

Direct Airscale

easy series



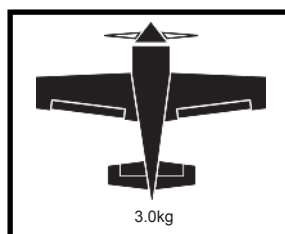
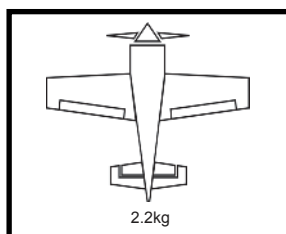
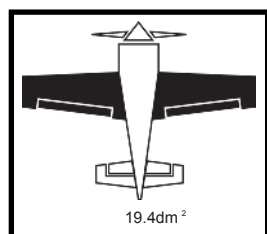
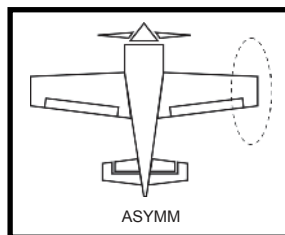
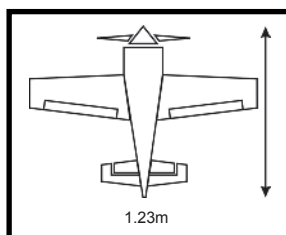
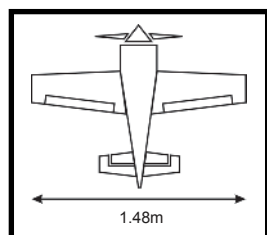
Code : from 2113 to 2157

TECHNICAL INSTRUCTIONS

May change without notice



Recreation 148



SERVOS

- Ailerons
- Rudder + wheel
- Elevator
- Flaps
- Landing gear
- Gas or bec

CONGRATULATIONS.

Thank you for choosing a *Direct Airscale* model. If you have any problems do not hesitate to consult our website. Especially the section CLUB *DA* (*Direct Airscale* club) for each plane where you will find information. You also can consult us directly by phone but try to be a maximum shorter 😊. Thank you. You also can participate in the interaction you'll find at general chapter CLUB *DA*.

The RECREATION is the perfect aircraft to relax and, or, progress. Low wing for a neutral behavior and good reactivity. Facilitates learning inverted flight. Rectangular wing. Moderate dihedral. Good ratio length / size (0.84) for a good pitch tolerance and easy balancing. Tricycle to protect the propeller in case of global return scabrous. Large diameter wheels for tracks average. Logo *DA* (direct airscale) very visible to the underside (below) for tracking that will help you in your aerobatic training. A plane leisure without moderation. We kept an asymmetric biconvex profile for our Recreations to maintain good fault tolerance in particular variations of lift landing. This is the plane that you will start to really play in the third dimension.

WARNING.

If you are inexperienced with basic r/c flight we strongly recommended you contact the nearest model aircraft club. Experienced members will help you to install additional accessories to put your aircraft airworthy. The club will ensure your training and you will avoid flying illegally and destroy your aircraft from the first flight.

ADDITIONAL ITEMS REQUIRED.

- Propulsion set depending your choice : gas or electric.
- Radio set minimum 4 channels.
- 4 servos.
- Propeller.
- Electric lipo pack or Ni-Mh.
- Switch or Bec controller and fuse.

TOOLS AND SUPPLIES.

- Thick cyanoacrylate glue.
- 30 minute epoxy.
- Electric drill.
- Assorted drill bits.
- Modelling knife.
- Straight ruler.
- Miscellaneous sandpaper.
- 90° builder's triangle.
- Wire cutters.
- Tape & T-pin
- A set of small keys 6 section
- A set of screw drivers

KIT CONTAIN.

- Light and rigid balsa and plywood construction
- Hull and wings constructed and covered
- Clear canopy
- 1 Pilot included
- Decoration sticker board
- Rigid aluminium landing gear
- Large wheels diameter
- Controlled front wheel
- Spinner
- Gas engine accessories (tank, engine mount,...)
- Electric engine accessories (lipo wooden part, mounting kit,...)
- All necessary hardware and accessories included
- Document for assembly (Several languages).

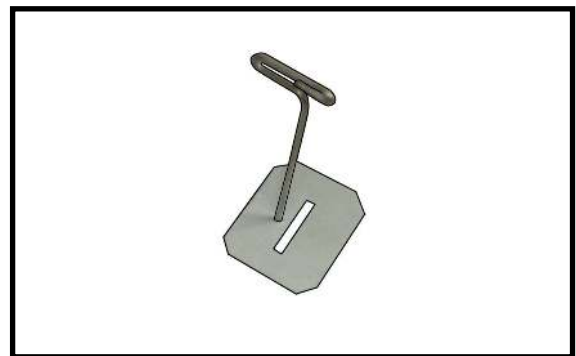
NOTE : To avoid scratching your new aeroplane we suggest that you cover your workbench with an old towel. Keep a couple of jars or bowls handy to hold the small parts after you open the bags. Please trial fit all parts. Make sure you have the correct parts and that they fit and are aligned properly before gluing! This will ensure proper assembly as the RECREATION 148 is made from natural materials and minor adjustments may have to be made. The paint and plastic parts used in this kit are fuel proof. However, they are not tolerant of many harsh chemicals including the following: paint thinner, cyano-acrylate glue accelerator, cyanoacrylate glue debonder and acetone. Do not let these chemicals come in contact with the colours on the covering and the plastic parts.



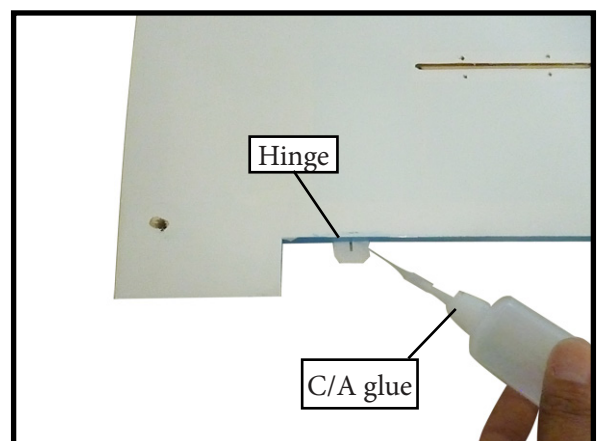
HINGING THE AILERON.

Note : The control surfaces, including the ailerons, elevators, and rudder, are pre-hinged with hinges in stalled, 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.

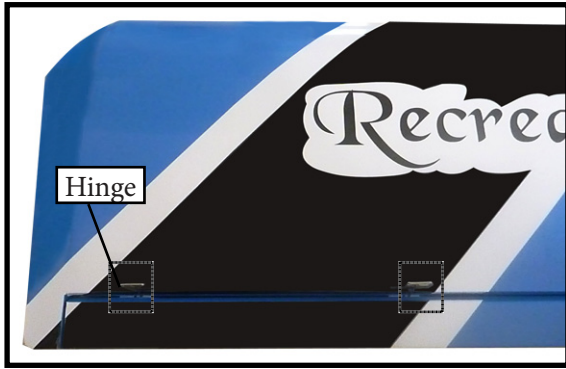
- 1) Carefully remove the aileron from one of the wing panels. Note the position of the hinges.



- 2) 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 aileron until the T-pin is snug against the aileron. This will help ensure an equal amount of hinge is on either side of the hinge line when the aileron is mounted to the wing panel.

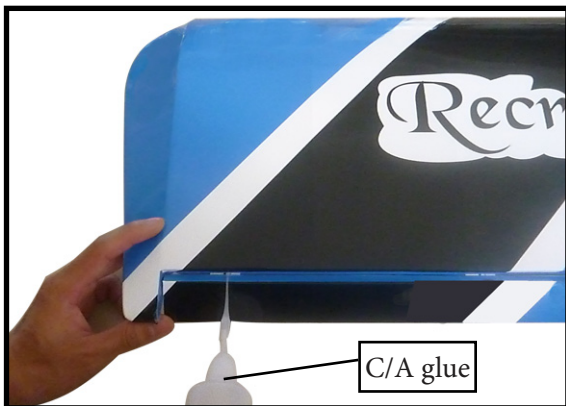


- 3) Slide the aileron on the wing panel until there is only a slight gap. The hinge is now centered on the wing panel and aileron. Remove the T-pins and snug the aileron against the wing panel. A gap of 1/64" or less should be maintained between the wing panel and aileron.



