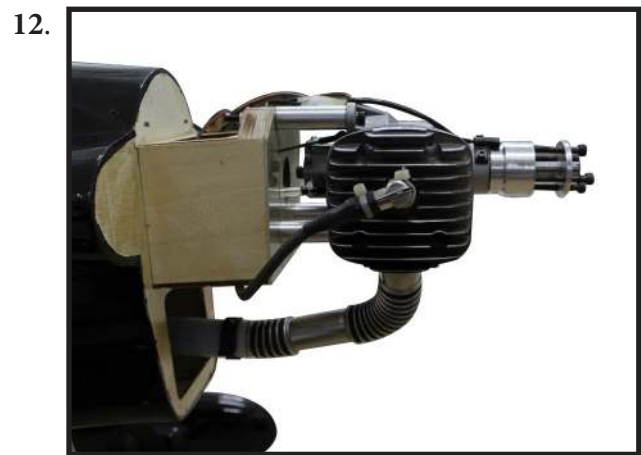
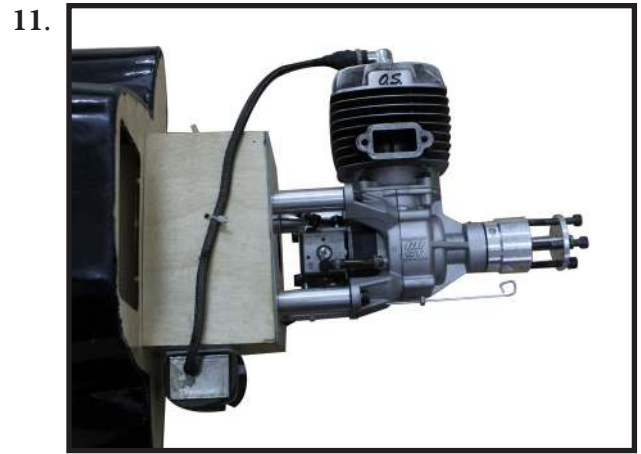
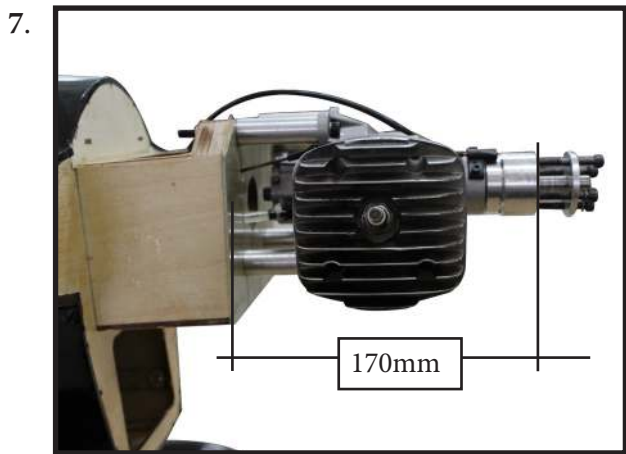
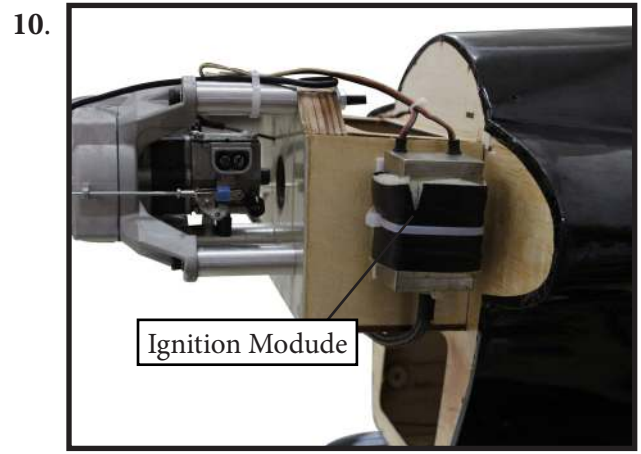
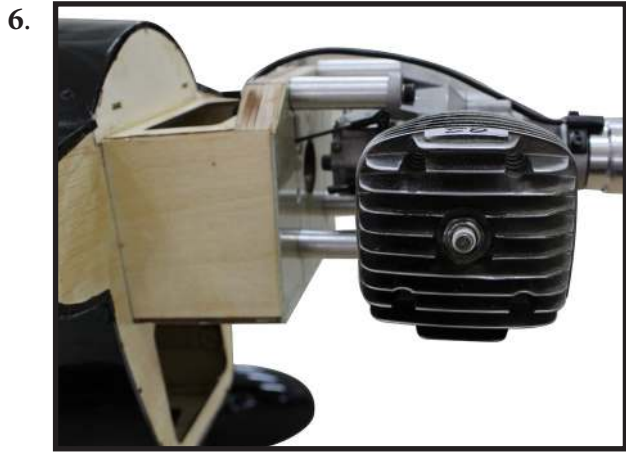


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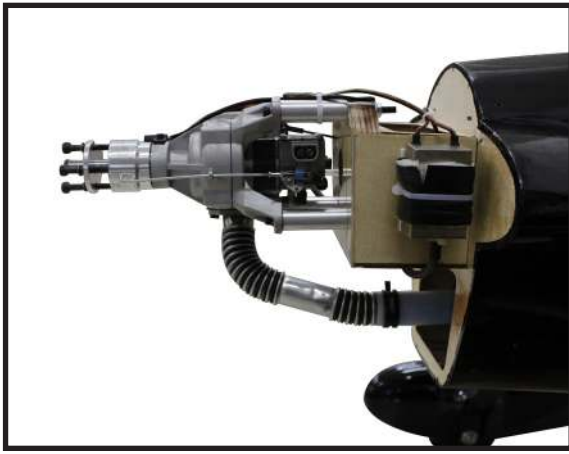


5.





14.



COWLING

- Please see below pictures.

1.



2.

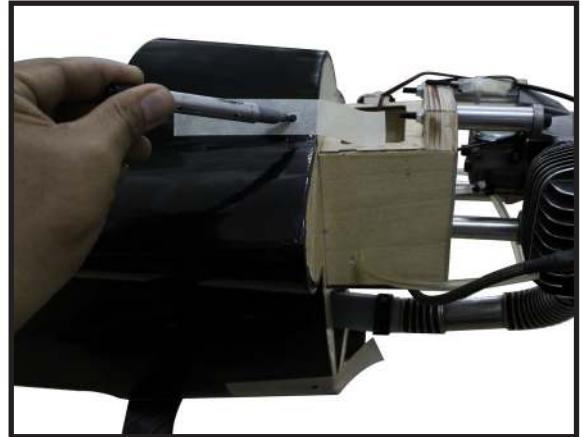


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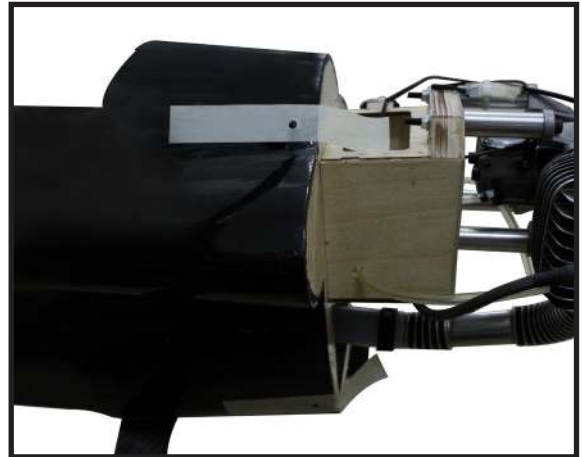


Tape the cowl to the fuselage using low-tack tape.

