LASER 48" ARF 30E

SEAGULL MODELS

ASSEMBLY MANUAL

SG MODELS
SINCE 1998

Specifications:

Wingspan------------------ 122 cm--------------------- 48 inches.
Length---------------------- 118.3 cm------------------- 47 inches.
Wing Area----------------- 31 sq.dm ------------------- 480.5 sq.in.
Weight--------------------- 1.7 kg--------------------- 3.7 lbs.
Radio---------------------- 4 channels----------------- 4 servos.
Motor---------------------- GA800.15 MKII 810KV.
ESC------------------------ 65A.
Propeller------------------- 12x6 – 13x6 – 14x6.
Battery--------------------- 4S LiPo 2200–2800mAh.

INTRODUCTION

Thank you for choosing the **LASER 48" ARF 30E** ARTF by **SG MODELS**. The **LASER 48" ARF 30E** 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 **LASER 48" ARF 30E** 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 **LASER 48" ARF 30E** 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 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
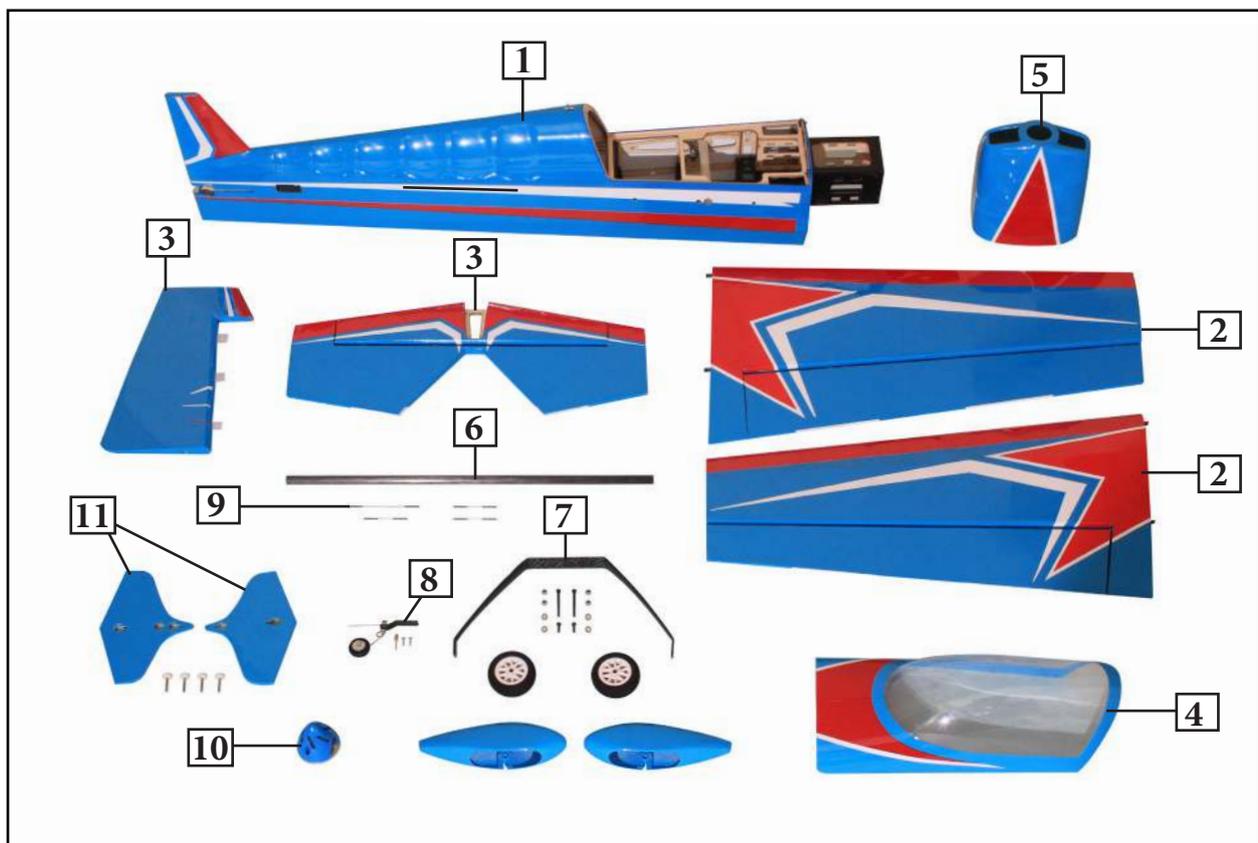
KIT CONTENTS

SEA417: LASER 48" ARF 30E

1. Fuselage
2. Wing set (2)
3. Tail set (2)
4. Canopy
5. Cowling
6. Wing tube
7. Landing gear
8. Tail wheel
9. Pushrod
10. Spinner
11. Wing tip

ADDITIONAL ITEMS REQUIRED

☐   Gasoline engine.
☐   Computer radio 4 channel with 4 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 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.

1.

C/A Hinge

Remove each hinge from the wing panel and aileron and place a T-pin in the center of each hinge. Slide each hinge into the wing panel until the T-pin is snug against the wing panel. This will help ensure an equal amount of hinge is on either side of the hinge line when the aileron is mounted to the aileron.

2.

Slide the wing panel on the aileron until there is only a slight gap. The hinge is now centered on the wing panel and aileron. Remove the T-pins and snug the aileron against the wing panel. A gap of 1/64" or less should be maintained between the wing panel and aileron.

Deflect the aileron and completely saturate each hinge with thin C/A glue. The ailerons front surface should lightly contact the wing during this procedure. Ideally, when the hinges are glued in place, a 1/64" gap or less will be maintained throughout the lengh of the aileron to the wing panel hinge line.

NOTE : The hinge is constructed of a special material that allows the C/A to wick or penetrate and distribute throughout the hinge, securely bonding it to the wood structure of the wing panel and aileron.

3.

Hinge

4.

CA glue

5.

6.
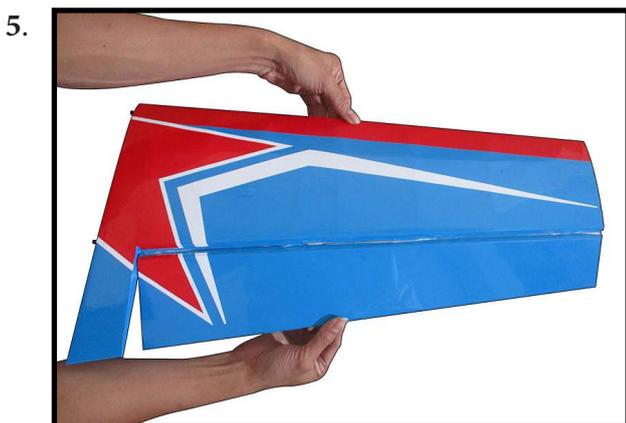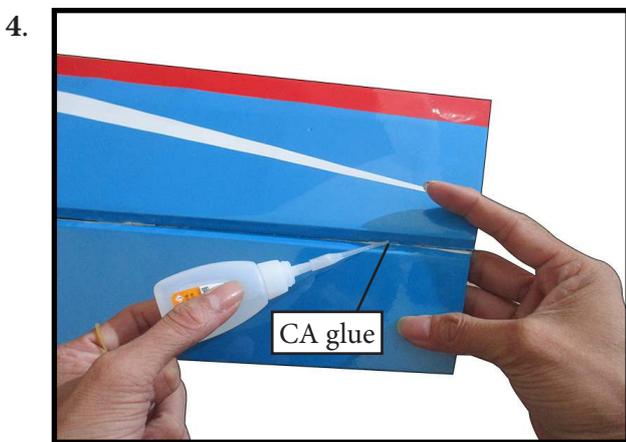
Turn the wing panel over and deflect the aileron in the opposite direction from the opposite side. Apply thin C/A glue to each hinge, making sure that the C/A penetrates into both the aileron and wing panel.

Using C/A remover/debonder and a paper towel, remove any excess C/A glue that may have accumulated on the wing or in the aileron hinge area.

Repeat this process with the other wing panel, securely hinging the aileron in place.

After both ailerons are securely hinged, firmly grasp the wing panel and aileron to make sure the hinges are securely glued and cannot be pulled out. Do this by carefully applying medium pressure, trying to separate the aileron from the wing panel. Use caution not to crush the wing structure.

7.

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

1.

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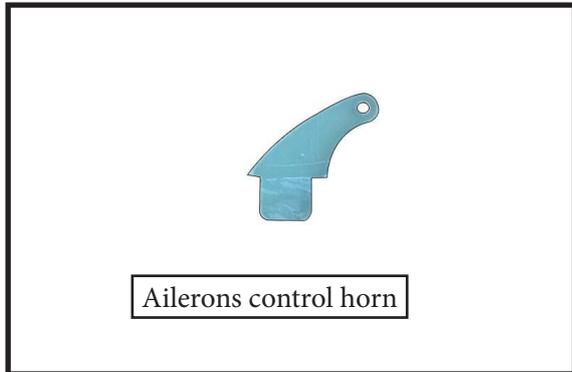
Use sandpaper to scuff the bottom of the aileron and flap control horns. Use a paper towel and isopropyl alcohol to remove any oils or debris from the control horns.

2.
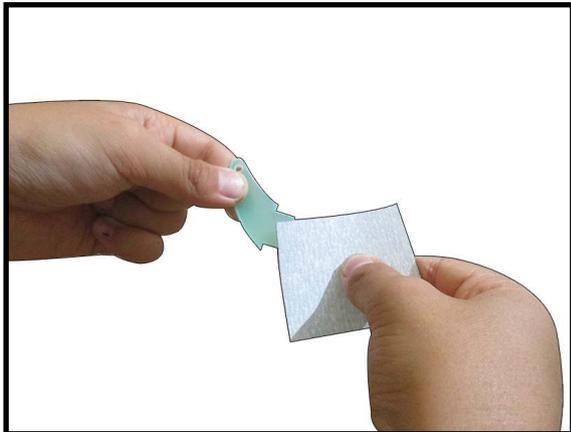
Check the fit of the control horns to the aileron and flap. They should rest flush against the control surface as shown.

3.

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.

4.
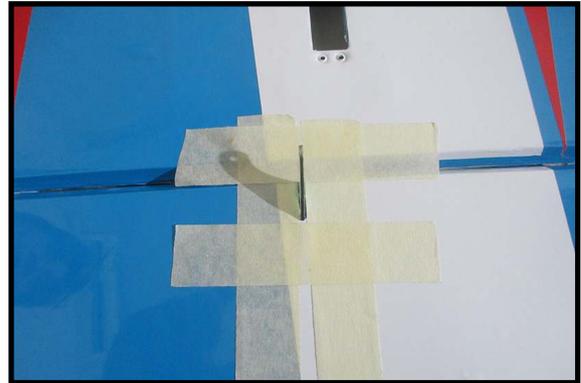
Remove the control horns from the control surfaces. Apply epoxy to the slot in the aileron and flap. Make sure the epoxy gets into the slot for a good bond between the surfaces and control horn.

5.
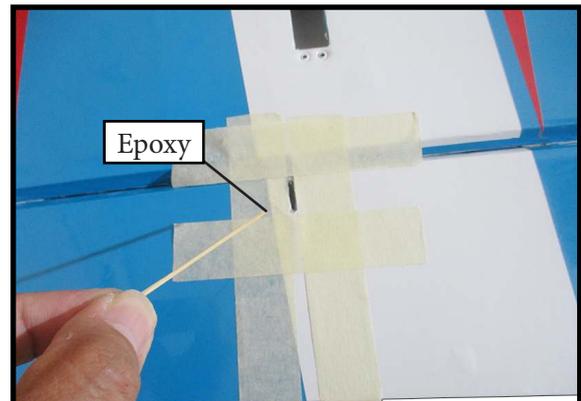
Epoxy

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.

6.
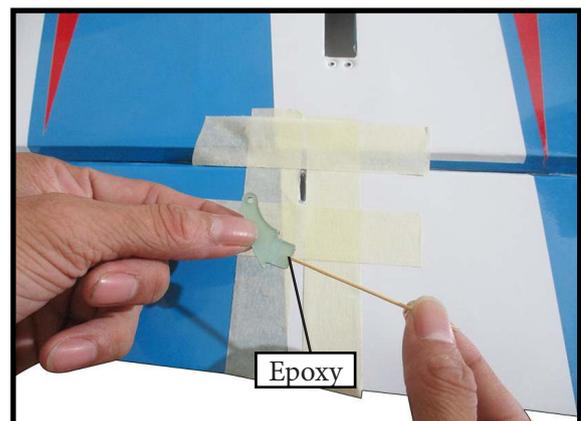
Epoxy

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 filet between the control horn and surface for a fiished look and secure bond.

7.
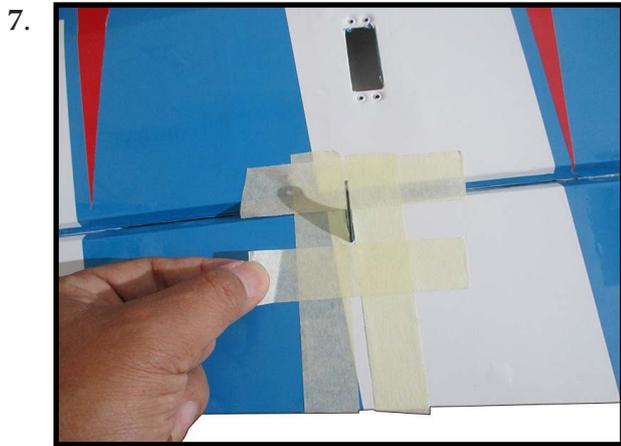
INSTALLING THE AILERON SERVOS

1.

2.
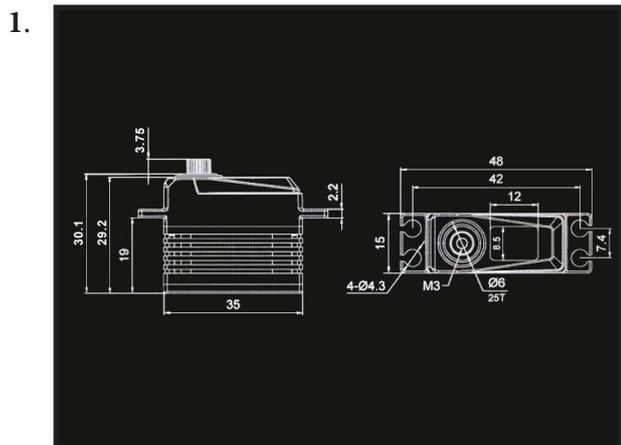
Maximum Servo spec.	
Torque :	**Speed:**
(6.0V) 6.2kg.cm	0.095sec/60°
(7.4V) 7.5kg.cm	0.08sec/60°
(8.4V) 8.5kg.cm	0.07sec/60°
Size: 35x15.1x30mm	

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.