4) 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 length 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.



5) 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.

6) 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.

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

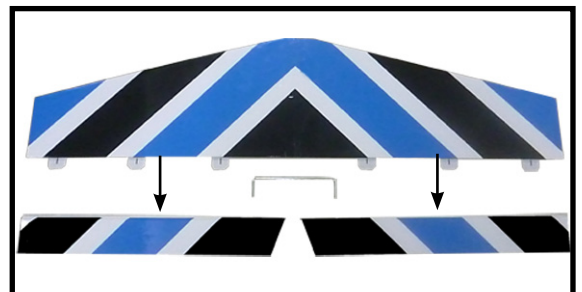
8) After both ailerons are securely hinged, firmly grasp the wing panel and aileron to make sure the hinges are securely glued and cannot be pulled out. Do this by carefully applying medium pressure, trying to separate the aileron from the wing panel. Use caution not to crush the wing structure.



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

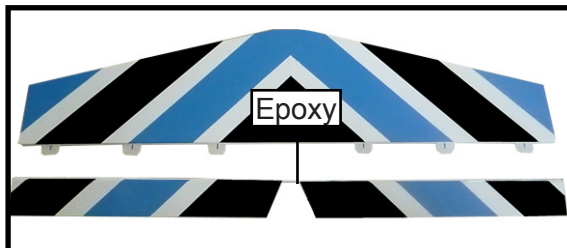
HINGING THE ELEVATOR.

1) Locate the item for this section of the manual.

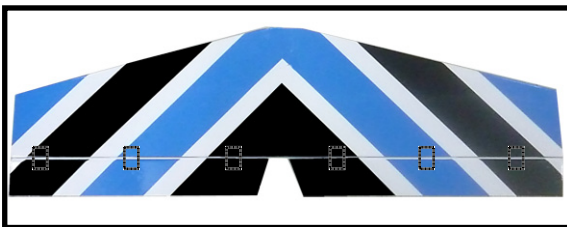


2) Carefully remove the elevator from one of the horizontal stabilizer panels. Note the position of the hinges.

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

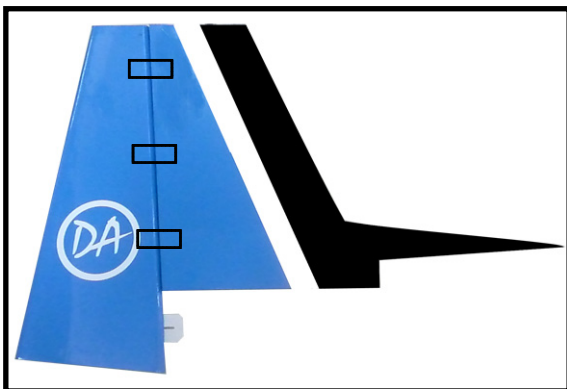


Glue the elevator hinges in place using the same techniques used to hinge the ailerons.



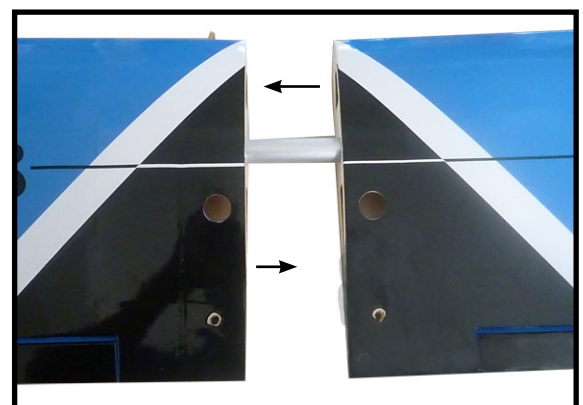
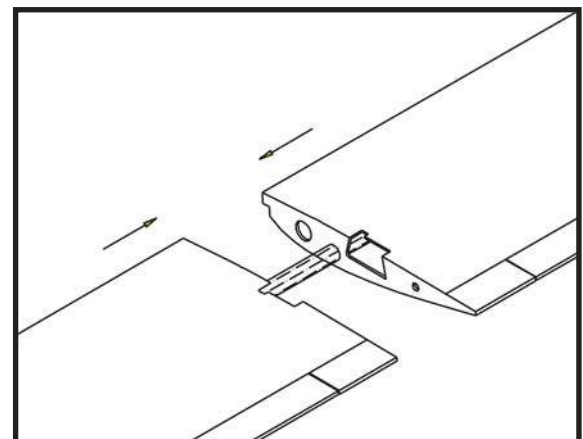
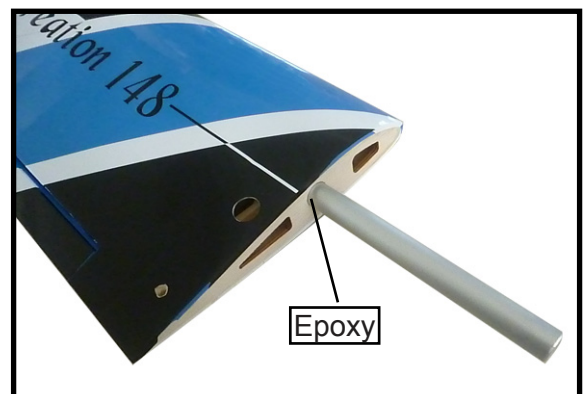
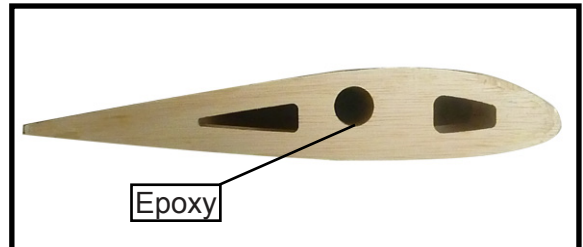
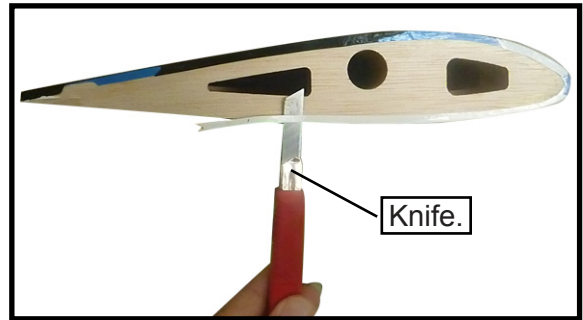
HINGING THE RUDDER.

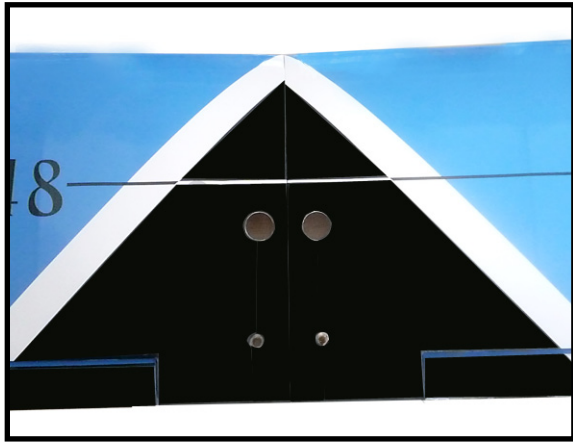
Glue the rudder hinges in place using the same techniques used to hinge the ailerons.



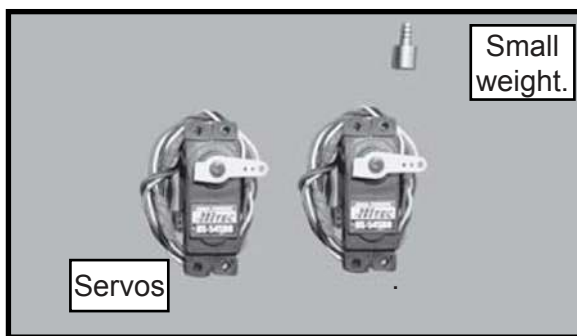
WING ASSEMBLY.