4.



5.



6.



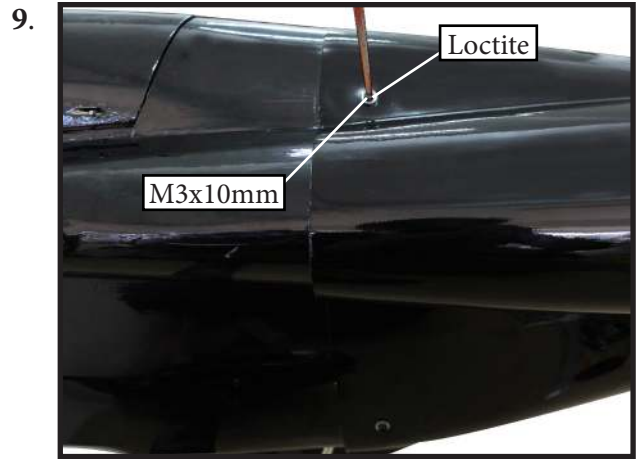
Use a drill and drill bit to drill the holes for the cowl mounting screws. Make sure the cowl position is correct before drilling each hole.



With the muffler, needle valve, and spark/glow plug removed from the engine, slide the cowl in place over the engine. Temporarily install the propeller and spinner in order to find the exact location of the cowl. When satisfied with the cowl placement, secure the cowl to the fuselage using masking tape.

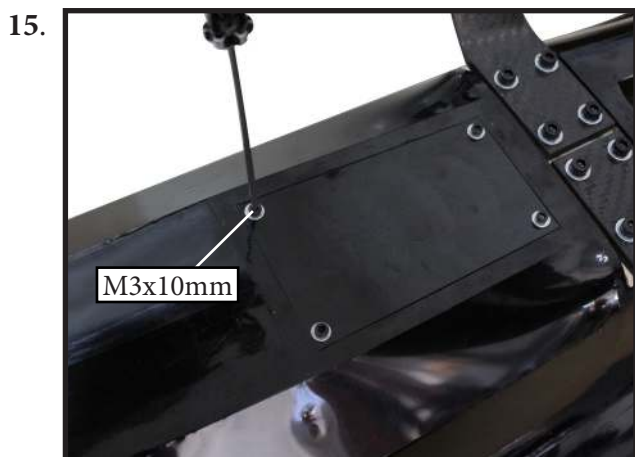
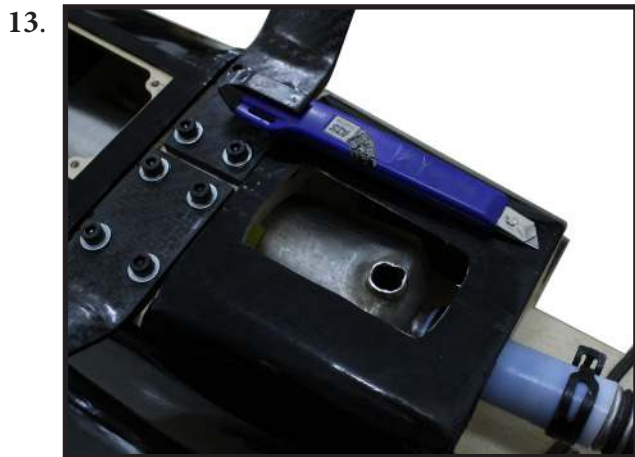


Install the muffler and muffler extension onto the engine and make the cutout in the cowl for muffler clearance. Connect the fuel and pressure lines to the carburetor, muffler and fuel filter valve. Secure the cowl to fuselage using the M3x10mm socket head screws. Putting a small length of silicon fuel tube under the head of the screw helps with vibration.



Because of the size of the cowl, it may be necessary to use a needle valve extension for the high speed needle valve. Make this out of sufficient length 1.5mm wire and install it into the end of the needle valve. Secure the wire in place by tightening the set screw in the side of the needle valve.





INSTALLING THE SPINNER

- Install the spinner backplate, propeller and spinner cone.

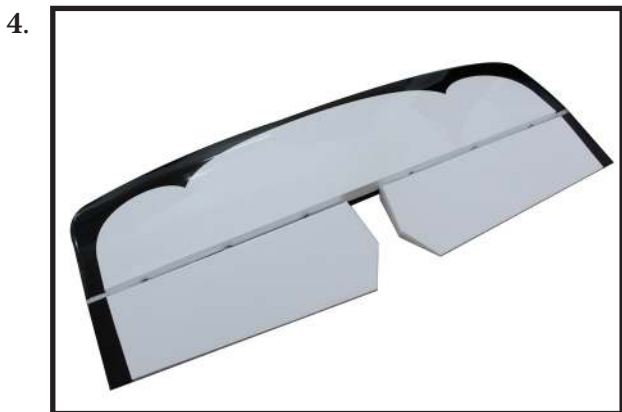
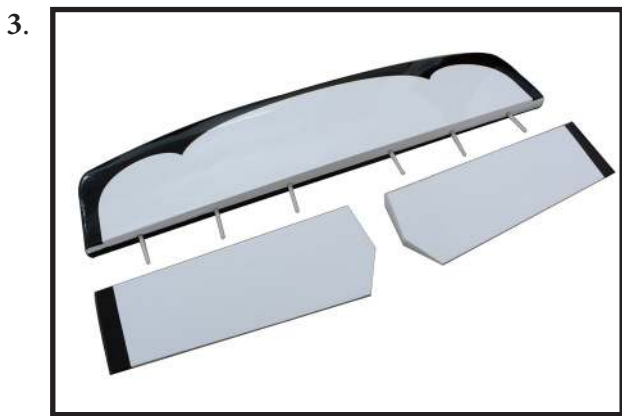
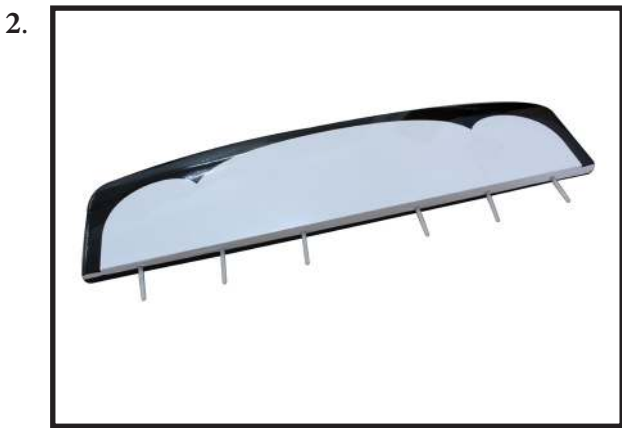
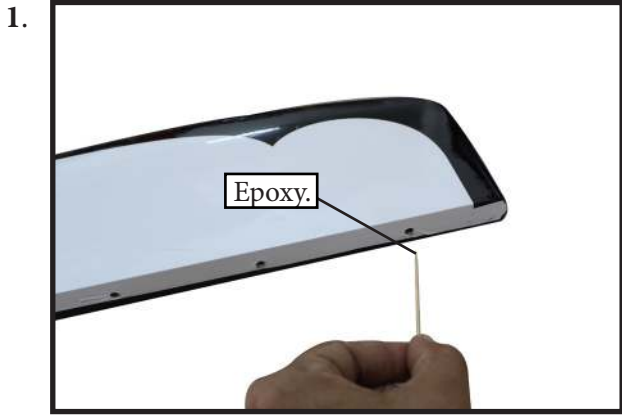