Use dental floss to secure the connection so they cannot become unplugged.

3.
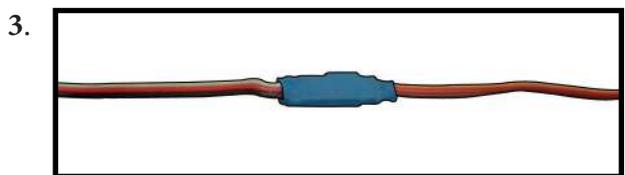
Using a small weight (Weighted fuel pickup works well) and thread, feed the string through the wing as indicated.

4.
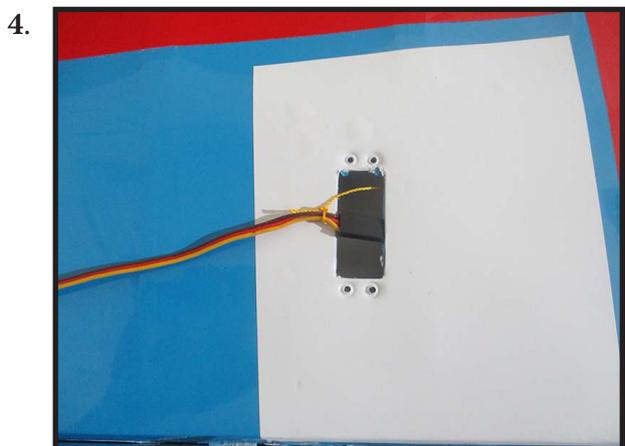
Attach servo lead to the aileron servo. Attach the string to the servo lead and carefully thread it though the wing. Once you have thread the lead throught the wing, remove the string so it can use for the other servo lead.

5.

6.
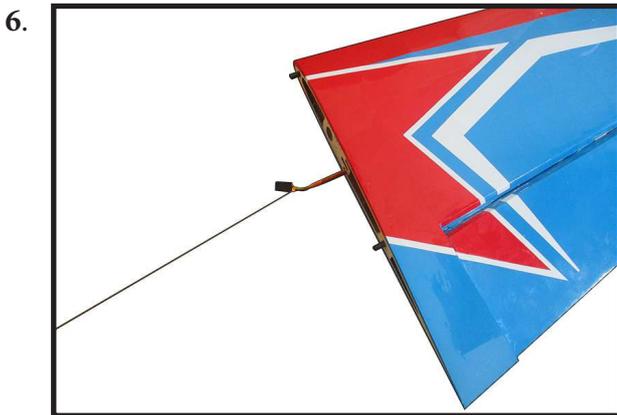
Tape the servo lead to the wing to prevent it from falling back into the wing.

7.

Reinstall the servo into the servo mount and secure the servo inplace using the wood screws provided with you radio system.

8.

Thin CA

240mm

9.

Thin CA

355mm

Cut 115mm

10.

11.

25mm

12.
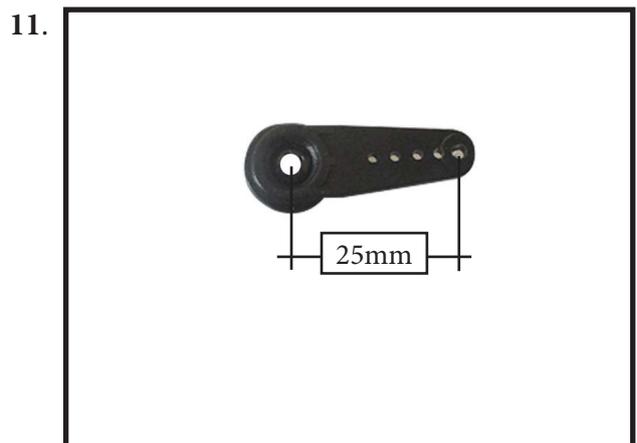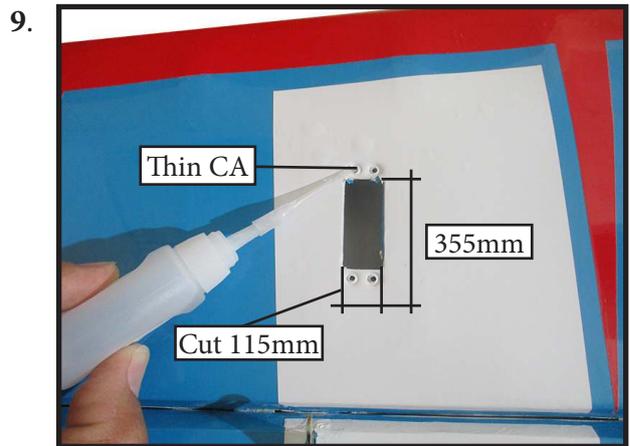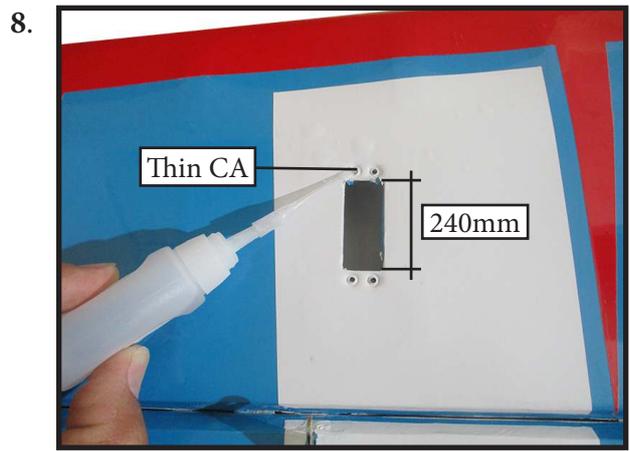
Repeat the procedure for the other wing half.

INSTALLING THE AILERON PUSHROD

Please study images below.

1.

65mm

2.

3.

4.
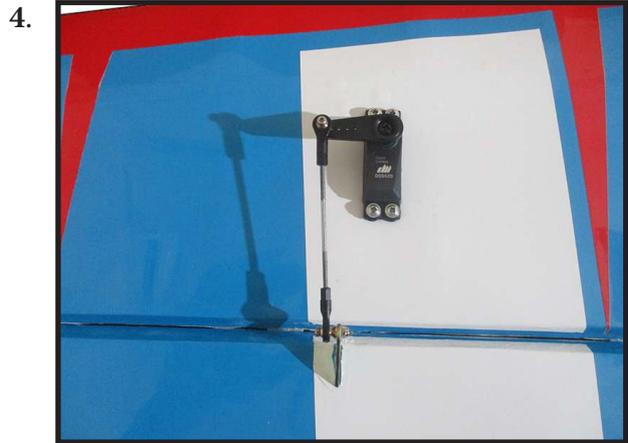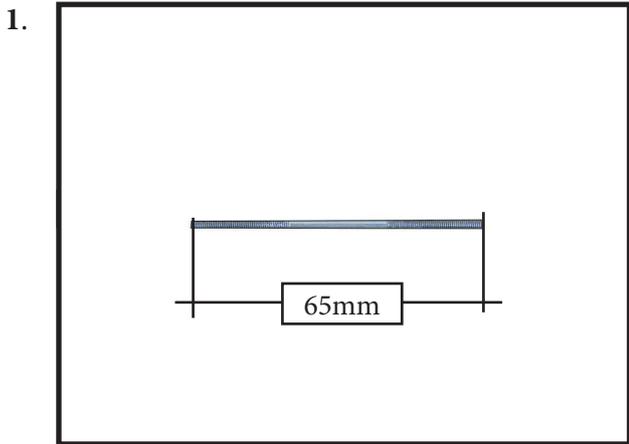
Repeat all the above steps for the other wing.

5.
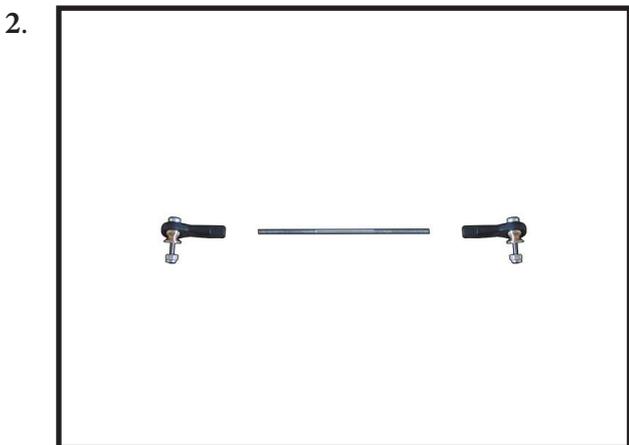
INSTALL HINGE FOR STABILIZER AND ELEVATOR

Please study images below.

1.

2.

3.

4.

CA glue

5.

6.

7.
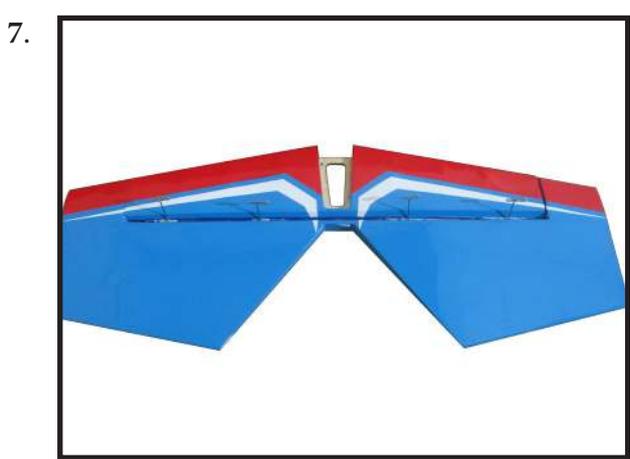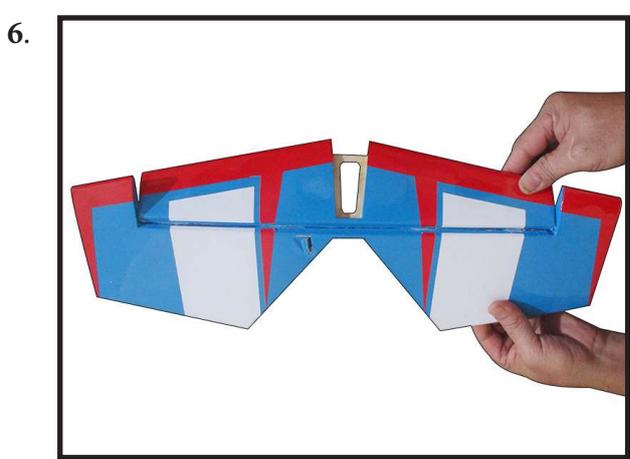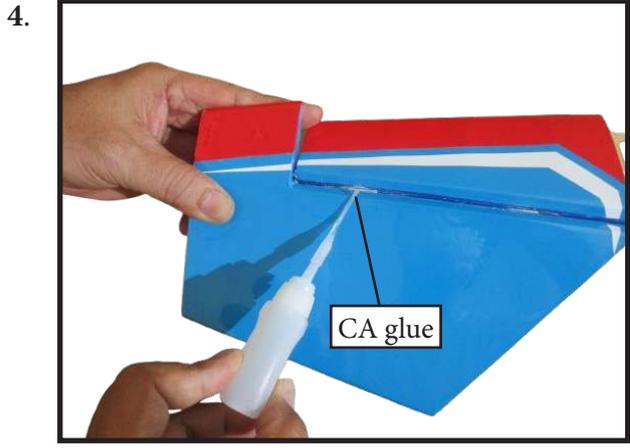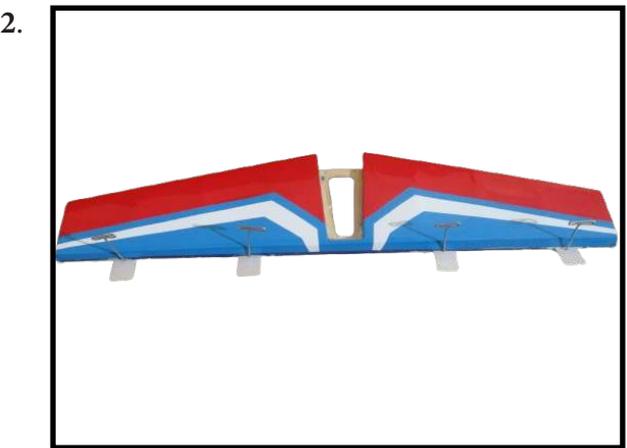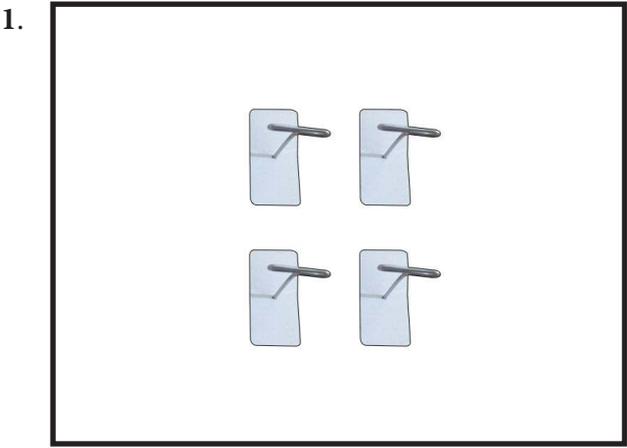
INSTALL ELEVATOR CONTROL HORN

1.

Fiberglass control horn

2.

3.

Epoxy

4.

Epoxy

5.

6.

7.

8.

9.

240mm

10.

355mm

Cut 115mm

11.

12.

13.

14.

15.

16.

240mm

17.

Cut 115mm
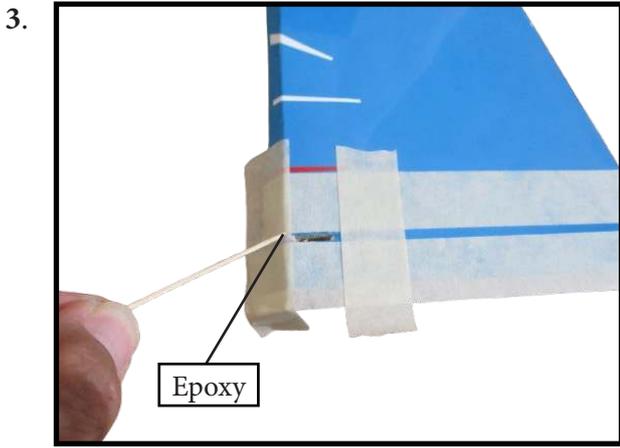
355mm

18.