See below pictures :






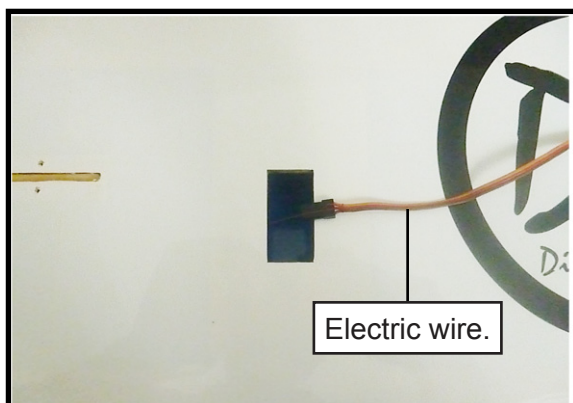
INSTALLING THE AILERON SERVO.



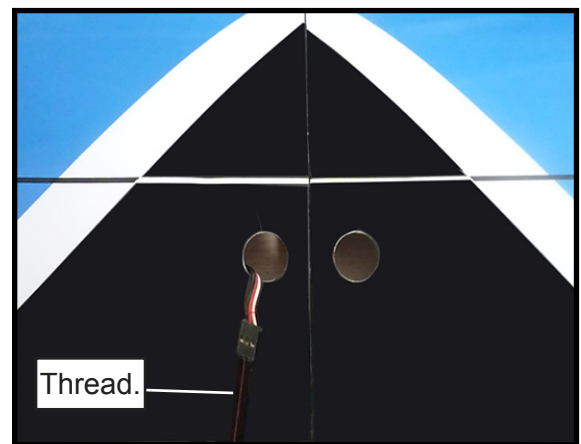
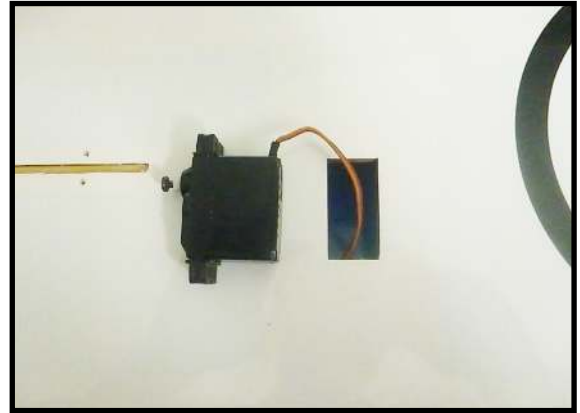
1) Install the rubber grommets and brass collets onto the aileron servo. Test fit the servo into the aileron servo mount.

 *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.*

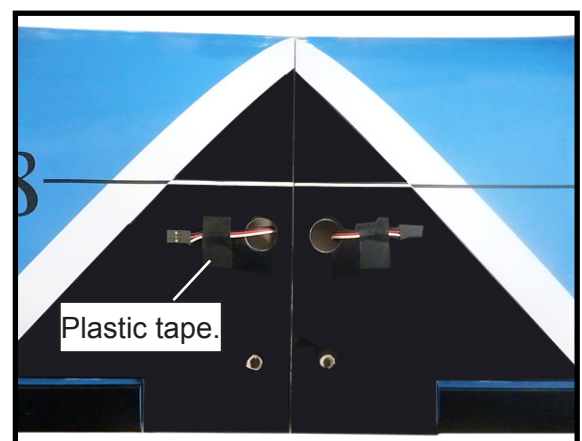
2) Using a small weight (Weighted fuel pick-up works well) and thread, feed the string through the wing as indicated.



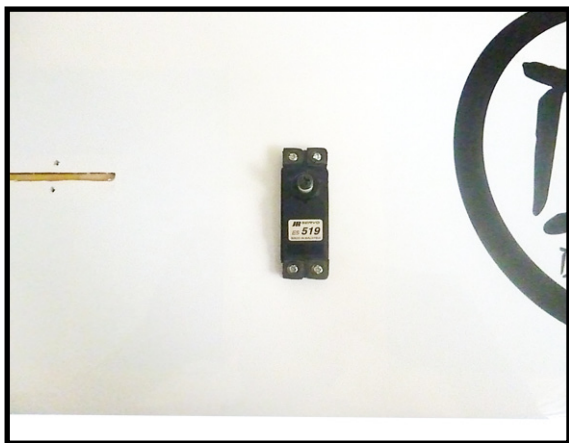
3) Attach servo lead to the aileron servo. Attach the string to the servo lead and carefully thread it through the wing. Once you have thread the lead through the wing, remove the string so it can use for the other servo



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



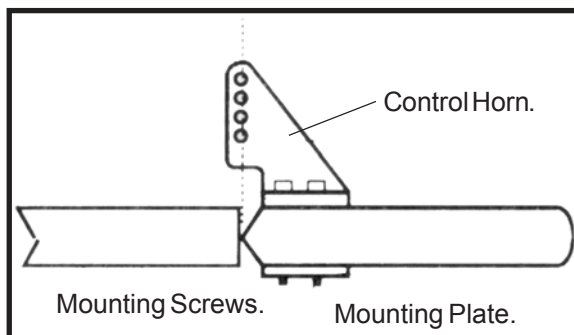
5) Reinstall the servo into the servo mount and secure the servo in place using the wood screws provided with your radio system.



Repeat the procedure for the other wing half.

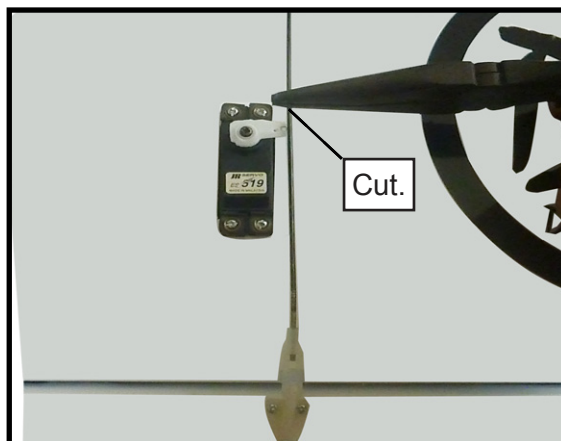
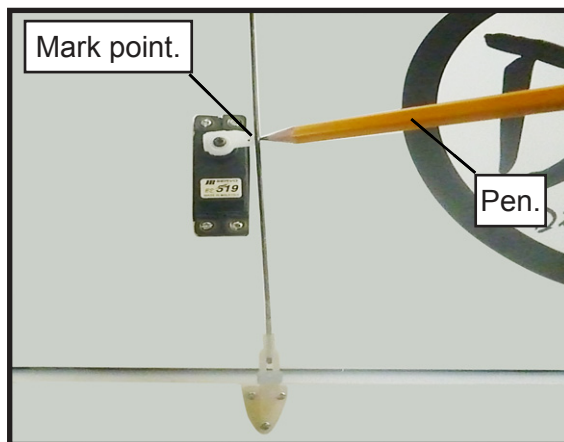
AILERON LINKAGE.

- 1) Using a ruler & pen to draw a straight line as below picture.
- 2) Locate the two nylon control horns, two nylon control horn backplates and four machine screws.
- 3) Position the aileron horn on the bottom side of aileron. The clevis attachment holes should be positioned over the hinge line.

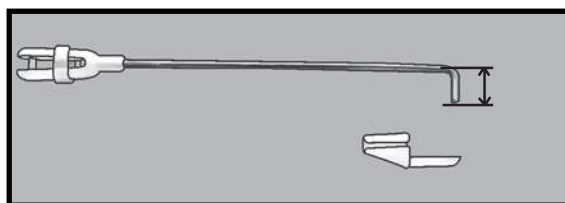


- 4) Using a 1mm drill bit and the control horns as a guide, drill the mounting holes through the aileron halves.
- 5) Mount the control horns by inserting the screws through the control horn bases and aileron halves, then into the mounting backplates. Do not overtighten the screws or the backplates may crush the wood.
- 6) Thread one nylon adjustable control horn onto each aileron control rod. Thread the horns on until they are flush with the ends of the control rods.