⚠ The propeller should not touch any part of the spinner cone. If it does, use a sharp modeling knife and carefully trim away the spinner cone where the propeller comes in contact with it.



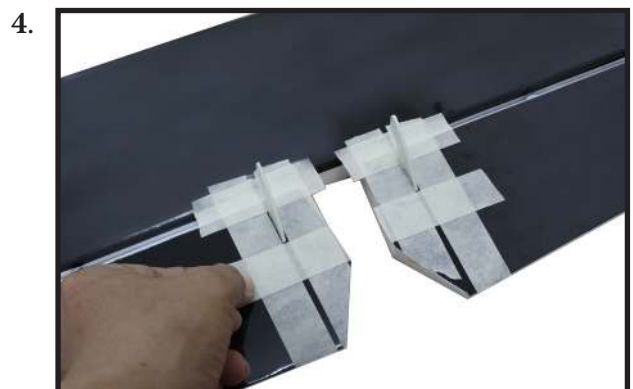
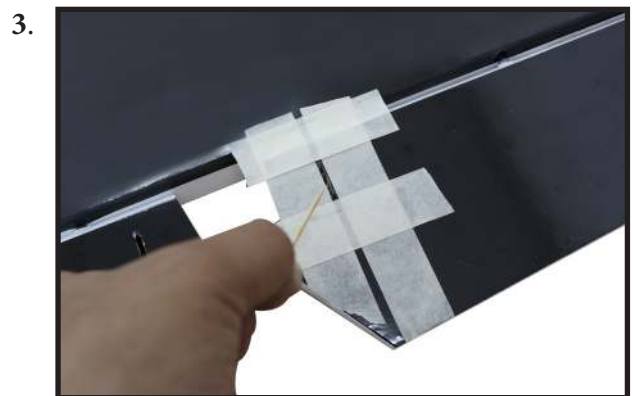
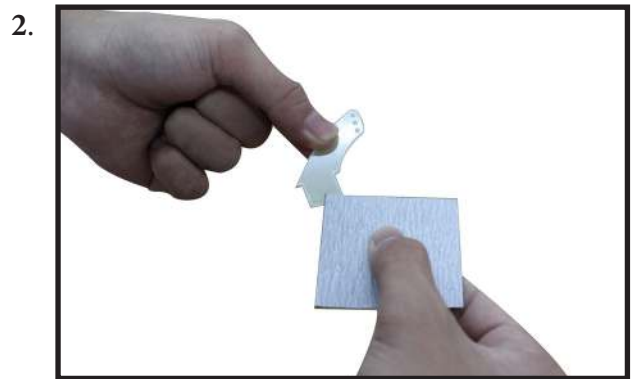
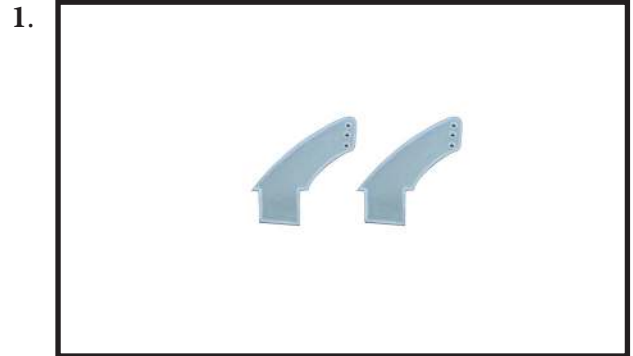
INSTALL NAIL HINGE ELEVATOR

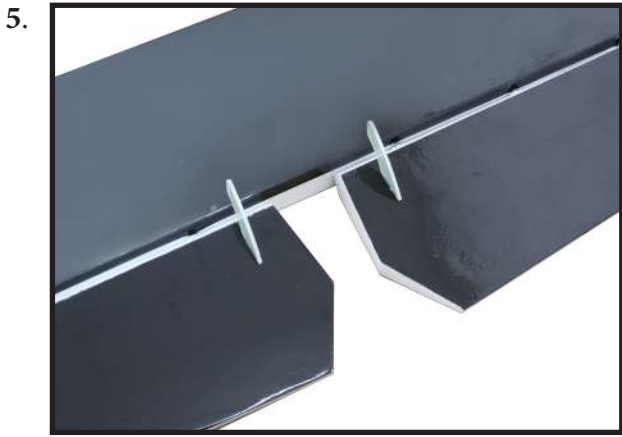
Test fit the hinges into the elevator, and then the hinges into the tail. Ensure that the hinge pockets line up, and that the hinges move freely.