19.

20.

21.
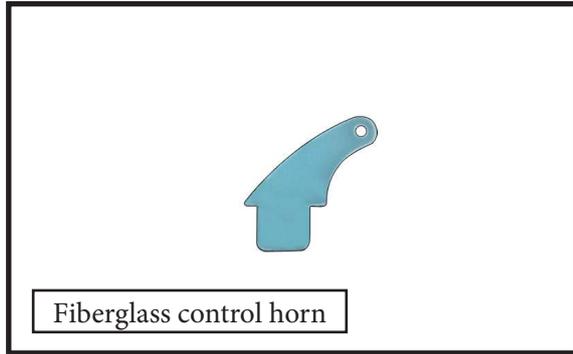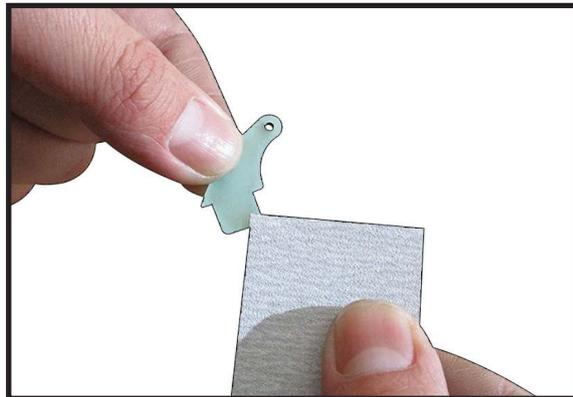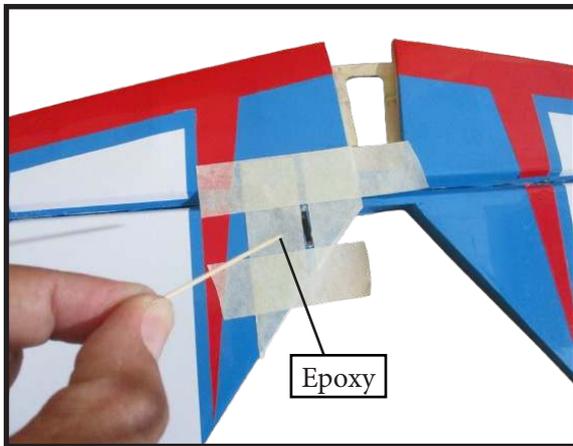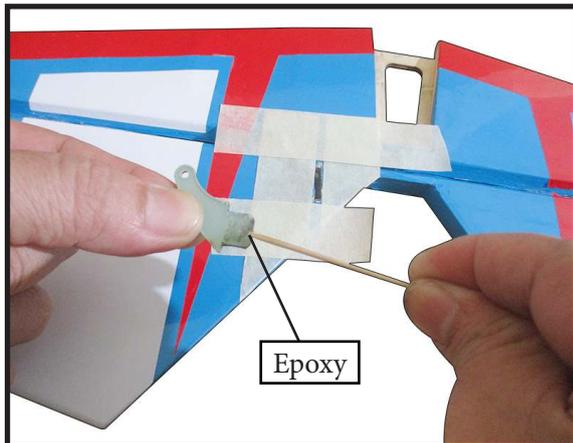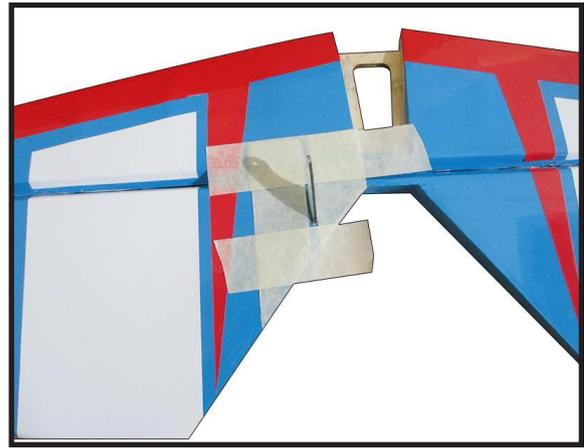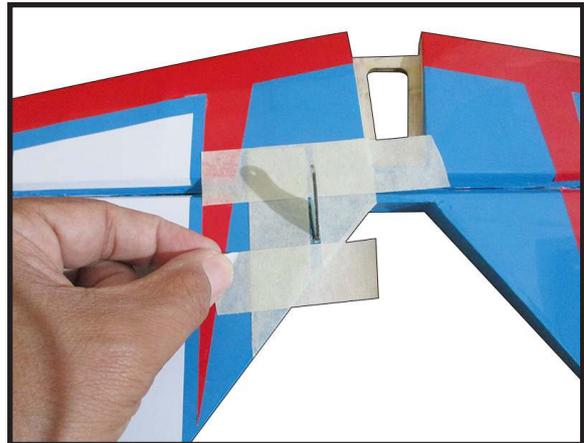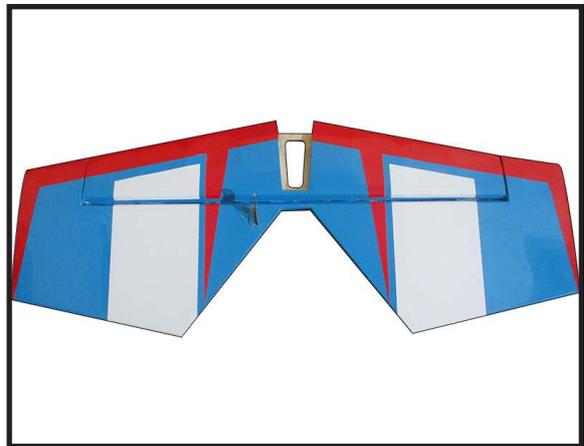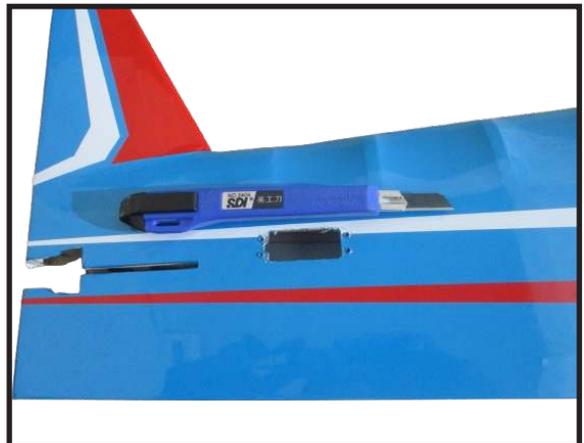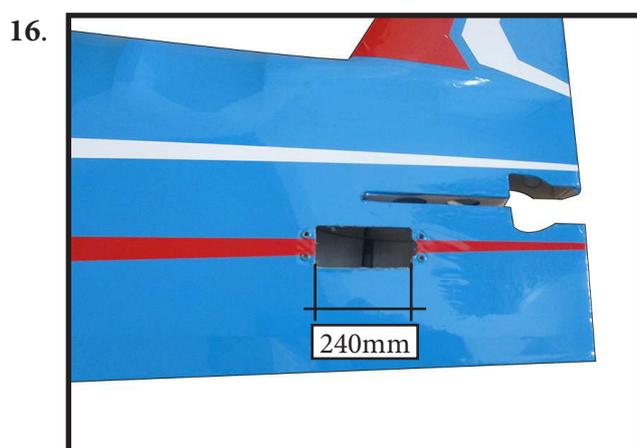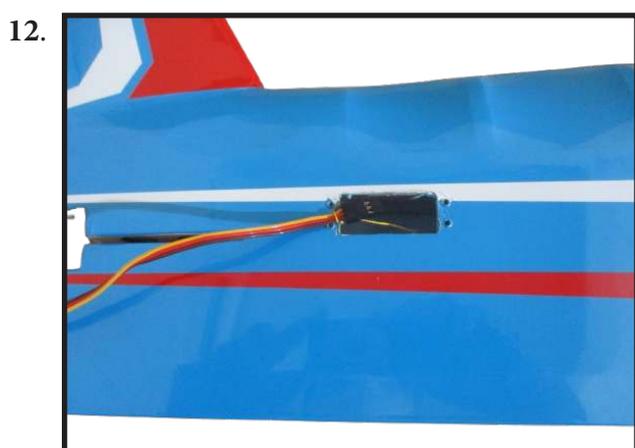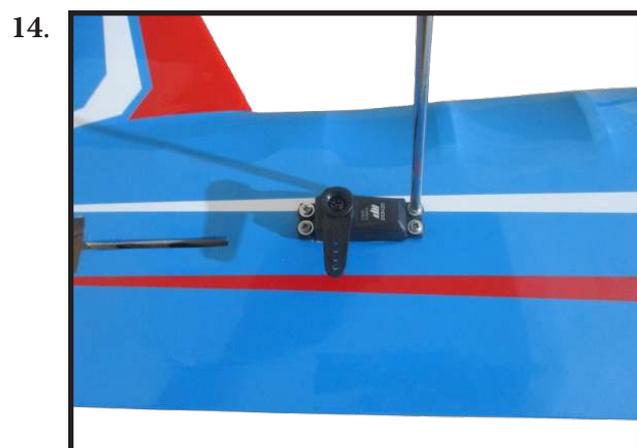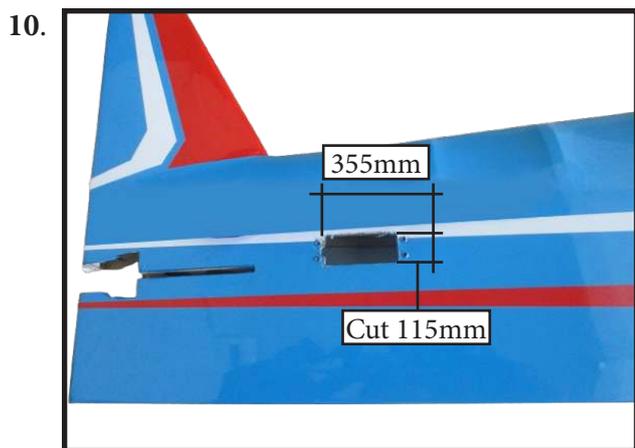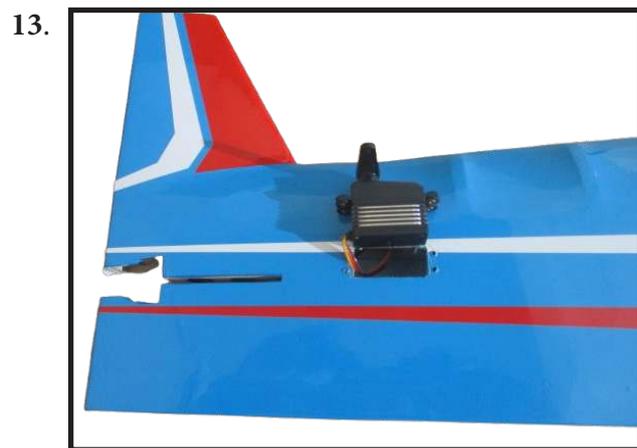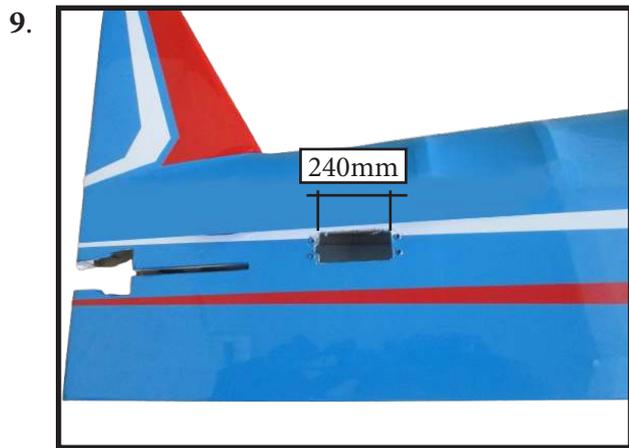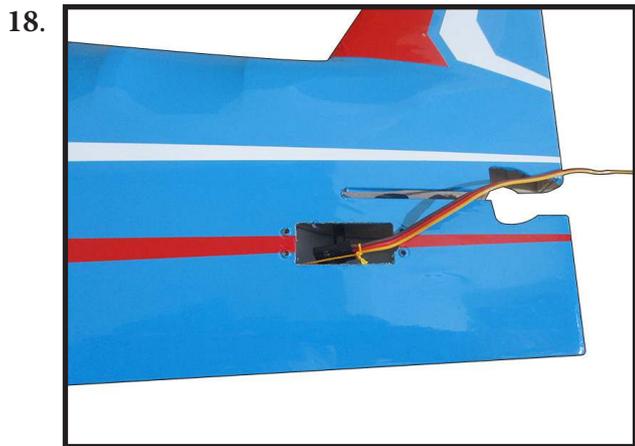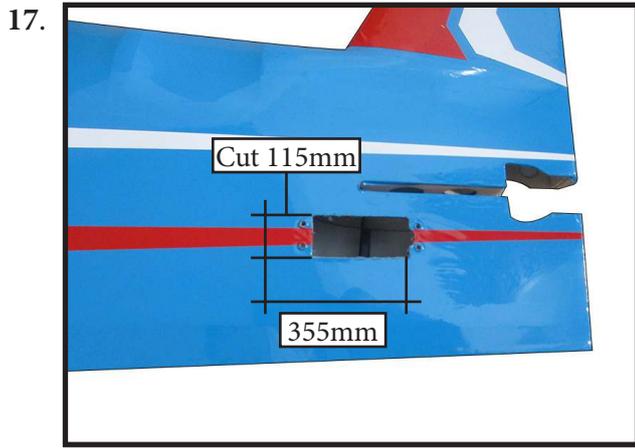
INSTALL RUDDER CONTROL HORN

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

1.

Fiberglass control horn

2.

3.

Epoxy

4.

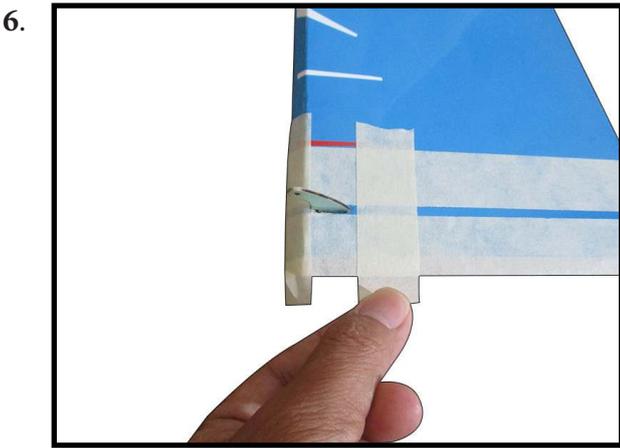
Epoxy

5.