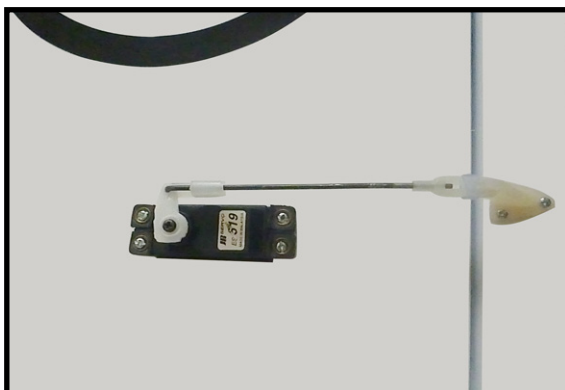
- 7) With the aileron servo centered and the aileron even with the trailing edge of the wing attach the clevis to the control horn. Mark the control wire where it crosses the servo arm hole.



- 8) Make a 90-degree bend at the mark and cut off the excess wire leaving 10mm past the bend.

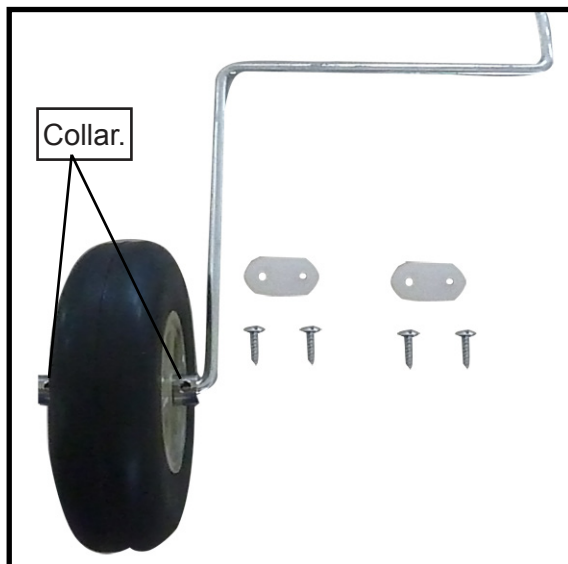
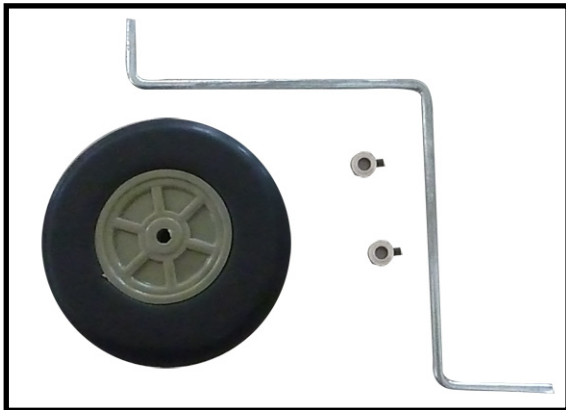


- 9) Connect the linkage as shown and secure the control wire with a wire keeper.



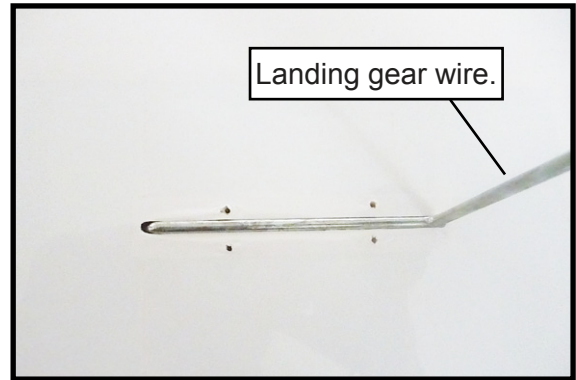
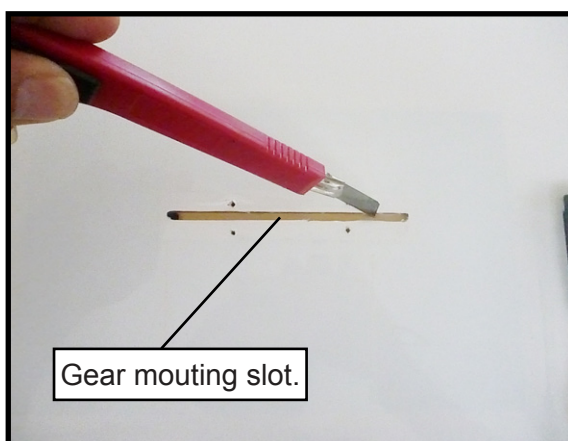
Repeat the procedure for the other aileron servos.

INSTALLING THE MAIN GEAR WIRES.




1) Using a modeling knife, remove the covering from over the two main gear mounting slots located in the bottom of the wing.

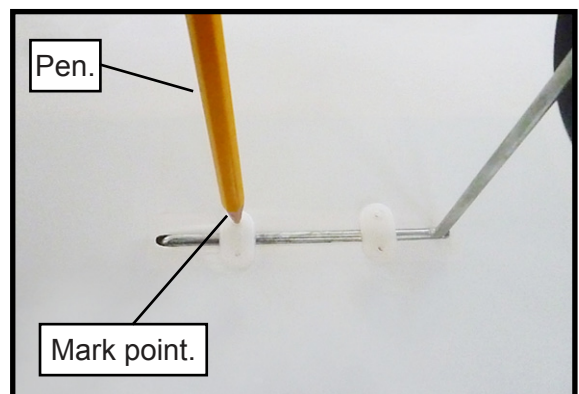
2) Insert the 90° bend of one main gear wire into the predrilled hole in one mounting slot.



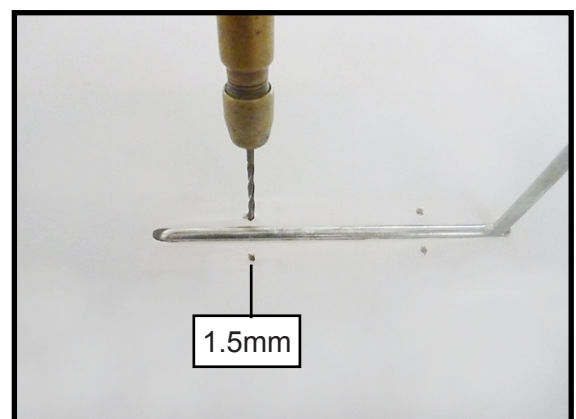
3) The landing gear wire is held in place using two nylon landing gear straps and four 3mm x 15mm wood screws.

 *The straps should be located equal distance from the inside and outside ends of the wire.*

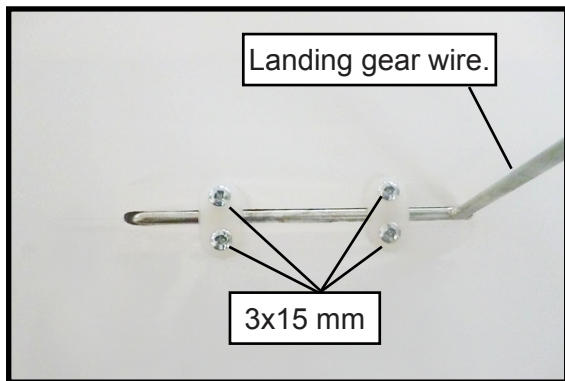
4) Using the two landing gear straps as a guide, mark the locations of the four 3x10mm mounting screws onto the wing surface.



5) Remove the two straps and the gear wire. Drill four 1.5mm pilot holes into the wing for the wood screws.

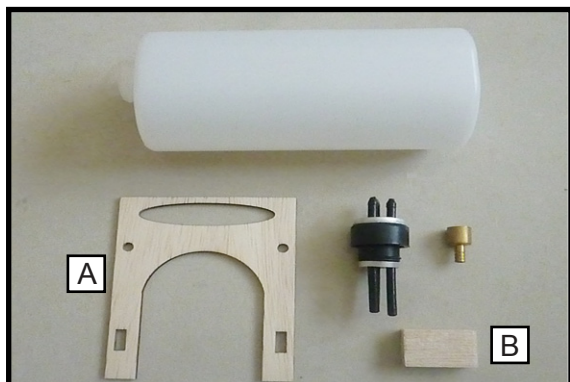


Be careful do not to drill through the top of the wing !



6) Reinstall the gear wire and install the straps using the four 3 x 15mm wood screws. Tighten the screws completely to secure the gear wire in place.