INSTALL ELEVATOR CONTROL HORN

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

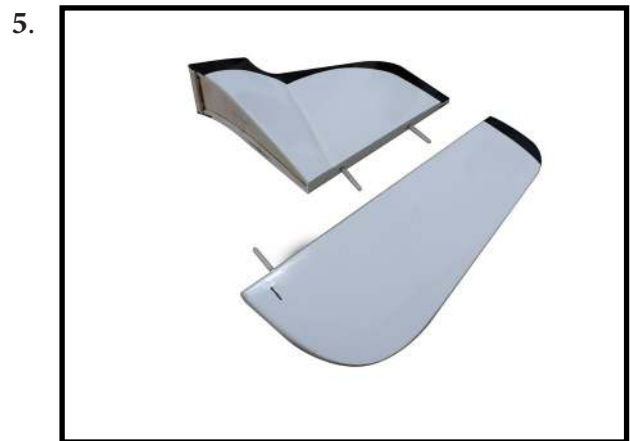
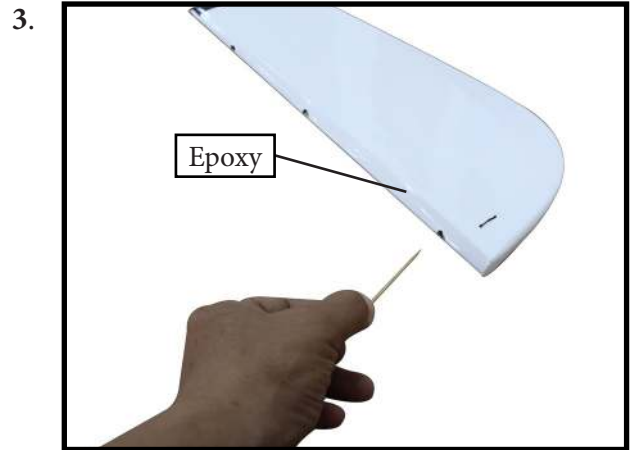




HINGING THE RUDDER

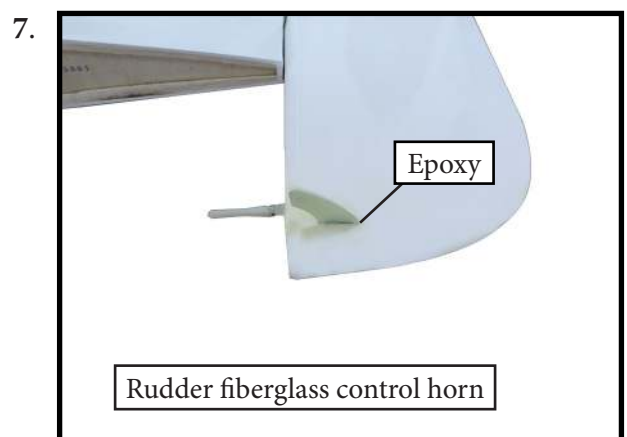
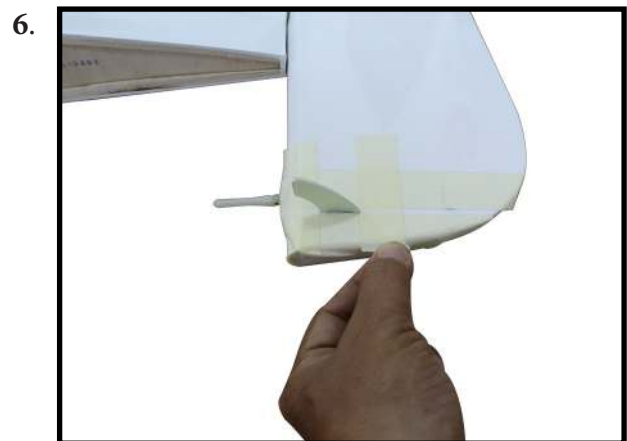
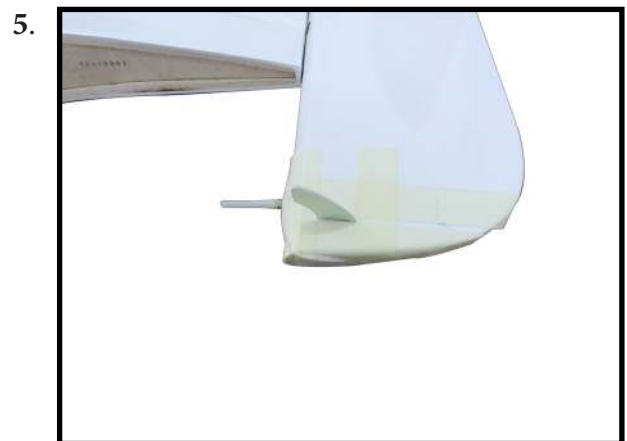
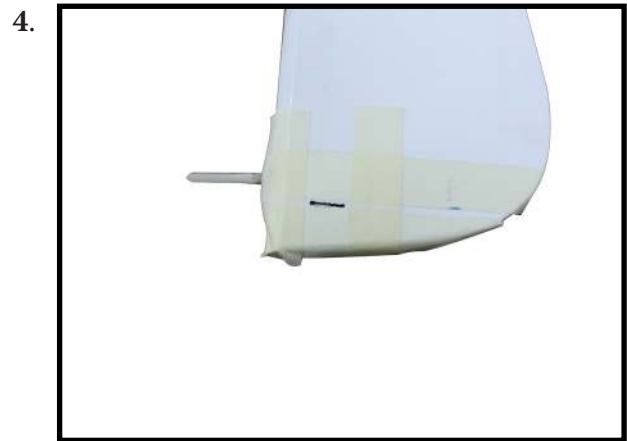
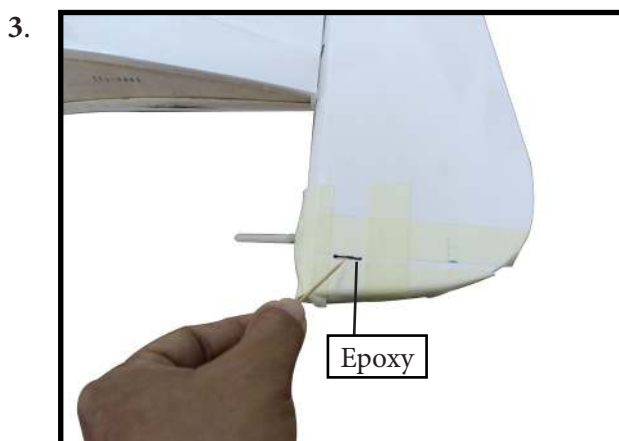
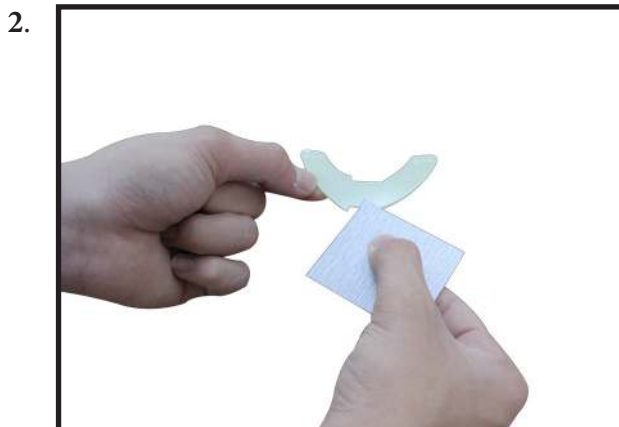
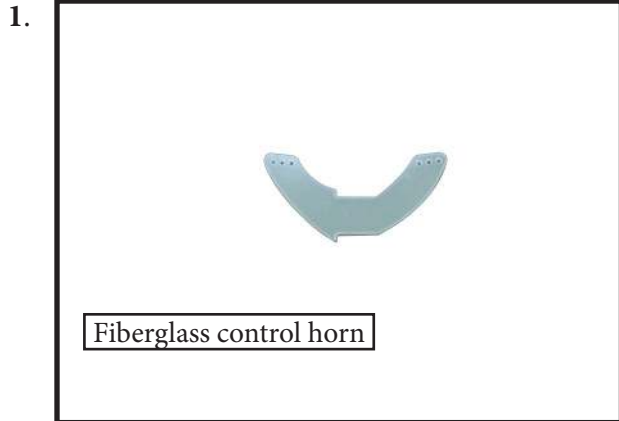
Glue the top three rudder hinges in place using the same techniques used to hinge the elevator.