6.

7.

Epoxy

Rudder fiberglass control horn
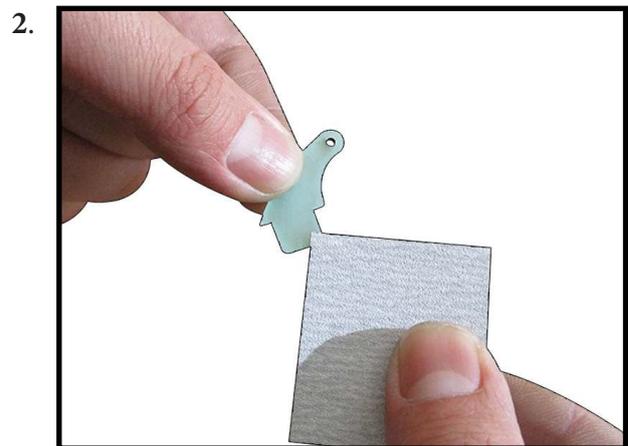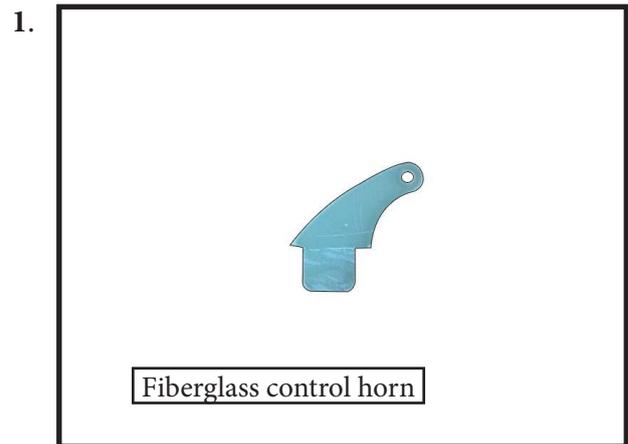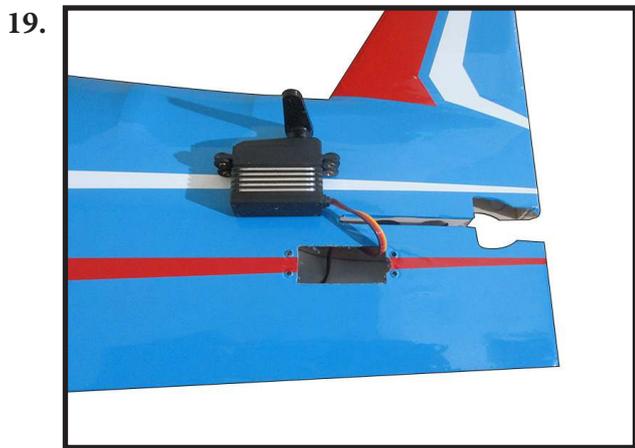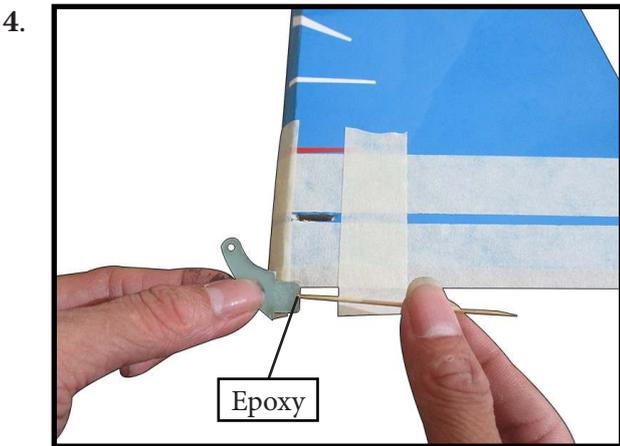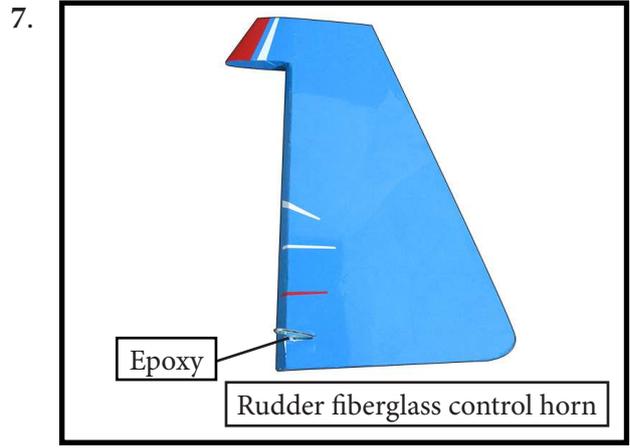
INSTALLING THE HORIZONTAL STABILIZER

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.

1.

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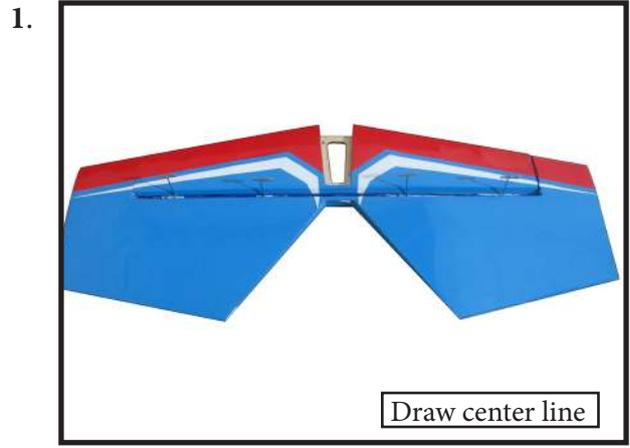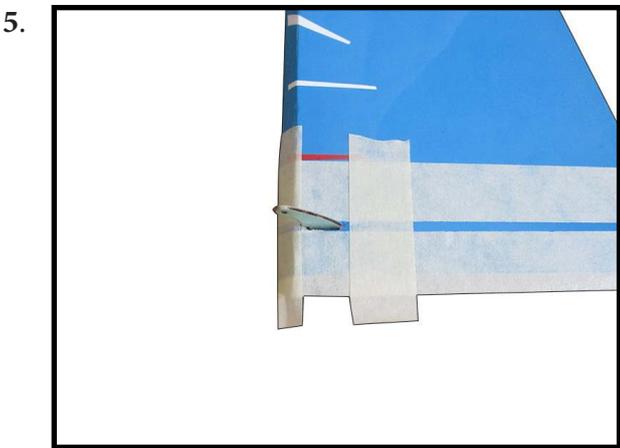
Using a modeling knife, carefully remove the covering at mounting slot of horizontal stabilizer (both side of fuselage).

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.

2.
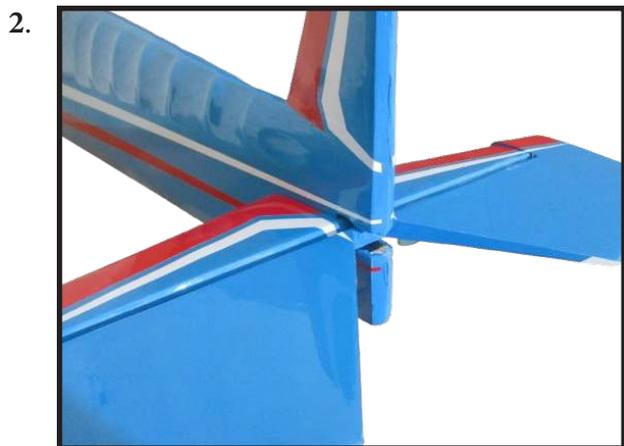
When you are sure that everything is aligned correctly, mix up a generous amount of 30 Minute Epoxy. Apply a thin layer to the top and bottom of the stabilizer mounting area and to the stabilizer mounting platform sides in the fuselage. Slide the stabilizer in place and realign. Double check all of your 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.

3.

C/A glue

4.
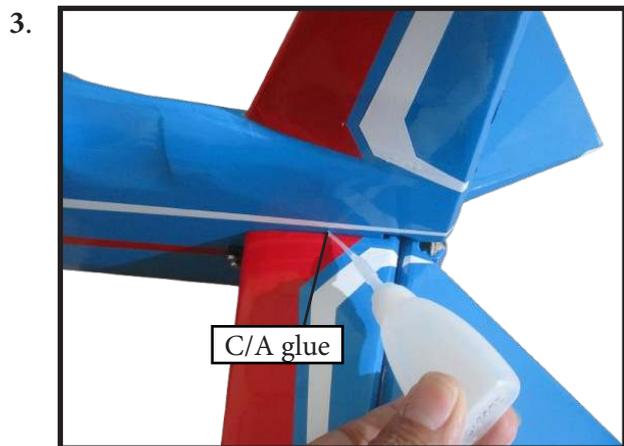
After the epoxy has fully cured, remove the masking tape or T-pins used to hold the stabilizer in place. Carefully inspect the glue joints. Use more epoxy to fill in any gaps that may exist that were not filled previously and clean up the excess using a paper towel and rubbing alcohol.

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.

1.

2.

C/A glue

3.

C/A glue

4.
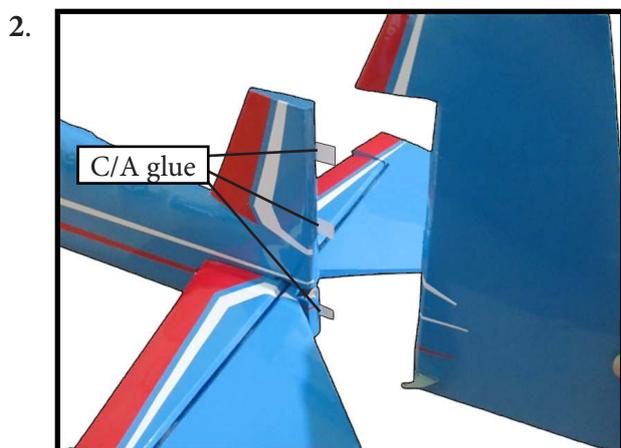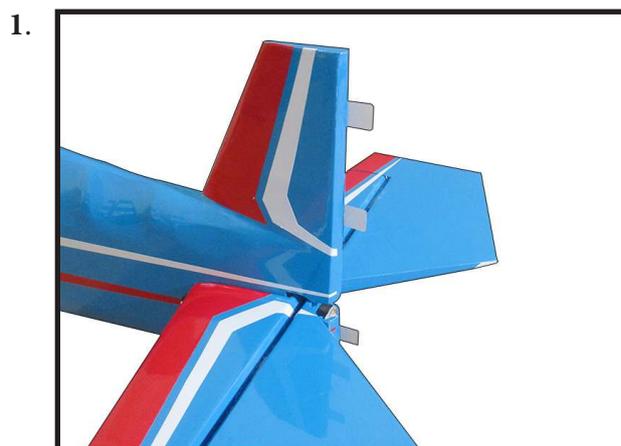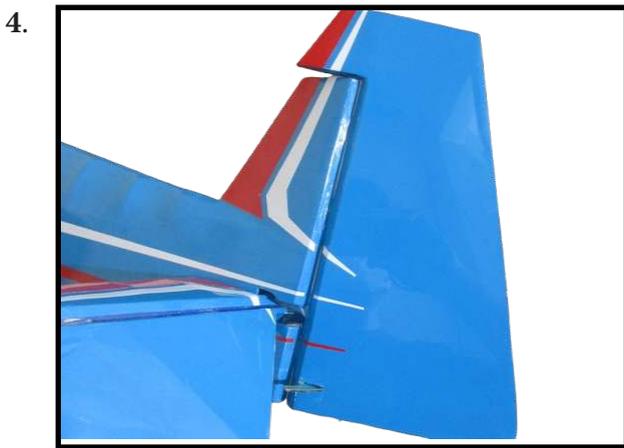
Slide the vertical stabilizer back in place. Using a triangle, check to ensure that the vertical stabilizer is aligned 90º to the horizontal stabilizer.

5.

Horizontal Stabilizer.

Vertical Stabilizer.

6.
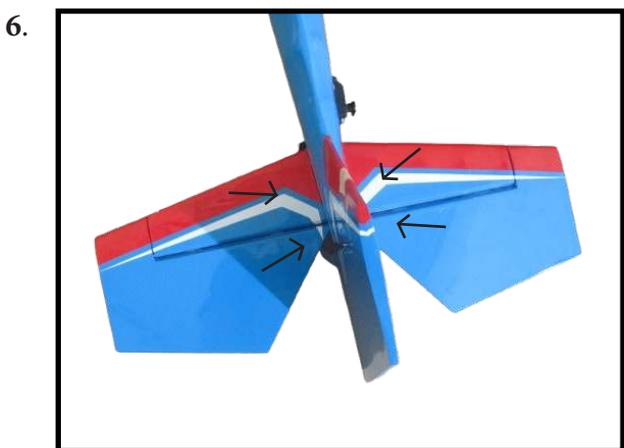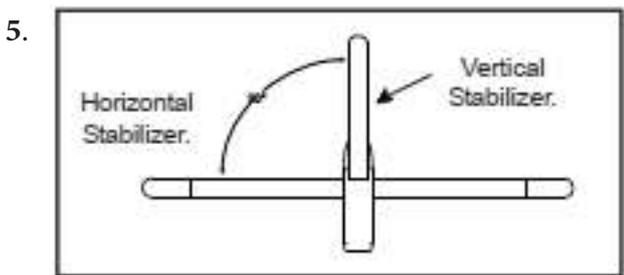
When you are sure that everything is aligned correctly, mix up a generous amount of Flash 30 Minute Epoxy. Apply a thin layer to the mounting slot and to bottom of the vertical stabilizer mounting area. Apply epoxy to the bottom and top edges of the filler block and to the lower hinge also. Set the stabilizer 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.
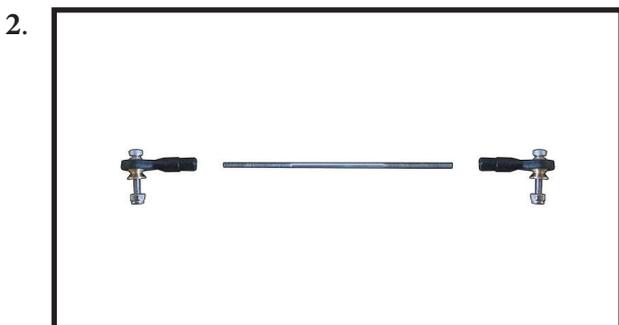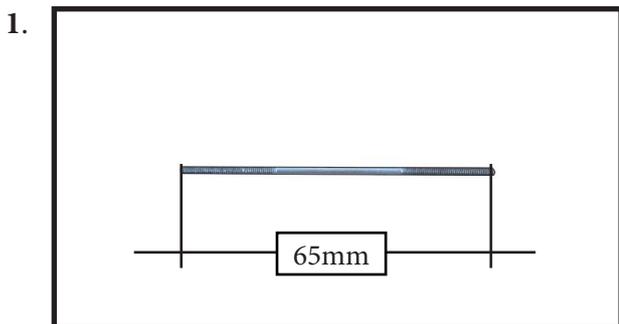
ELEVATOR PUSHROD INSTALLATION

1.