FUEL TANK.

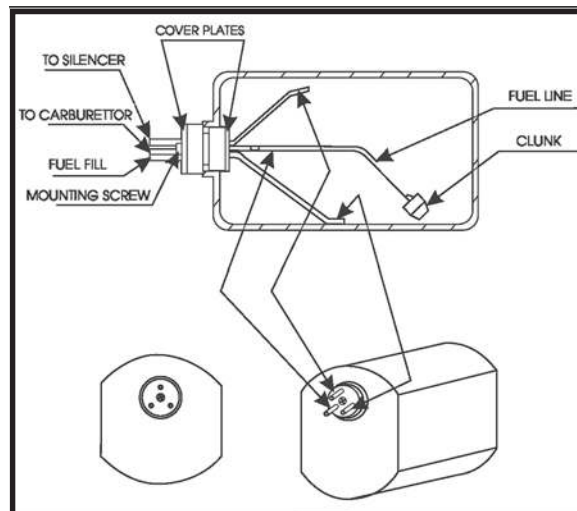


INSTALLING THE STOPPER ASSEMBLY.

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

2) Using a modeling knife, cut one length of silicon fuel line (not included) to 2-1/4" long. Connect one end of the line to the weighted fuel pick up and the other end to the nylon pick up tube.

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



4) Carefully heat the vent tube using a heat gun or lighter to permanently set the angle of the tube.



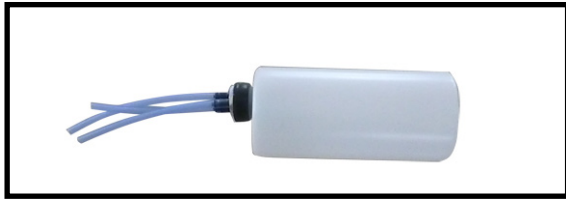
When the stopper assembly is installed in the tank, the top of the vent tube should rest just below the top surface of the tank. It should not touch the top of the tank.


5) 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.

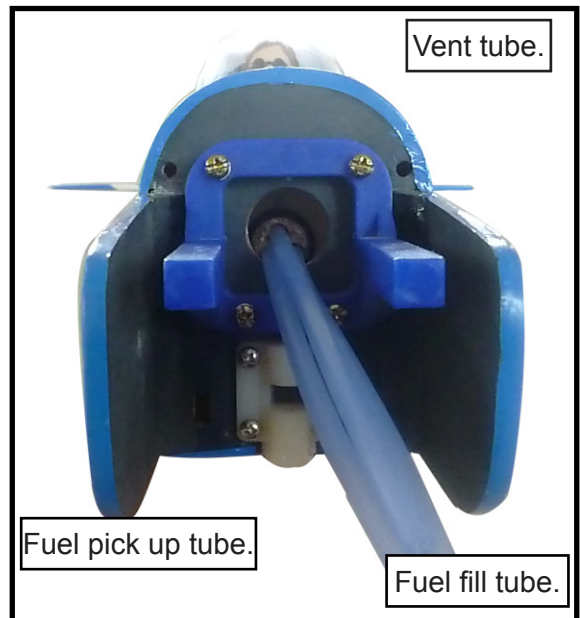
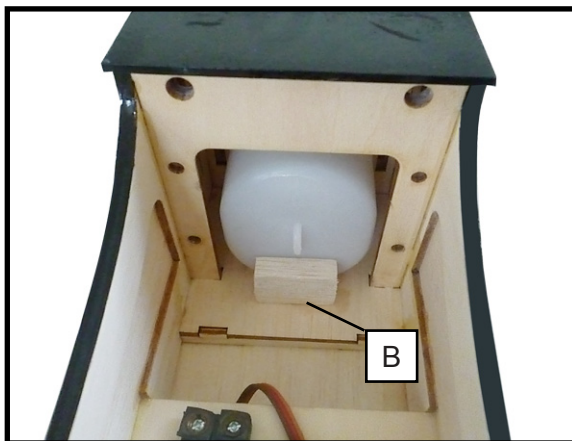
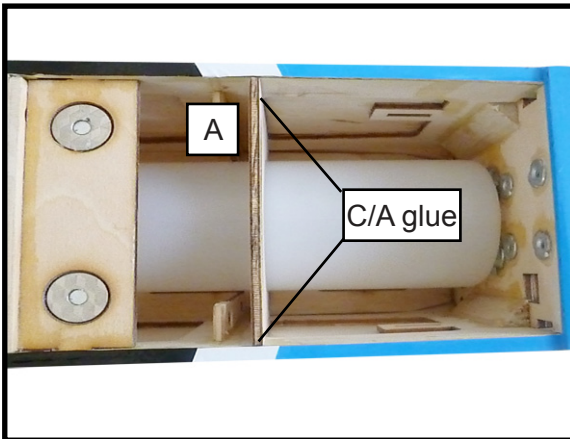
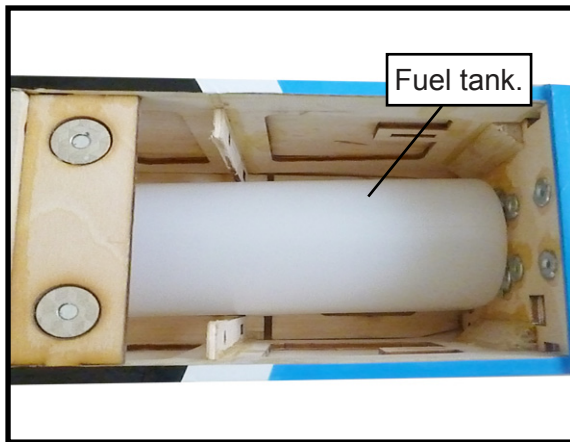
6) With the stopper assembly in place, the weighted pick up should rest about 3/8" away from the rear of the tank and move freely inside the tank. The top of the vent tube should rest just below the top of the tank. It should not touch the top of the tank.

7) When satisfied with the alignment of the stopper assembly tighten the 3mm x 20mm 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.

Using a modeling knife, cut one length of fuel line 20" long. Connect one line to the vent tube and one line to the fuel pick up tube on the stopper. See picture bellow.

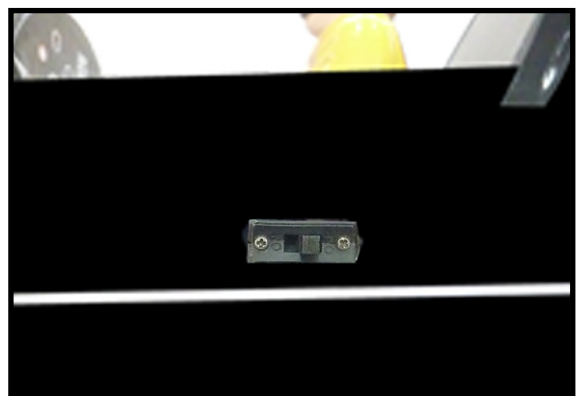
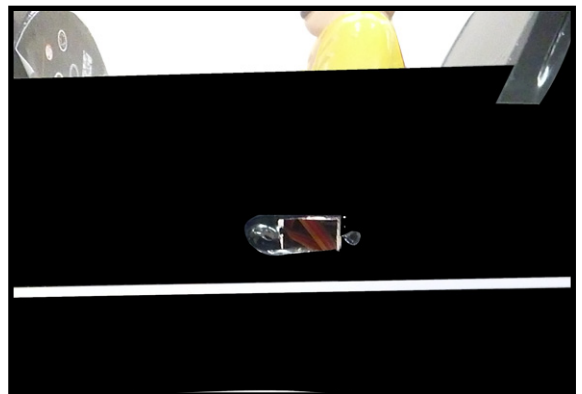


 *Blow through the tubes to make sure the lines have not become kinked during installation.*



INSTALLING THE SWITCH.

1) Install the switch into the precut hole in the fuselage side. Use the two screws provided with the switch to secure it in place.