The lower hinge will be glued when the fin/rudder assembly is attached to the fuselage.



INSTALL RUDDER CONTROL HORN

Repeat steps to install the rudder control horn as same as steps done for elevator.



INSTALLING THE HORIZONTAL STABILIZER

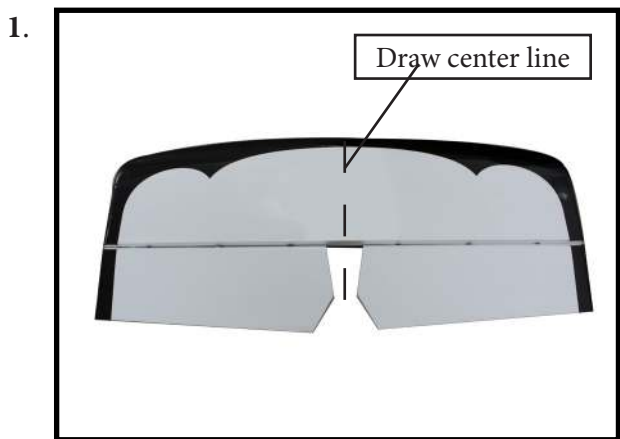
Required Parts

- Fuselage assembly
- Tail Set(Rudder and Elevator)

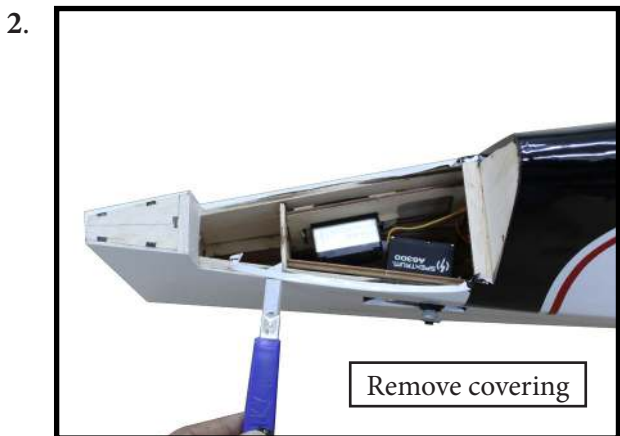
Required Tools and Adhesives

- Ruler, Pen, Knife
- 30-minute epoxy

Using a ruler and a pen, locate the centerline of the horizontal stabilizer, at the trailing edge, and place a mark. Use a triangle and extend this mark, from back to front, across the top of the stabilizer. Also extend this mark down the back of the trailing edge of the stabilizer.



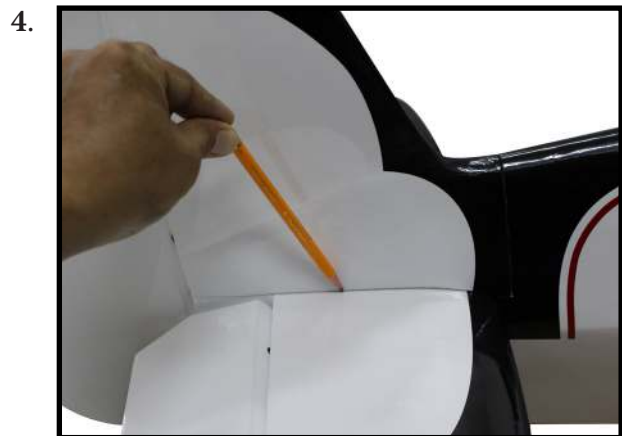
Using a modeling knife, carefully remove the covering at mounting slot of horizontal stabilizer (both side of fuselage).



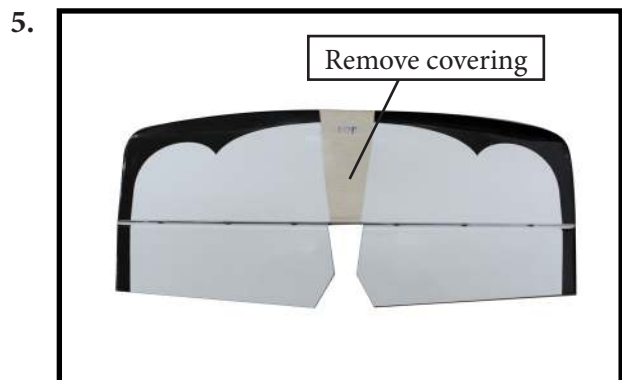
Slide the stabilizer into place in the precut slot in the rear of the fuselage. The stabilizer should be pushed firmly against the front of the slot.




With the stabilizer held firmly in place, use a pen and draw lines onto the stabilizer where it and the fuselage sides meet. Do this on both the right and left sides and top and bottom of the stabilizer.



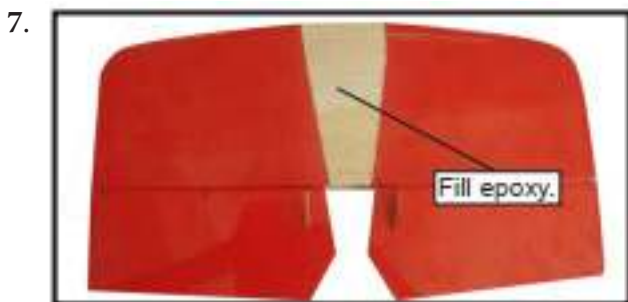
Remove the stabilizer. Using the lines you just drew as a guide, carefully remove the covering from between them using a modeling knife.





 *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.*

Using a modeling knife, carefully remove the covering that overlaps the stabilizer mounting platform sides in the fuselage. Remove the covering from both the top and the bottom of the platform sides.



When you are sure that everything is aligned correctly, mix up a generous amount of 30 Minute Epoxy. Apply a thin layer to the top and bottom of the stabilizer mounting area and to the stabilizer mounting platform sides in the fuselage. Slide the stabilizer in place and realign. Double check all of your measurements once more before the epoxy cures. Hold the stabilizer in place with T-pins or masking tape and remove any excess epoxy using a paper towel and rubbing alcohol.