90mm

2.

3.

4.

3.

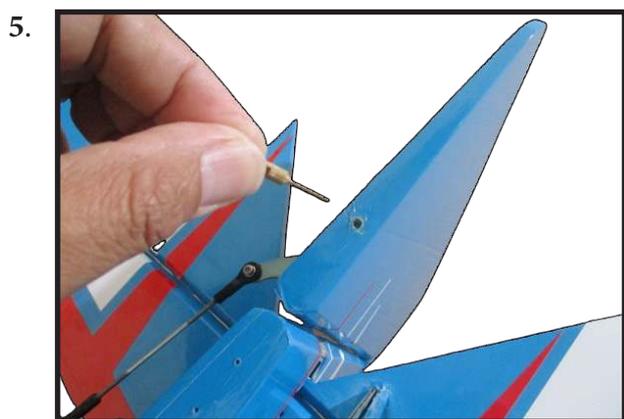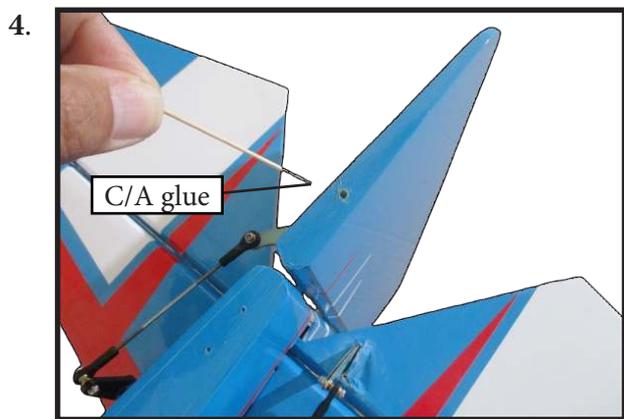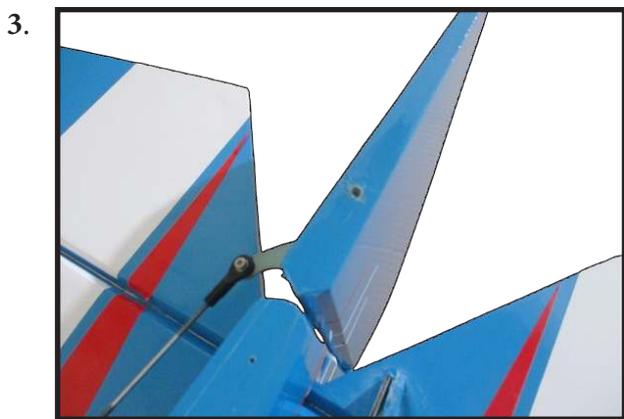

4.
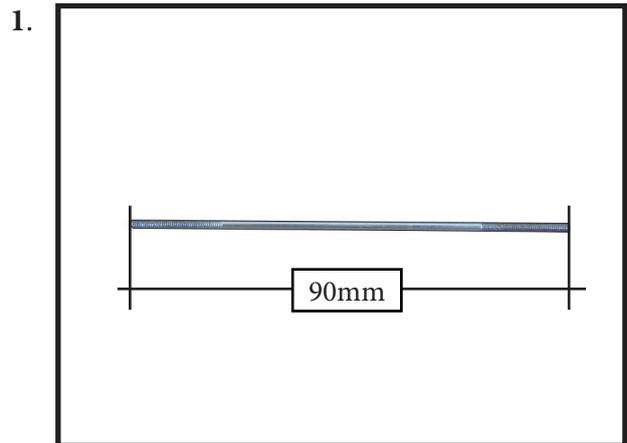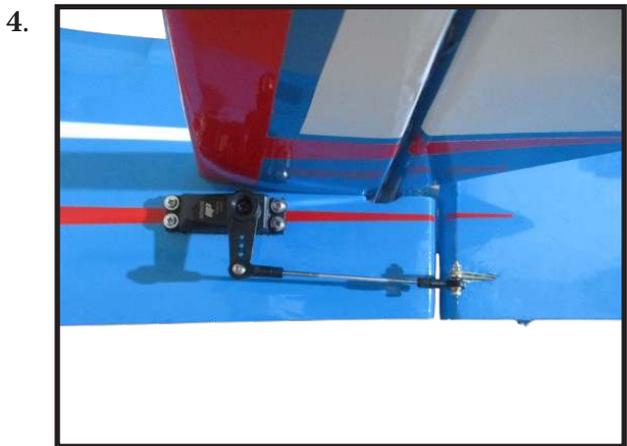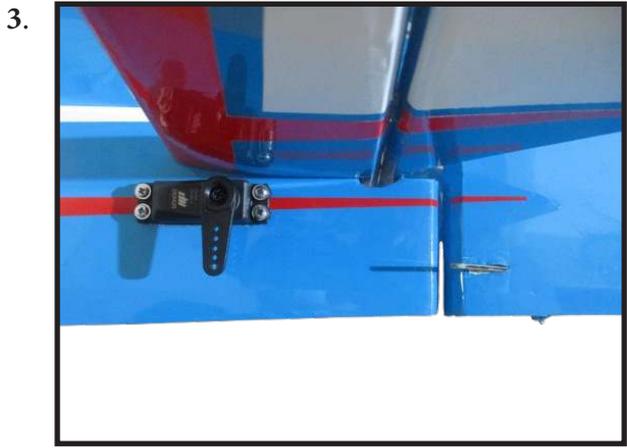
RUDDER PUSHROD INSTALLATION

Locate items necessary to install rudder pushrod.

1.

65mm

2.

TAIL - DRAGGER CONVERSION
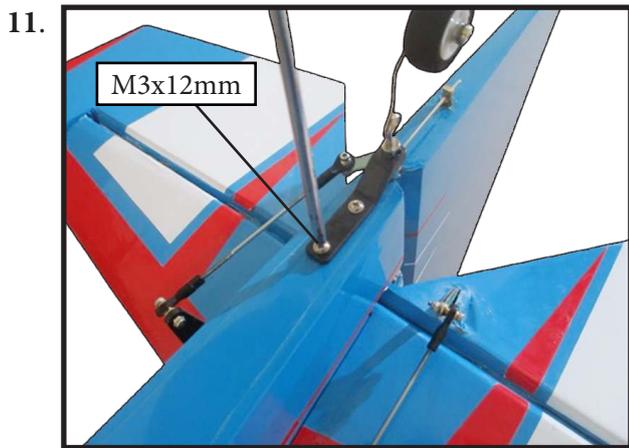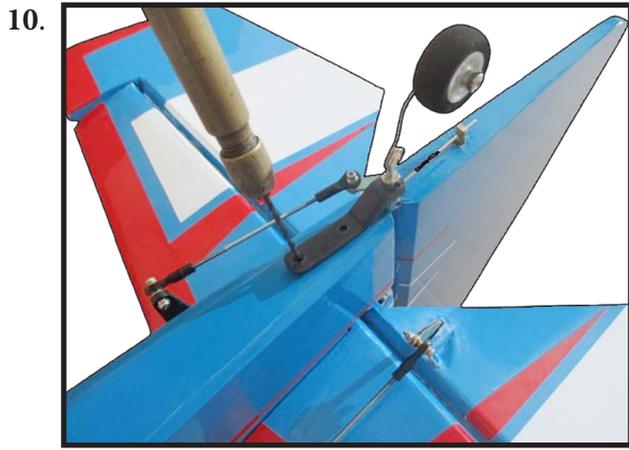
If you are installing the tail wheel bracket, follow the instructions below. If you have already installed the nose wheel assembly, please skip to hinging the rudder.

1.

Test fit the tail gear to make sure that it fits properly. When you are happy with the fit, attach the tail gear using the two M3x12mm wood screws.
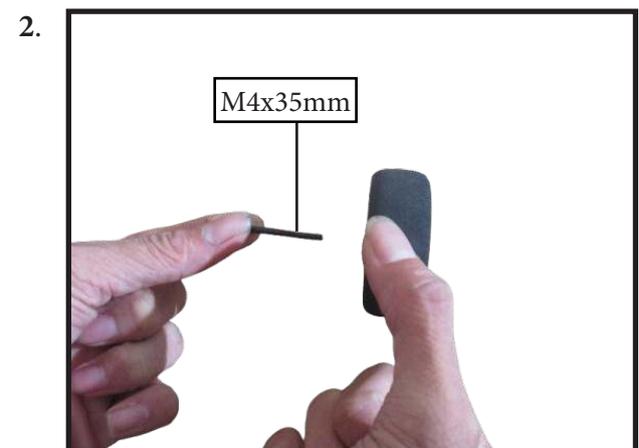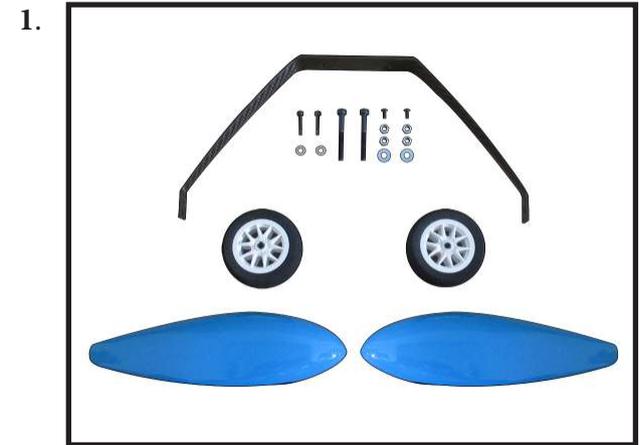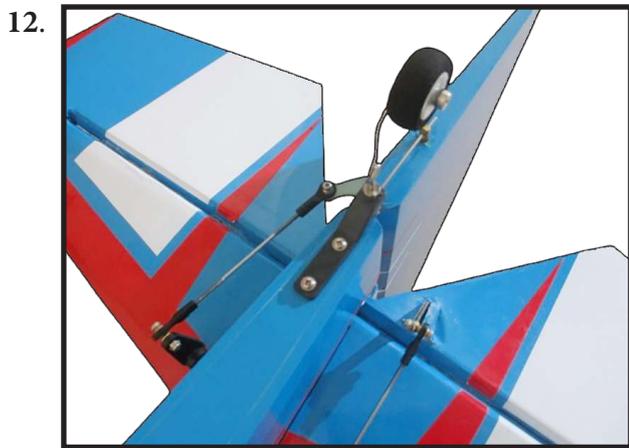
See below pictures how to assembly the tail- dragger conversion.

2.

3mm

3.

4.

C/A glue

5.

6.

C/A glue

7.

8.

9.

10.

11.

M3x12mm

12.

Hold the rudder in place and mark it where the music wire will enter. When you are happy with the fit, fill the hole with epoxy and use CA to glue in the rudder hinges.

13.
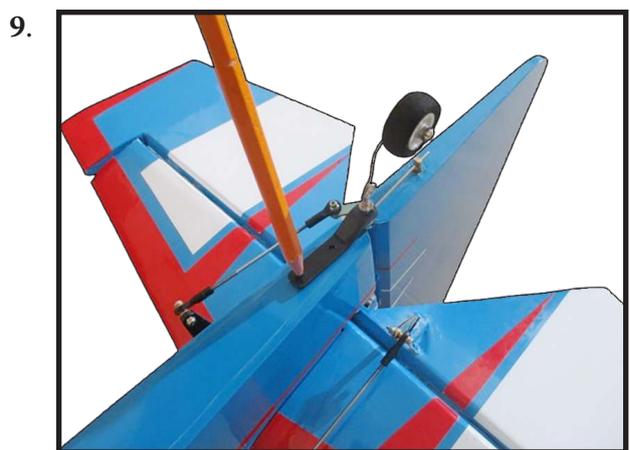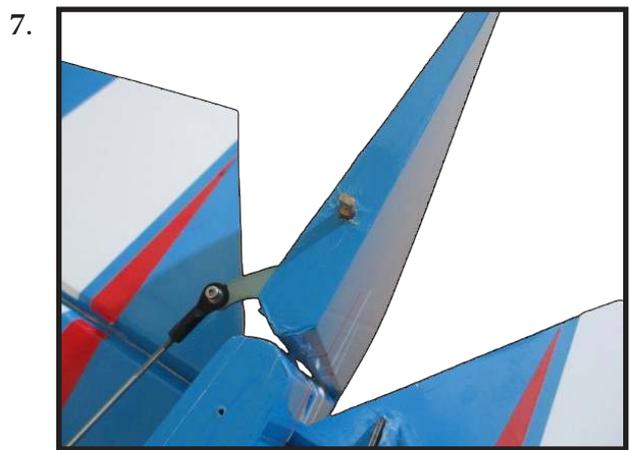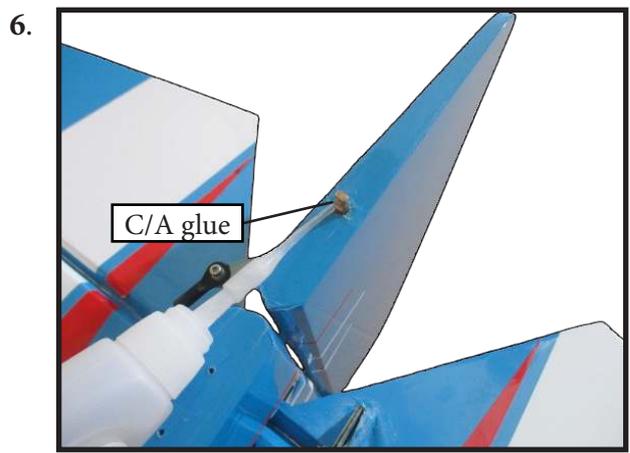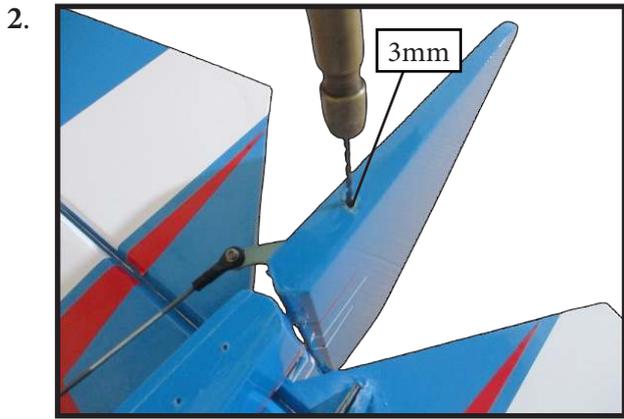
INSTALLING THE MAIN LANDING GEAR TO FUSELAGE
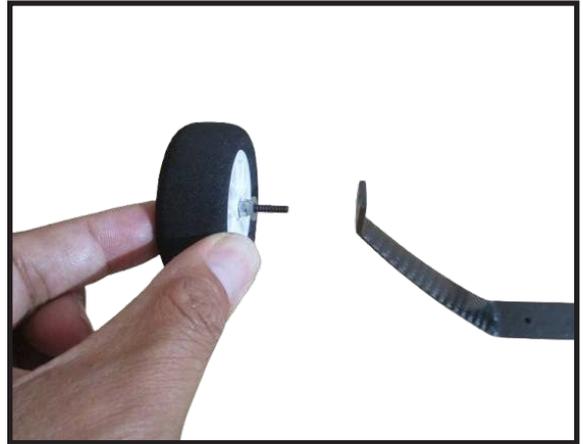
Please study images below.