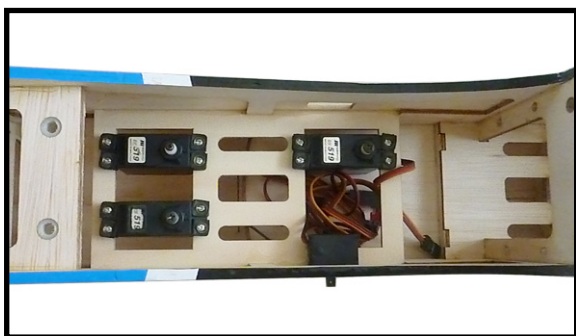
INSTALLING THE FUSELAGE SERVOS.



1) Install the rubber grommets and brass collets onto the elevator, rudder and throttle servos. Test fit the servos into the preinstalled servo tray. Because the size of servos differ, you may need to adjust the size of the precut openings in the tray.

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

2) Position the servos into the servo tray with the output shafts orientated as shown below. Drill 1/16" pilot holes through the tray for each of the mounting screws.



MOUNTING THE ENGINE.

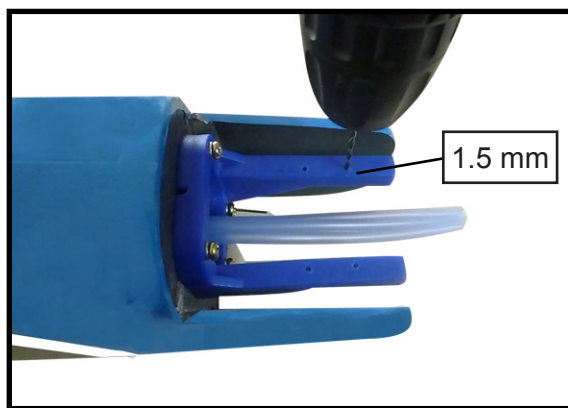
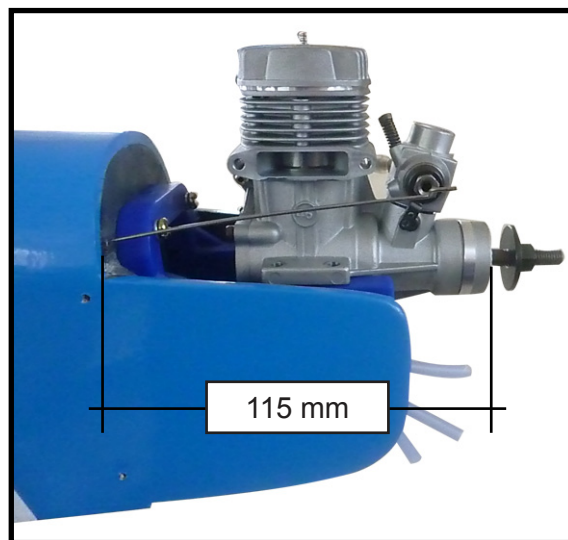
1) Install the pushrod housing through the predrilled hole in the firewall and into the servo compartment. The pushrod housing should protrude 1/4" out past the front of the firewall.

Make a Z-Bend 1/4" from one end of the plain wire pushrod.

2) Place your engine onto the engine mount. Adjust the engine is centered of the edges of the engine case.

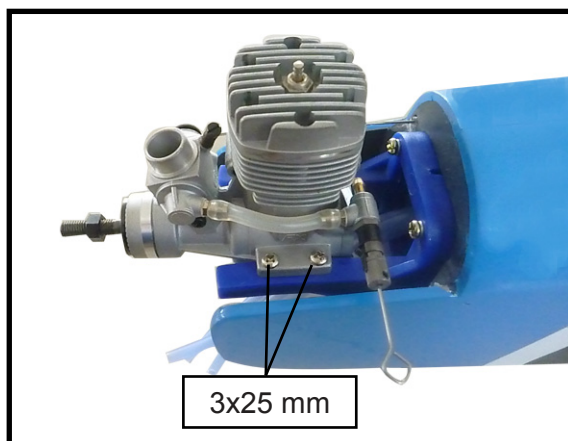
3) When you are satisfied with the alignment, mark the locations of the engine mounting.

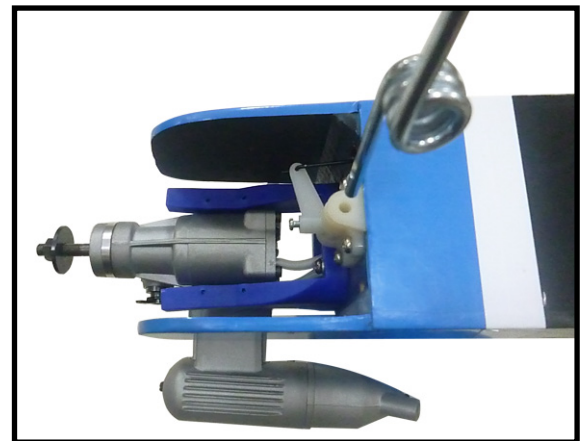
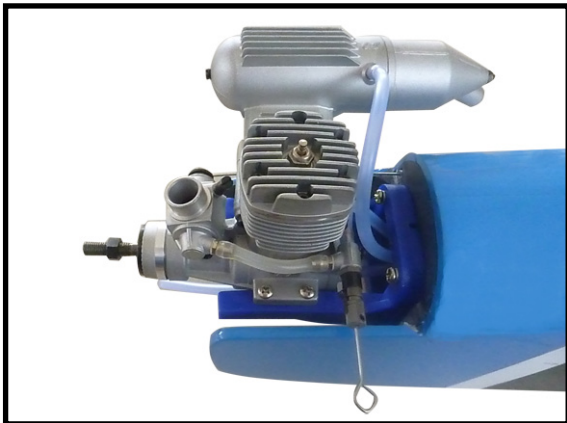
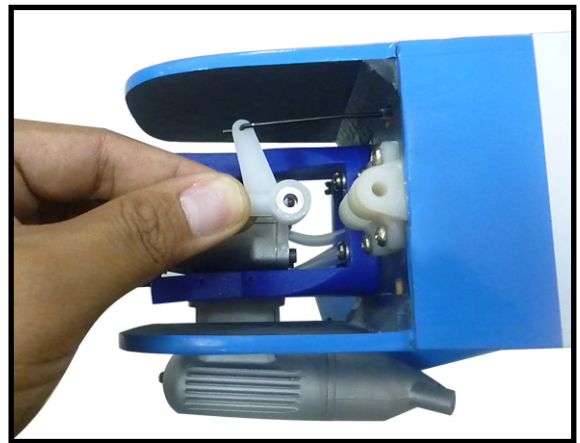
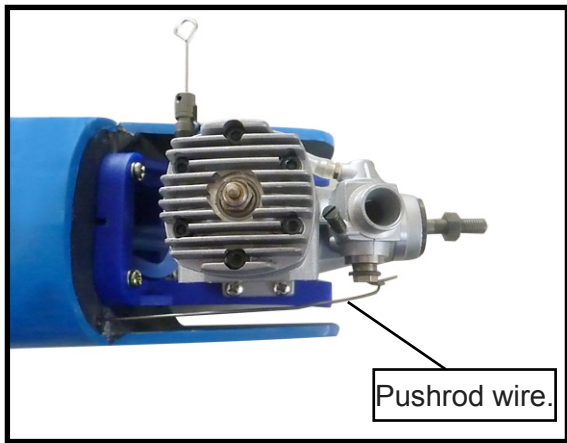
4) Remove the engine. Using an drill bit, drill the mounting holes through the engine mount at the four locations marked.



5) Bolt the engine to the engine mount using the four machine screws. Double check that all the screws are tight before proceeding.

6) Attach the Z-Bend in the pushrod wire to the throttle arm on the carburetor. You will need to remove the throttle arm from the carburetor to be able to attach the Z-bend. When complete, re-attach the throttle arm to the carburetor.