INSTALLING VERTICAL FIN

Required Parts

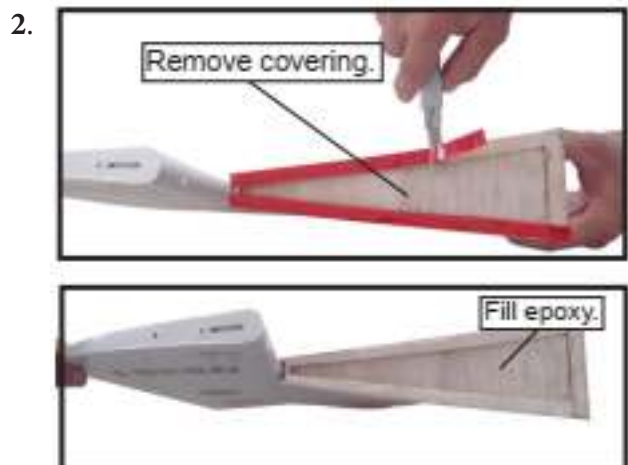
- Fuselage assembly
- Tail Set(Rudder and Elevator)

Required Tools and Adhesives

- Ruler, Pen, Knife
- 30-minute epoxy



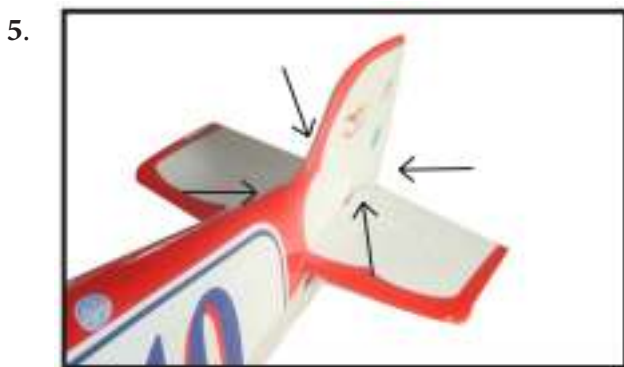
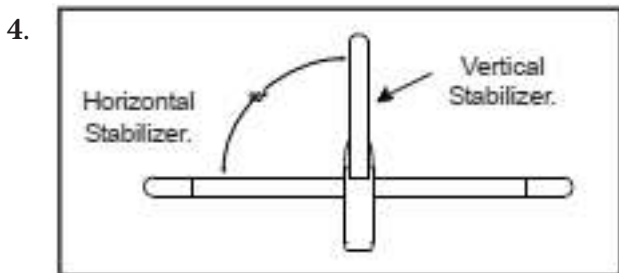
Using a modeling knife, remove the covering from over the precut hinge slot cut into the lower rear portion of the fuselage.



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.



Slide the vertical stabilizer back in place. Using a triangle, check to ensure that the vertical stabilizer is aligned 90° to the horizontal stabilizer.



When you are sure that everything is aligned correctly, mix up a generous amount of Flash 30 Minute Epoxy. Apply a thin layer to the mounting slot and to bottom of the vertical stabilizer mounting area. Apply epoxy to the bottom and top edges of the filler block and to the lower hinge also. Set the stabilizer in place and realign. Double check all of your measurements once more before the epoxy cures. Hold the stabilizer in place with T-pins or masking tape and remove any excess epoxy using a paper towel and rubbing alcohol. Allow the epoxy to fully cure before proceeding.

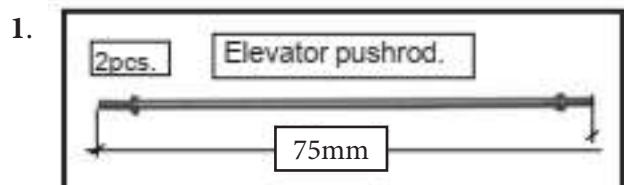


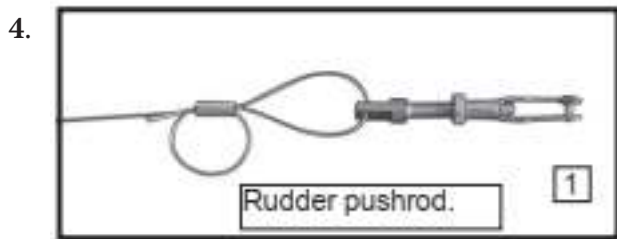
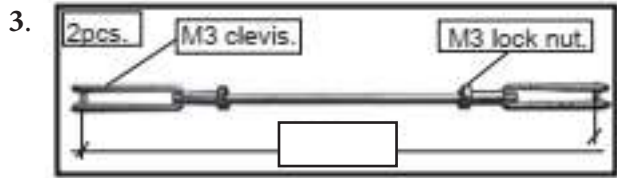
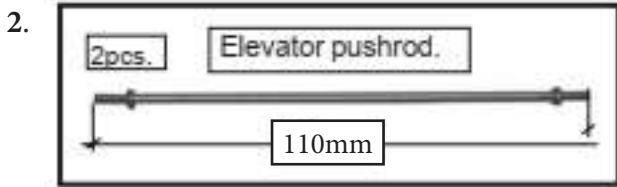
RUDDER AND ELEVATOR PUSHROD HORN INSTALLATION

Required Parts

- 1000mm Cable(2)
- 2.6mmx80mm threaded rod(2)
- M3 metal clevis with silicone tubing(8)
- Lock nut(4)
- Cable lock(8)

Locate the items for this section of the manual.





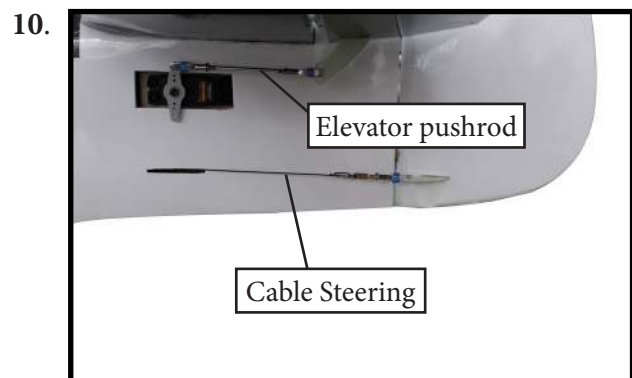
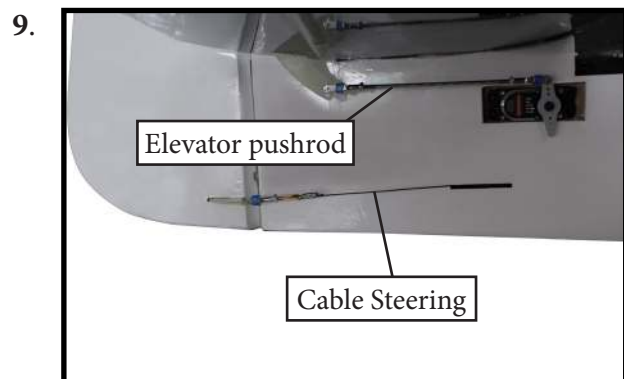
Install the rudder and elevator control horn. using the same method as with the rudder and aileron control horns.