1.

2.

M4x35mm

3.

4.

5.

6.

7.

8.

9.

10.

11.

15.

M3x6mm

12.

16.

13.

17.

3x12mm

14.

18.

Loctite

19.

20.

21.

M3x12mm

22.

23.
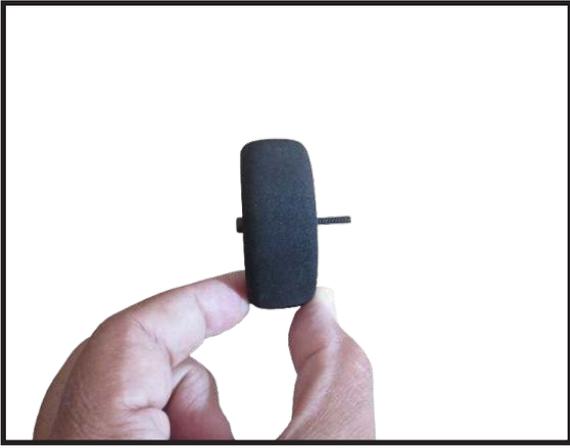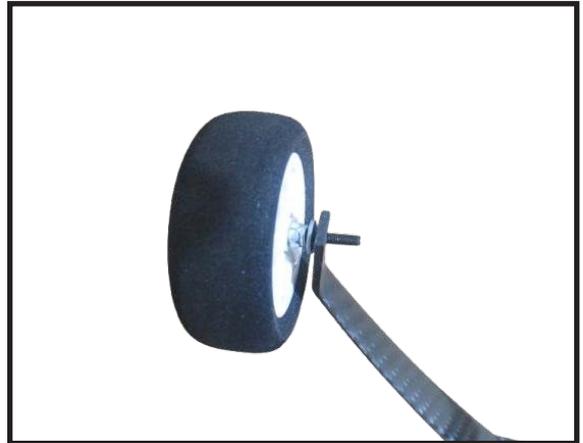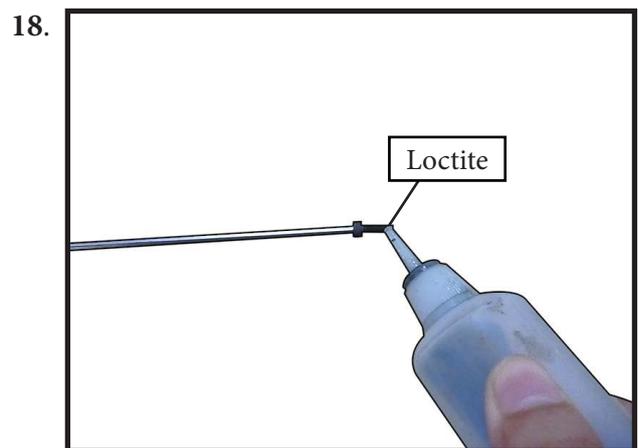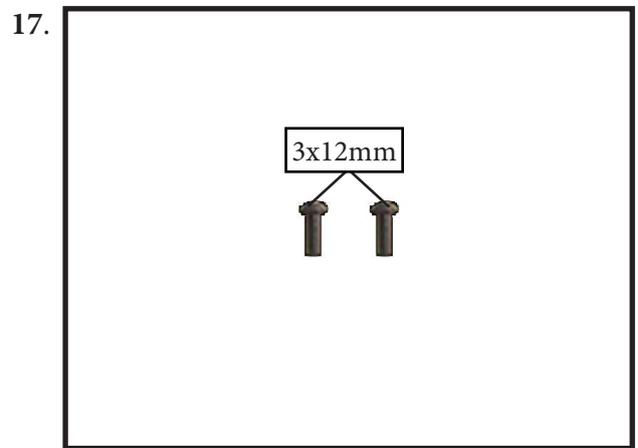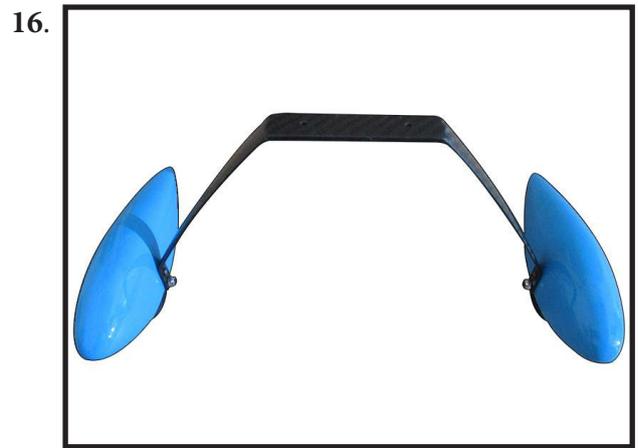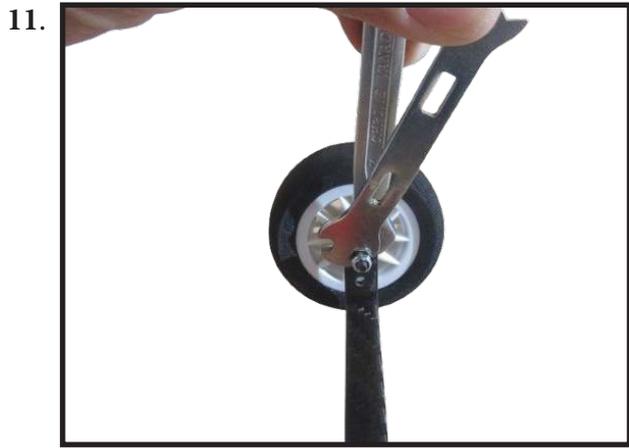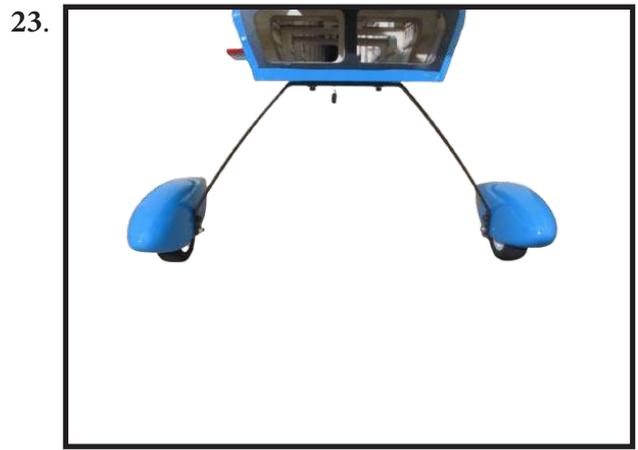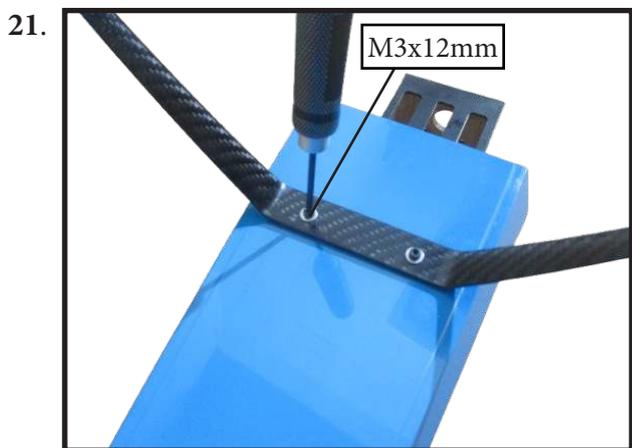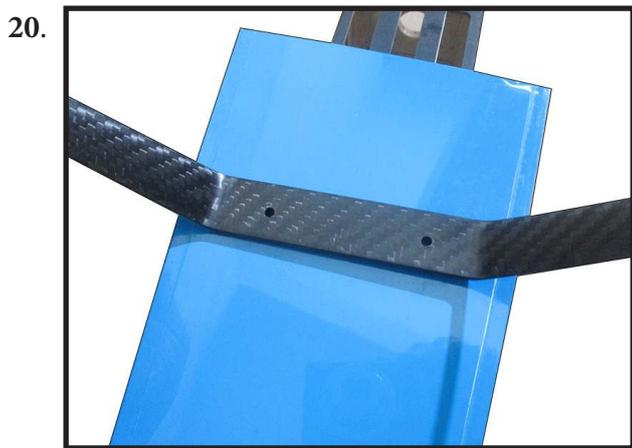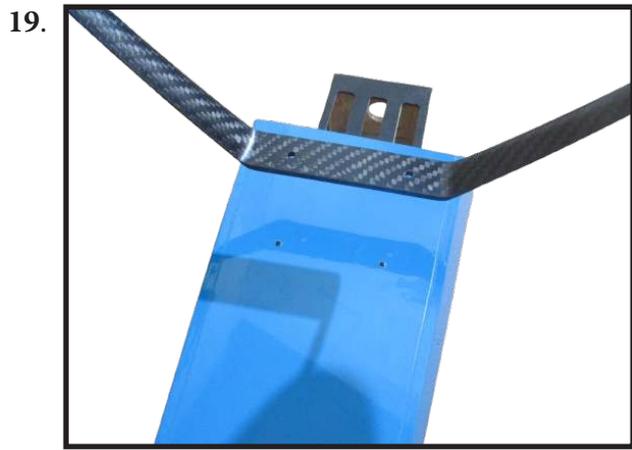
ELECTRIC POWER ASSEMBLY

Locate the items neccessary to install the electric power installation.
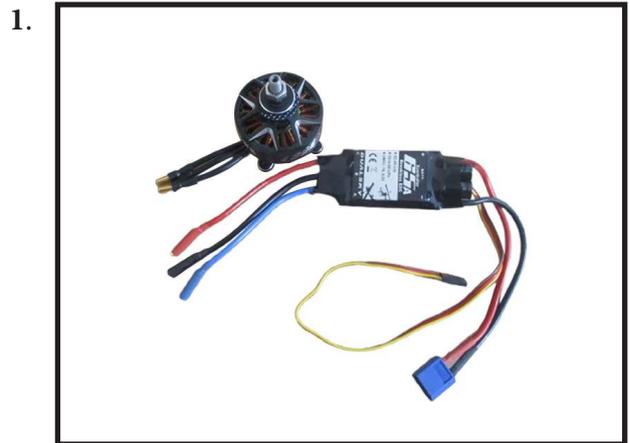
1.

Motor: GA800.15 MKII 810KV.
ESC: 65A.
Propeller: 12x6 – 13x6 – 14x6.
Battery: 4S LiPo 2200–2800mAh.

2.

M3x12mm

3.

6.

4.

7.

M3x15mm

5.