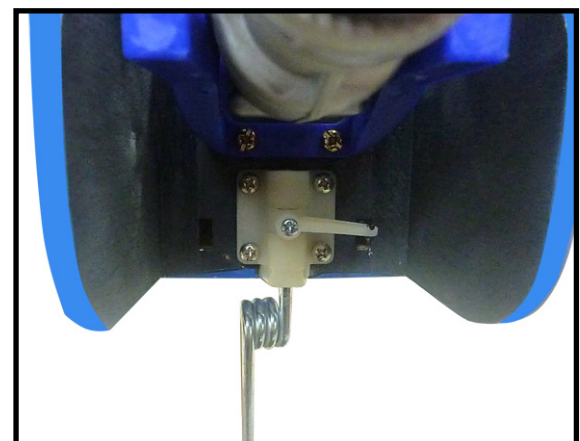
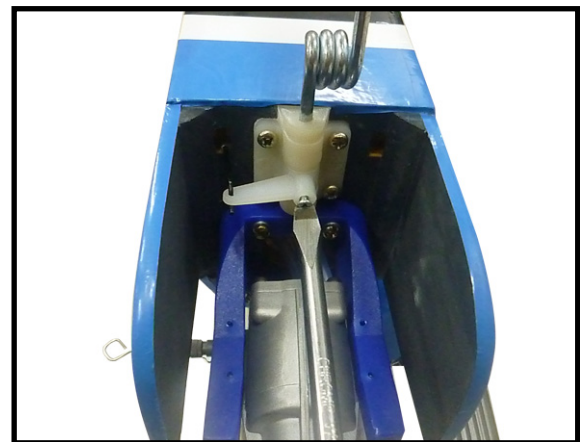
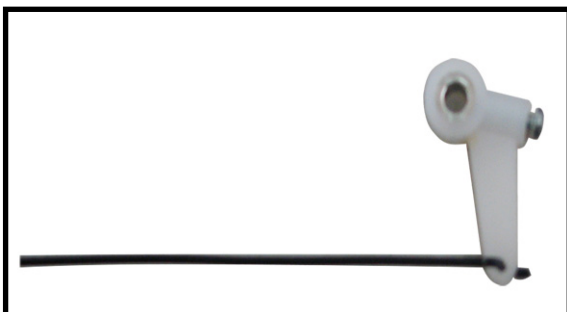




NOSE GEAR INSTALLATION.




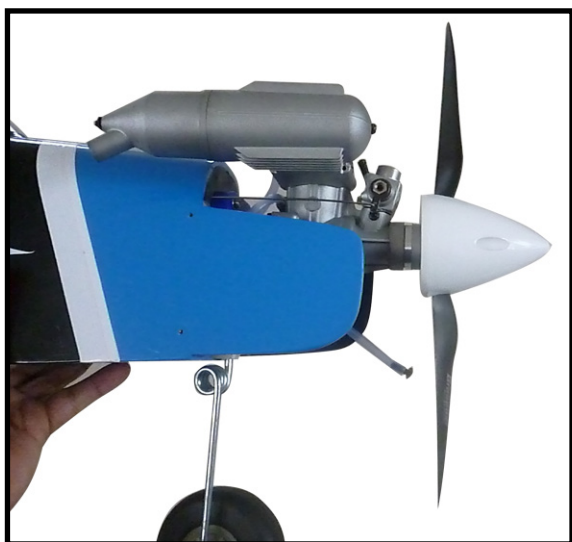
Installing steering arm as below.



INSTALLING THE SPINNER.

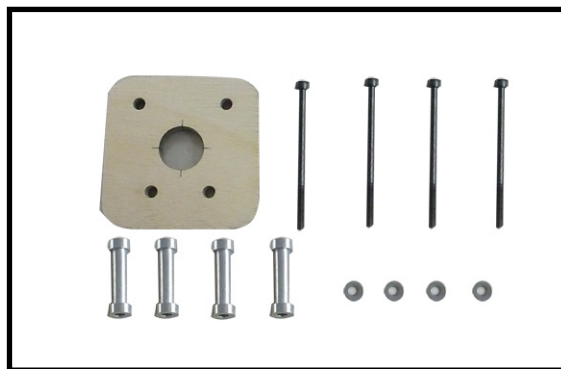
Install the spinner backplate, propeller and spinner cone. The spinner cone is held in place using two 3 x 15mm wood screws.

 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.