Position the rudder and elevator control horn on the both side of rudder and elevator.



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

Elevator and rudder pushrods assembly as pictures below.





MOUNTING THE TAIL WHEEL

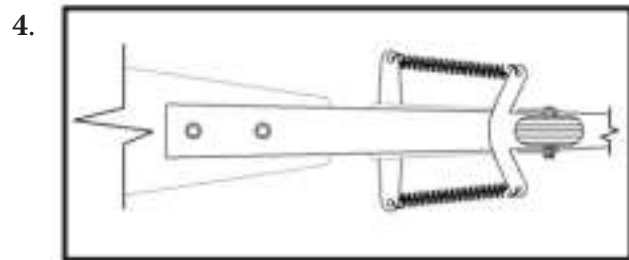
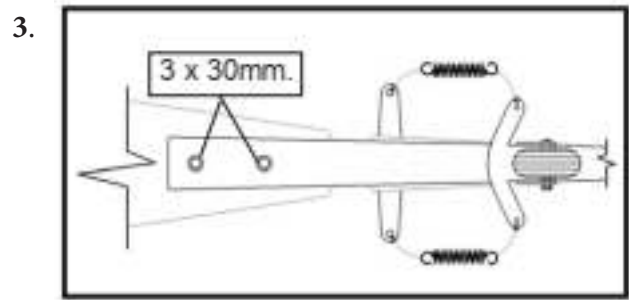
Required Parts

- Fuselage assembly
- Tail wheel assembly
- M3 Washer(2)
- M3x30mm socket head screw(2)
- M3x25mm machine screw(2)

Required Tools and Adhesives

- Phillis screwdrive
- 30-minute epoxy
- Drill

Locate the items for this section of the manual.



INSTALLATION PILOT

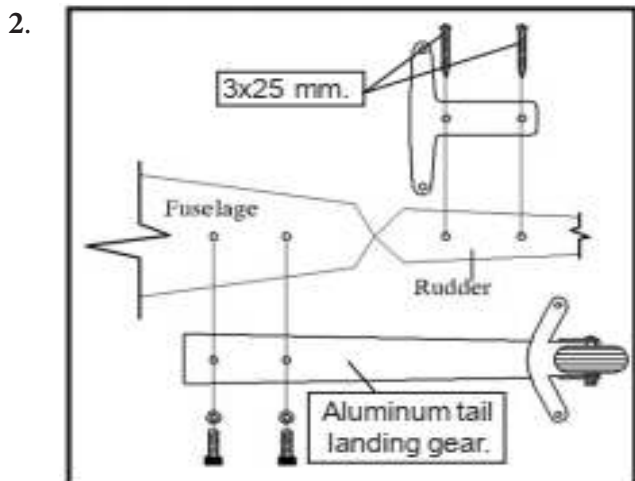
Required Parts

- Fuselage assembly
- Canopy
- Pilot
- M2x6mm machine screw(6)

Required Tools and Adhesives

- Phillis screwdrive
- 30-minute epoxy
- Ruler

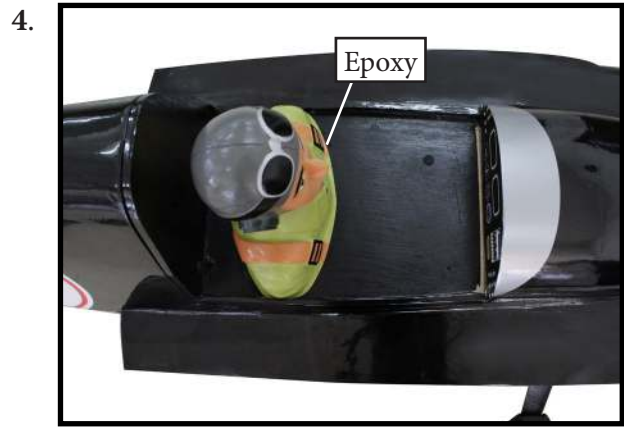
A scale pilot is included with this ARF. The Pilot included fitting well to the cockpit. (or you can order others scale pilot figures made by SG Models factory. They are available at SG Models distributors.)



If you are going to install a pilot figure, please use a sanding bar to sand the base of the figure so that it is flat.



Position the pilot figure on the canopy floor as show. Locate the oval shaped on the canopy floor and remove the covering. Use epoxy to glue this into the base of the pilot figure, please see pictures as shown.



Position the canopy onto the fuselage. Trace around the canopy and onto the fuselage using a felt-tipped pen.

Apply a bead of canopy glue around the inside edge of the canopy. Position the canopy onto the hatch. Use tape to hold the canopy secure until the glue fully cures.

Install the canopy and secure it with M2x6mm screws.



APPLYING DECALS

Please use scissors and/or a 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. You may use the photos on the box and/or online images to aid in their location and application.

If using custom decals, please follow manufacturers instructions to install those decals. Please be certain the model is clean and free from oily fingerprints and dust. Position decal on the model where desired, using images of appropriate artwork/photos to aid in their location.

INSTALLING THE BATTERY-RECEIVER

Required Parts

- Fuselage assembly
- Receiver
- Receiver battery

Required Tools and Adhesives

- Phillips screwdriver

Plug the servos 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.

Route the antenna in the antenna tube inside the fuselage and secure it to the bottom of fuselage using a plastic tape.



ATTACHMENT WING-FUSELAGE

Required Parts

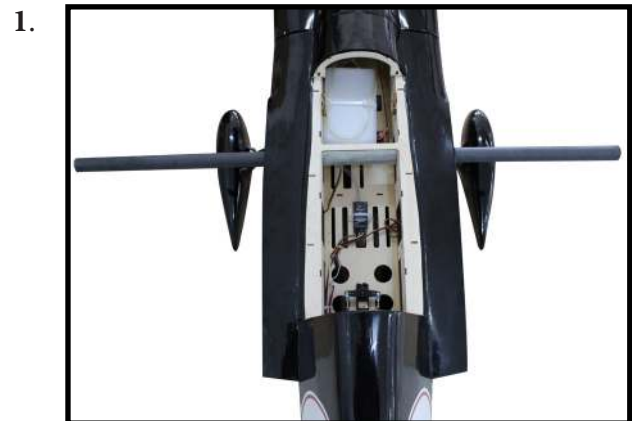
- Fuselage assembly
- Wing assembly
- Wing tube
- M4x12mm socket head screw(2)
- M4 washer(2)