8.
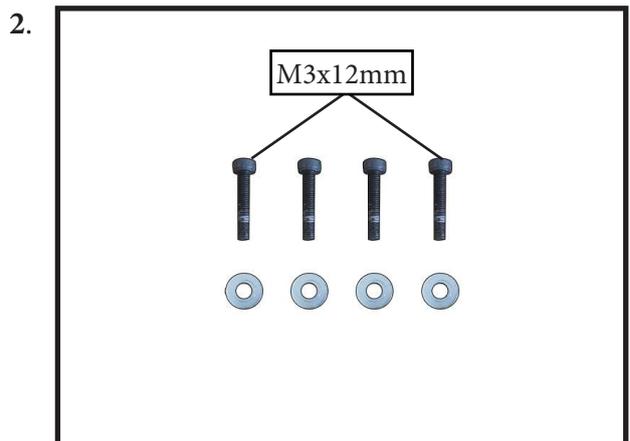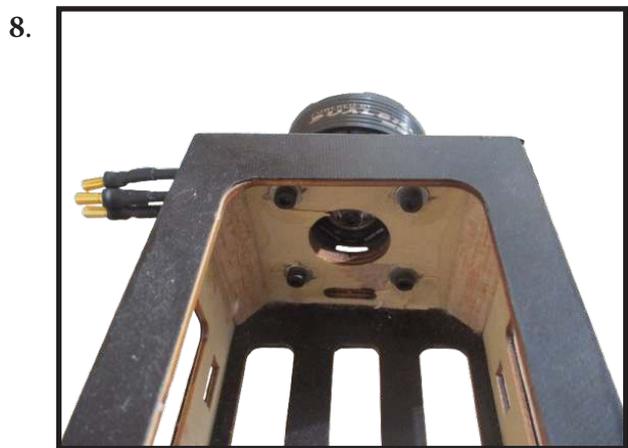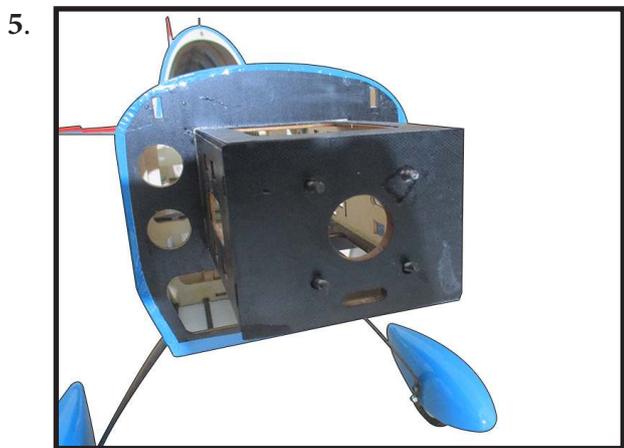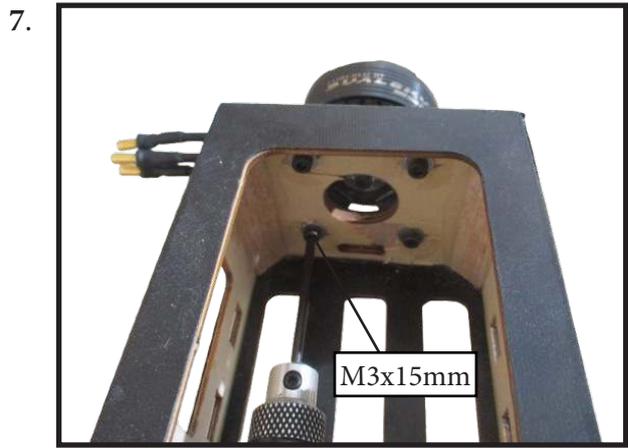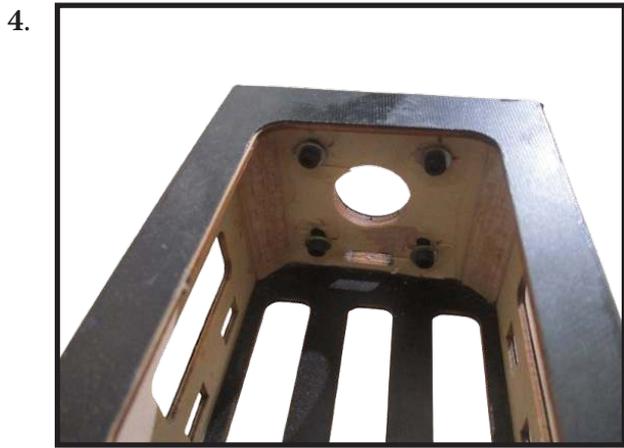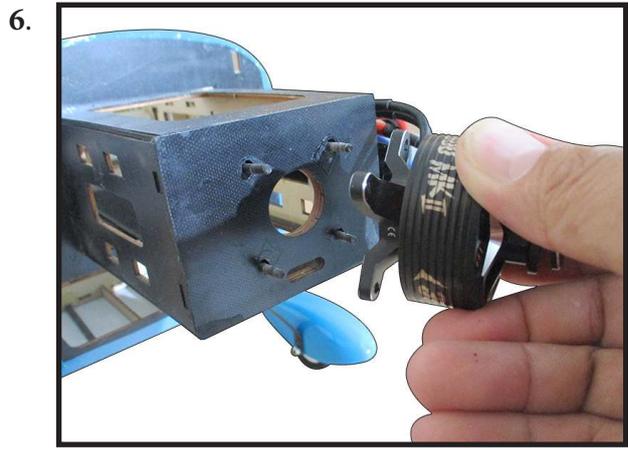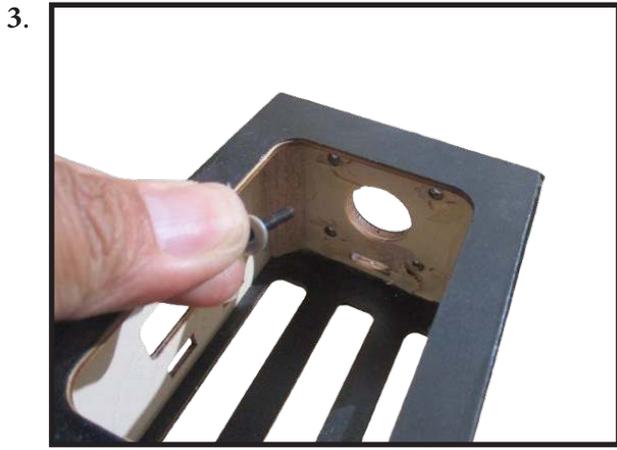
Attach the motor to the front of the electric motor box using four 3mm blind nut, four M3x15mm hex head bolts to secure the motor. Please see picture shown.

9.

10.

550mm

1.

11.

2.

12.

3.

C/A glue
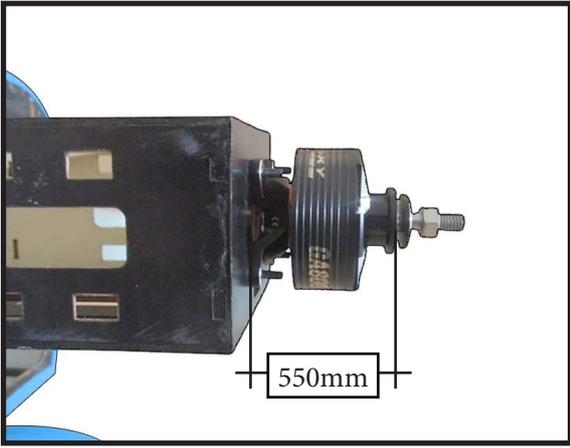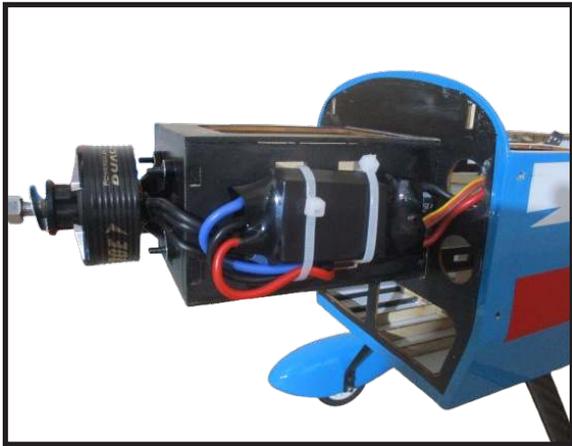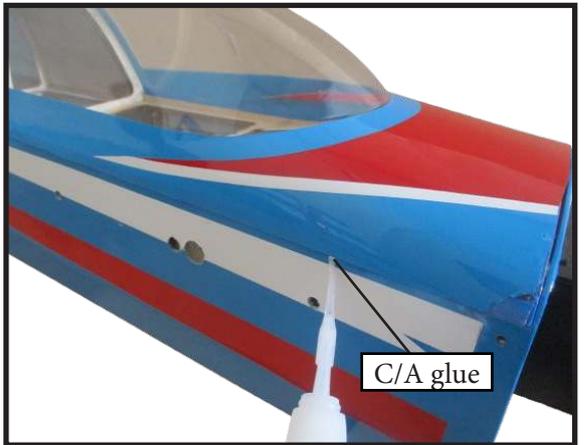
INSTALLATION CANOPY

Locate items necessary to install.

4.

5.

6.

7.

8.
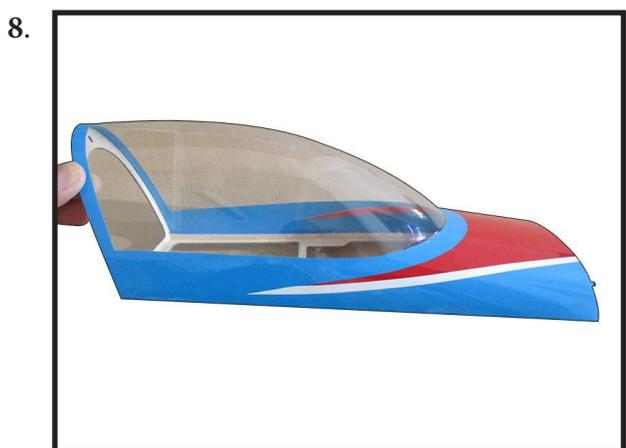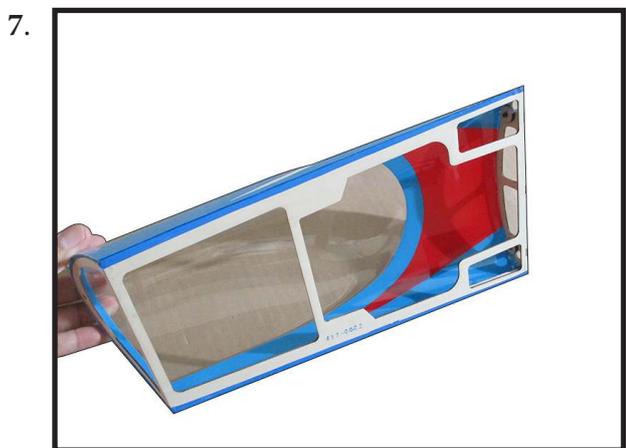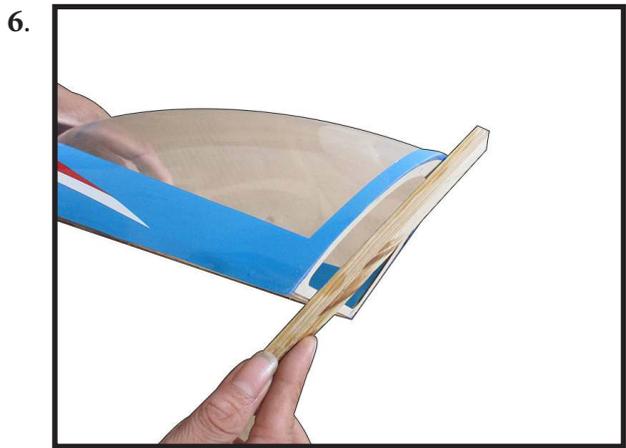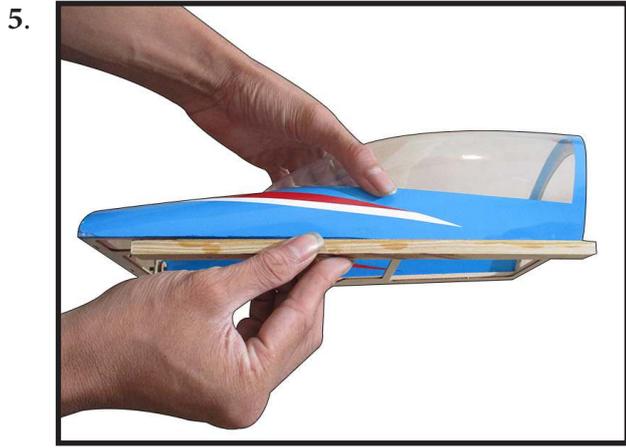
COWLING

Please study images below.

1.

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

2.

3.

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.

4.
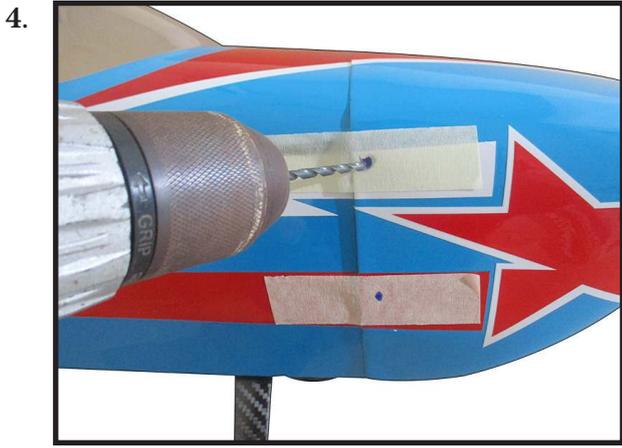
Install the muffler and muffler extension onto the engine and make the cutout in the cowl for muffler clearance. Connect the fuel and pressure lines to the carburetor, muffler and fuel filer valve. Secure the cowl to fuselage using the M3x6mm socket head screws. Putting a small length of silicon fuel tube under the head of the screw helps with vibration.

5.

3x6mm

6.

Loctite

7.

8.

9.

10.
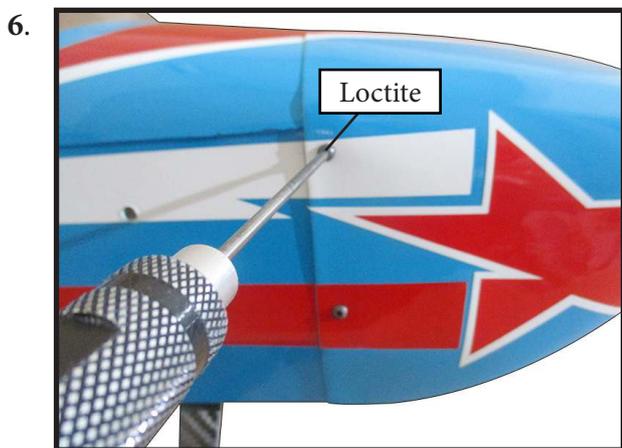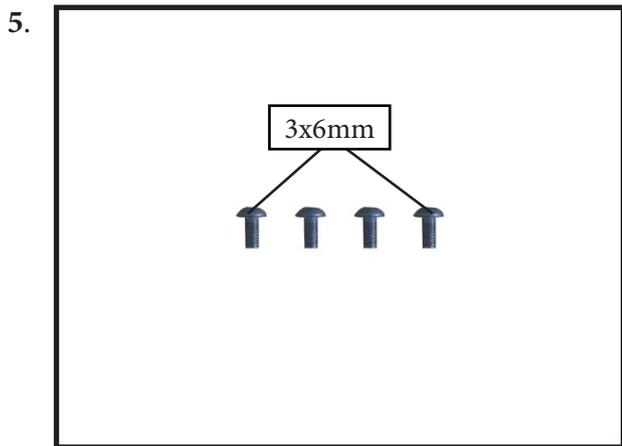
INSTALLING THE SPINNER

Install the spinner backplate, propeller and spinner cone.

1.
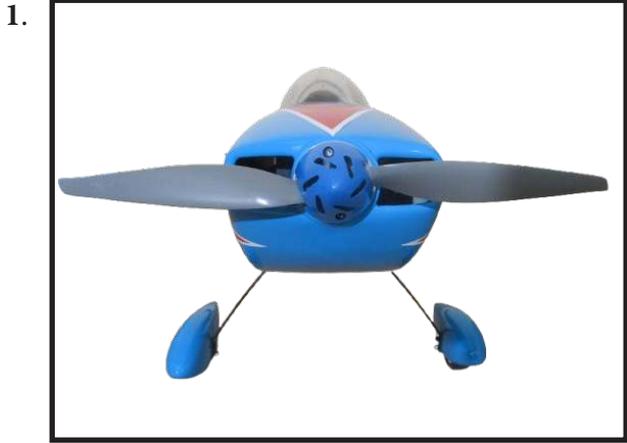
⚠ The propeller should not touch any part of the spinner cone. If it does, use a sharp modeling knife and carefully trim away the spinner cone where the propeller comes in contact with it.