Required Tools and Adhesives

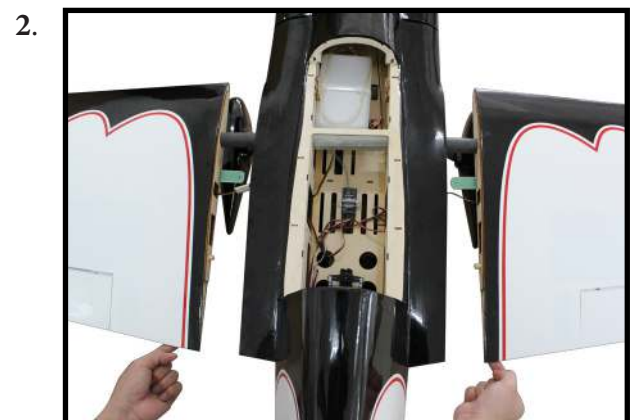
- Phillips screwdriver
- 30-minute epoxy
- Drill bit 3mm
- Drill

Locate the items necessary to install the wing set to fuselage.

Attach the aluminium tube into fuselage.



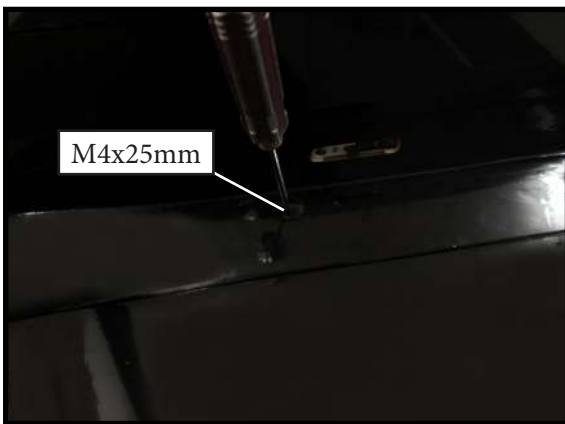
Insert two wing panels as pictures below.



3.



4.



5.



BALANCING

An important part of preparing the aircraft for flight is properly balancing the model.

1) Attach the wing panels to the fuselage. Make sure to connect the leads from the aileron to the appropriate leads from the receiver. Make sure the leads are not exposed outside the fuselage before tightening the wing bolts. Your model should be flight-ready before balancing.

2) The recommended Center of Gravity (CG) location for your model is (120mm) back from the leading edge at the center of the wing.

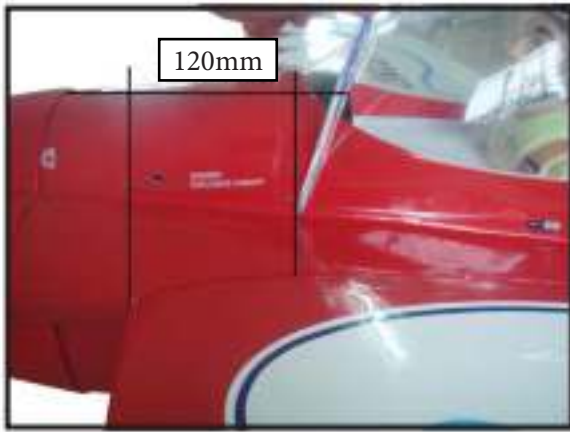
3) When balancing your model, make sure it is assembled and ready for flight. Support the plane upright at the marks made on the wing with your fingers or a commercially available balancing stand. This is the correct balance point for your model.

*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.

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.

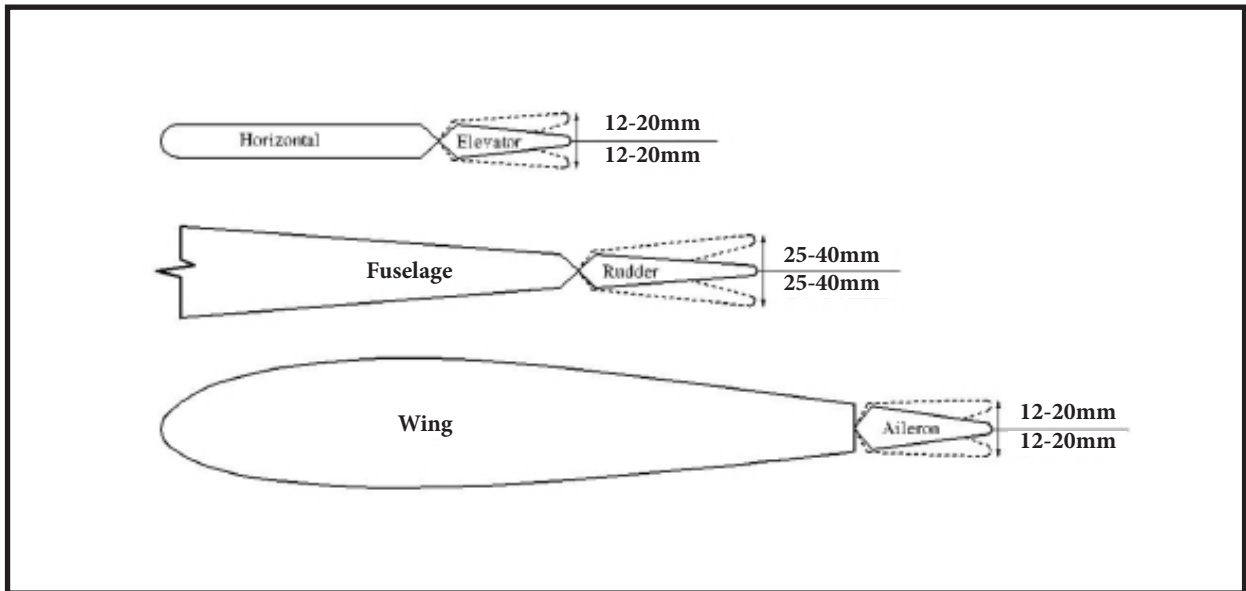
Lift the model. If the tail drops when you lift, the model is “tail heavy” and you must add weight* to the nose. If the nose drops, it is “nose heavy” and you must add weight* to the tail to balance.

1.



CONTROL THROWS

Ailerons:	Rudder:
High Rate :	High Rate :
Up : 20 mm	Right : 40 mm
Down : 20 mm	Left : 40 mm
Low Rate :	Low Rate :
Up : 12 mm	Right : 25 mm
Down : 12 mm	Left : 25 mm
Elevator:	
High Rate :	
Up : 20 mm	
Down : 20 mm	
Low Rate :	
Up : 12 mm	
Down : 12 mm	



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 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 **CASSUTT 3M RACER** 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 **CASSUTT 3M RACER.***

*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.

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Facebook : www.facebook.com/SeaGullModels.