2.
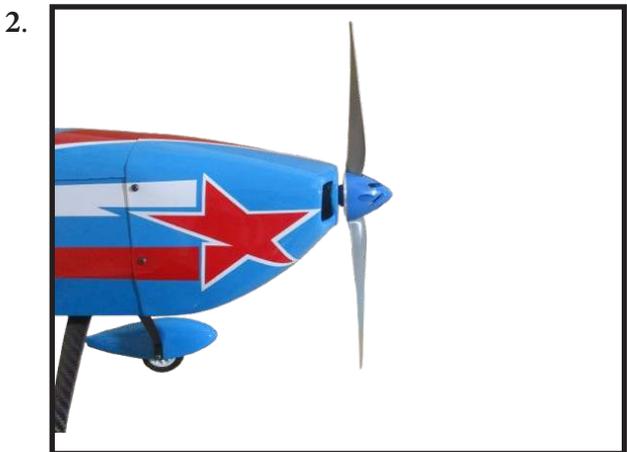
INSTALLING THE BATTERY-RECEVER

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.

1.

Receiver   Battery
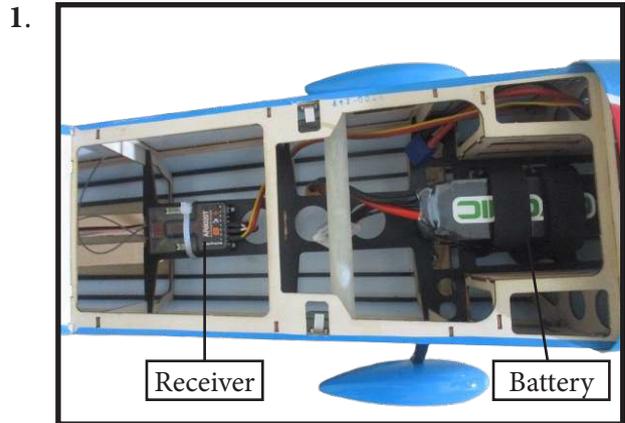
ATTACHMENT WING - FUSELAGE

Attach the aluminium tube into fuselage.

1.

Wing tube

2.

3x15mm

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.
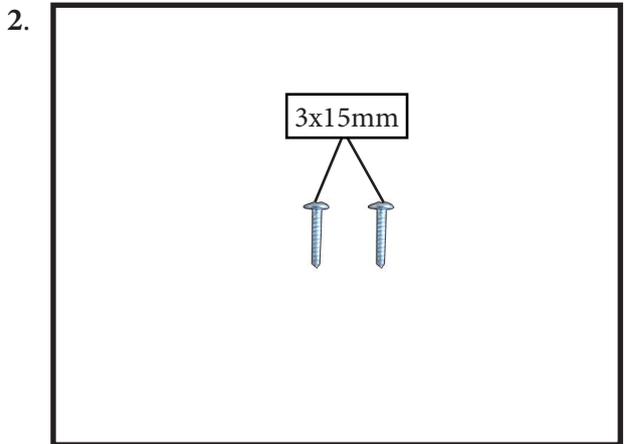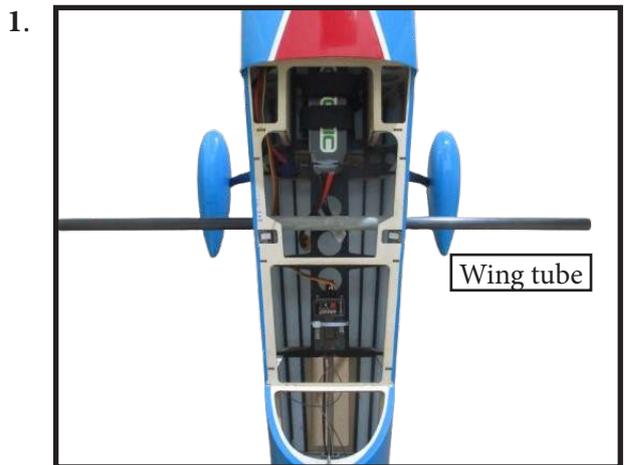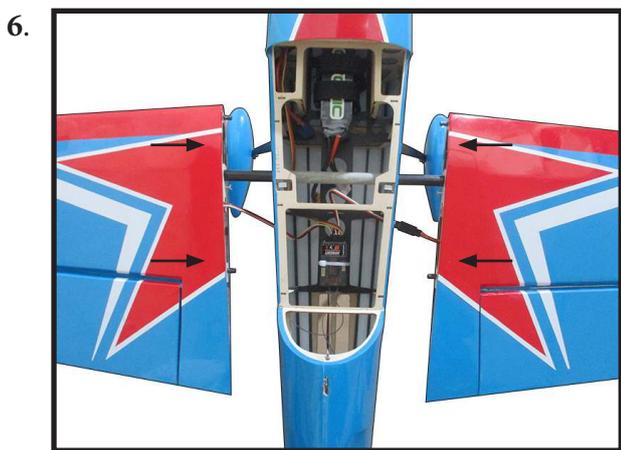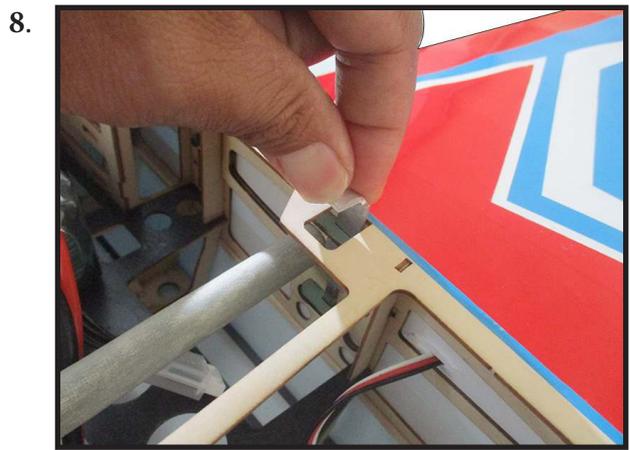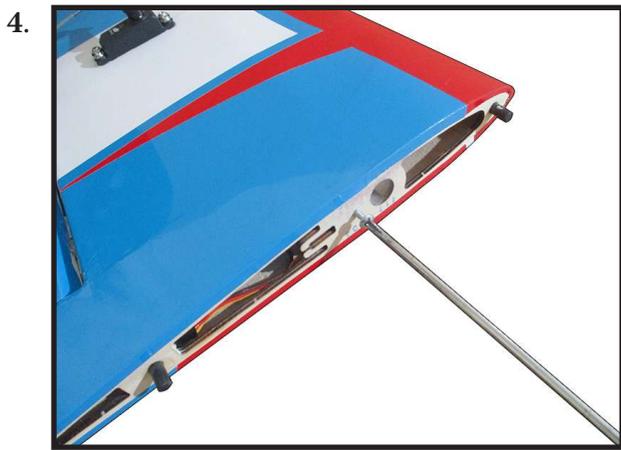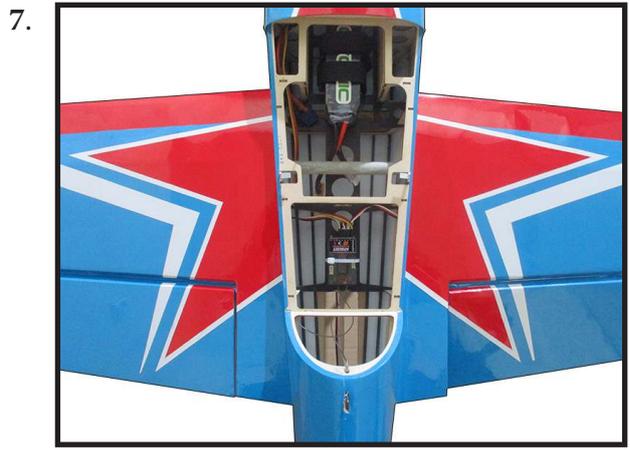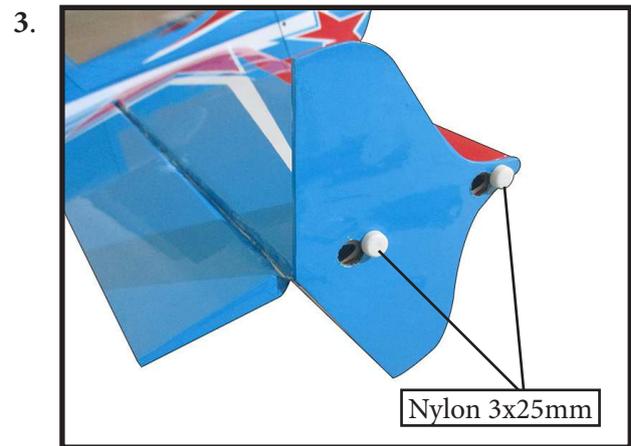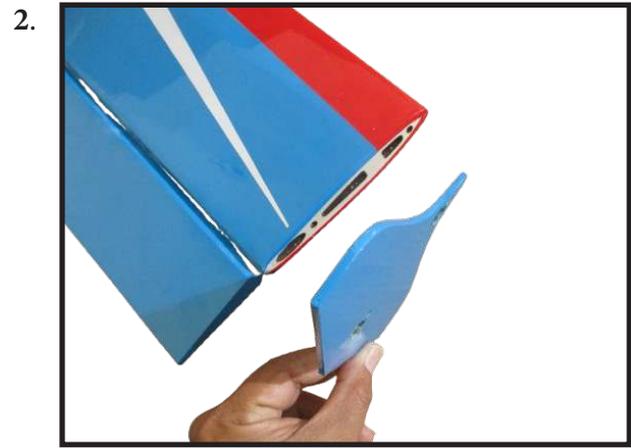
INSTALL WING TIP

Please study images below.

1.

2.

3.

Nylon 3x25mm

4.
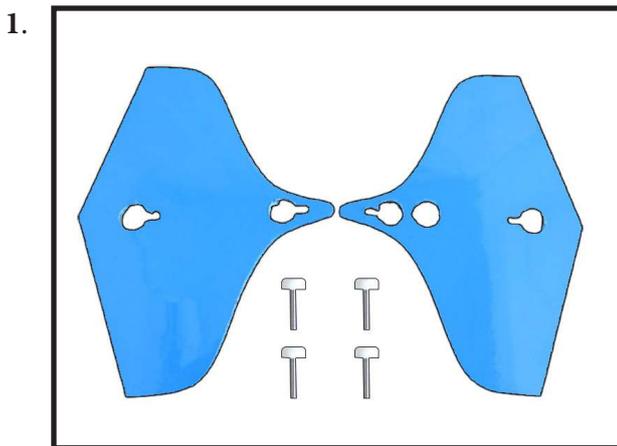
APPLY THE DECALS

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

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 figers 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 wings 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.

120mm

CONTROL THROWS

Ailerons:	Rudder:
High Rate :	High Rate :
Up : 80mm	Right : 90mm
Down : 80mm	Left : 90mm
Low Rate :	Low Rate :
Up : 60mm	Right : 70mm
Down : 60mm	Left : 70mm

Elevator:
  High Rate :
  Up : 90mm
  Down : 90mm
Low Rate :
  Up : 60mm
  Down : 60mm

Horizontal   Elevator   60-90mm / 60-90mm

Fuselage   Rudder   70-90mm / 70-90mm

Wing   Aileron   60-80mm / 60-80mm
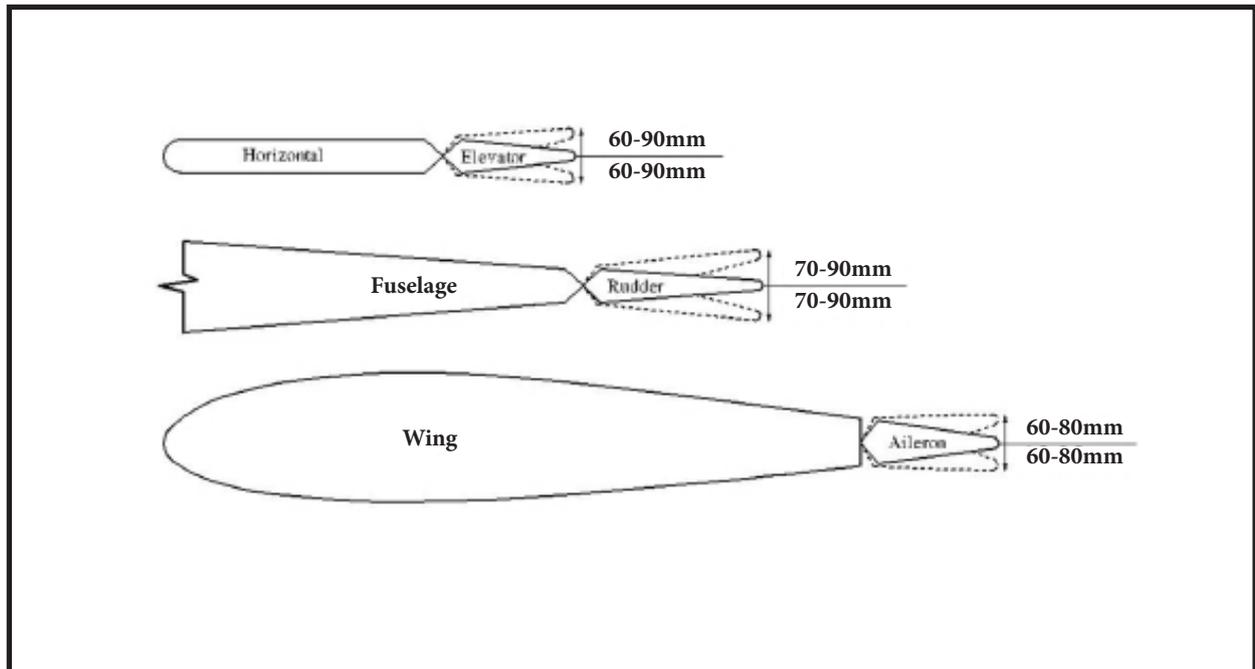
FLIGHT PREPARATION

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 **LASER 48" ARF 30E** 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 **LASER 48" ARF 30E.**

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

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