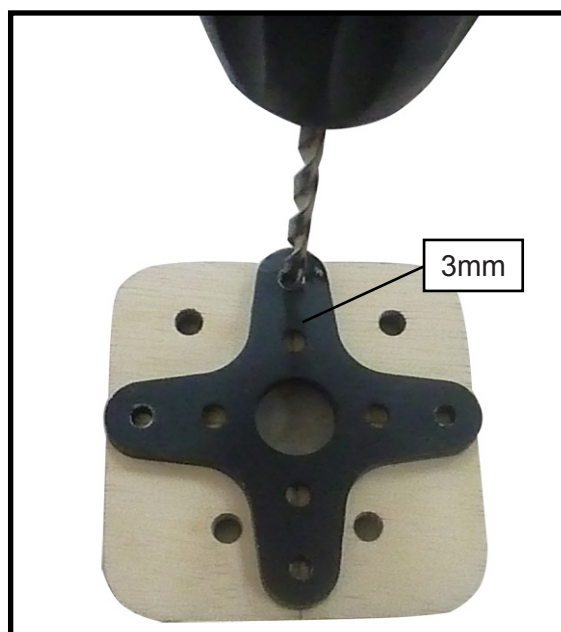


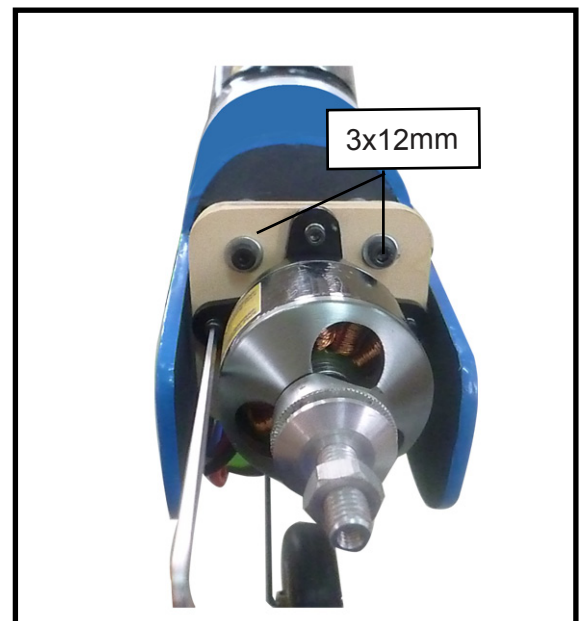
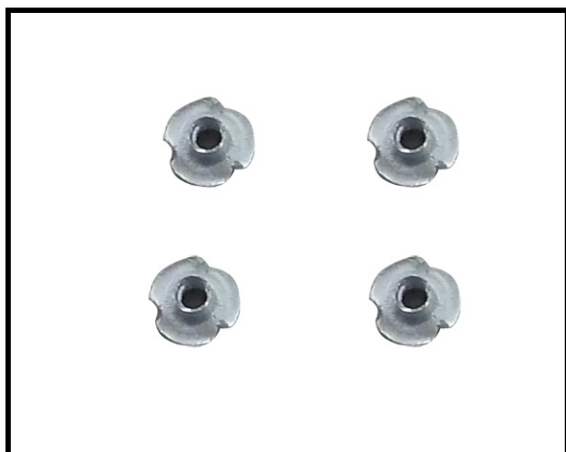
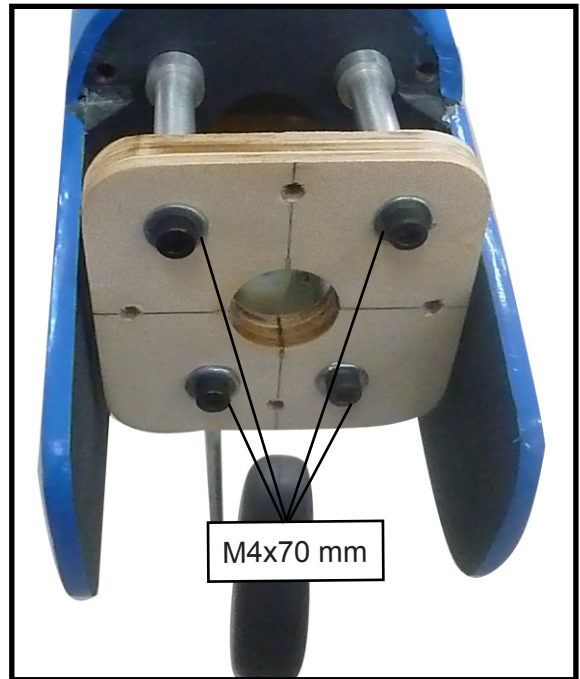
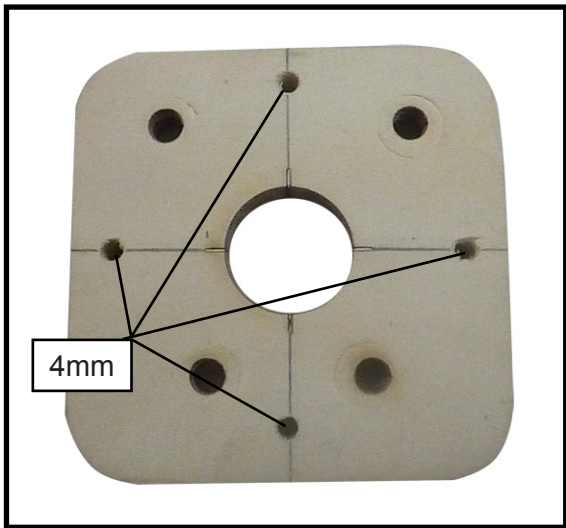
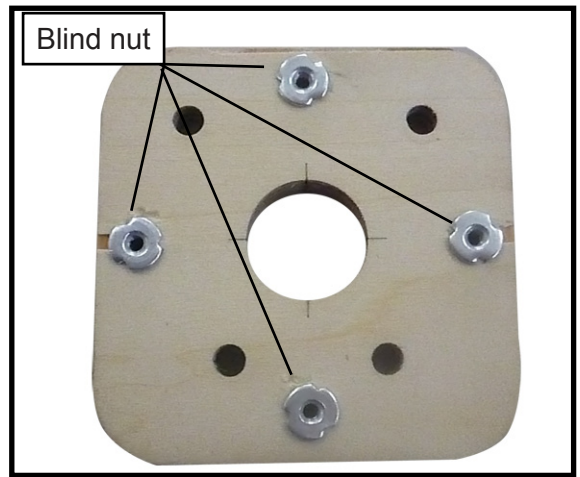
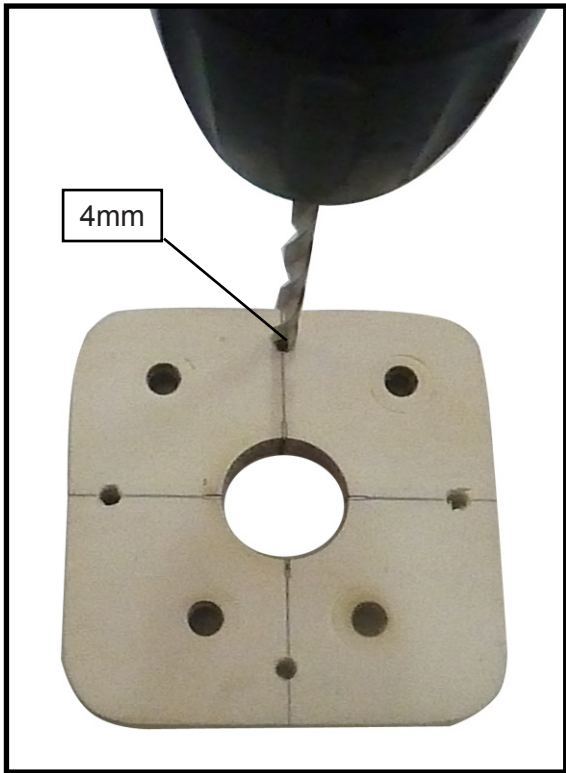
ELECTRIC POWER CONVERSION.

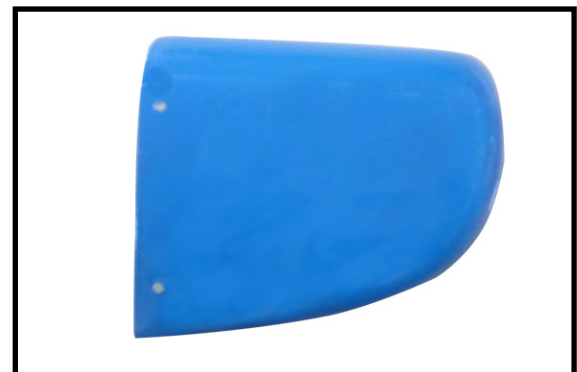
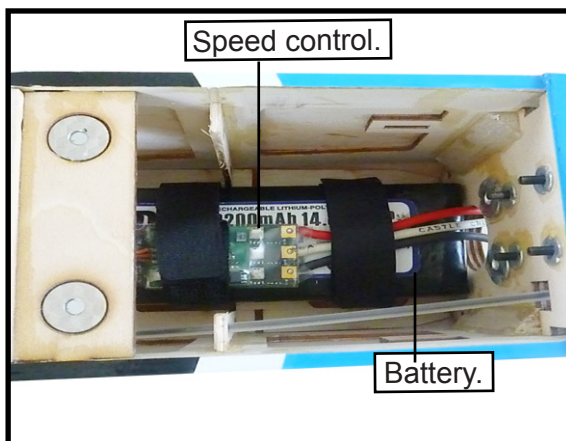
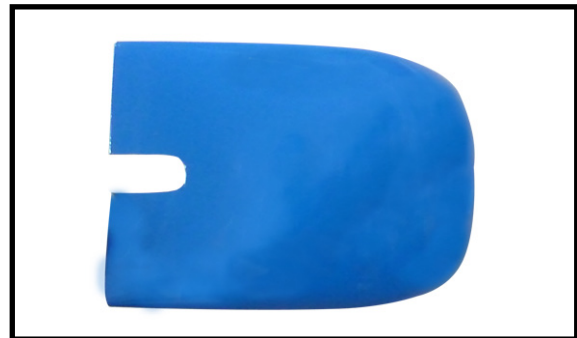
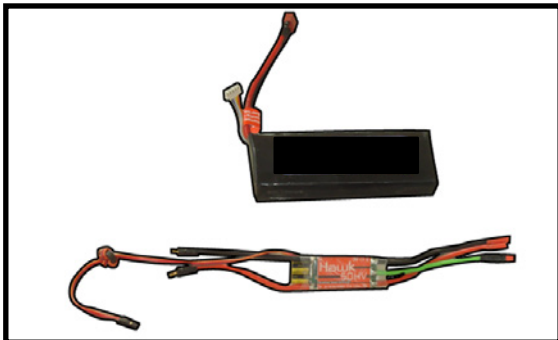
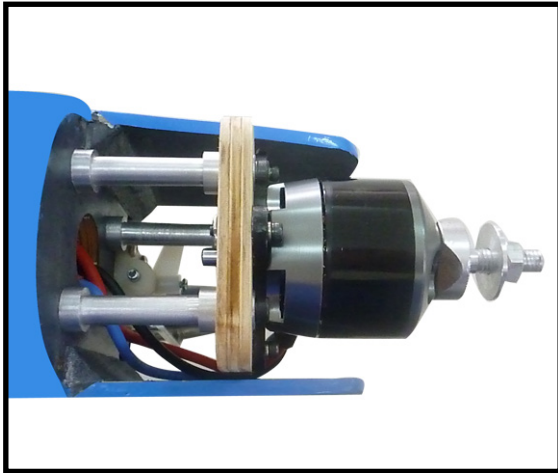
1) Locate the items necessary to install the electric power conversion included with your model.



- Model size: .46 size models
- Motor: 35mm 830 rev per volt
- Propeller: 13x 6
- ESC: 50A
- Lipo Batteries: 4cell 4200mA



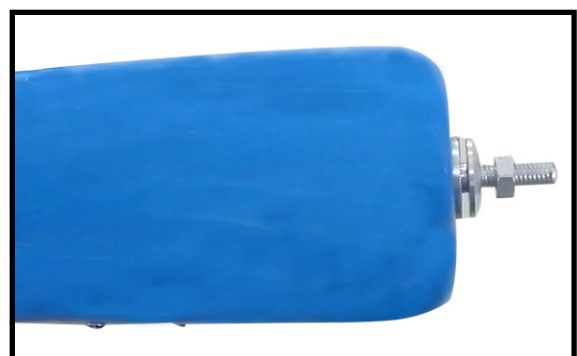


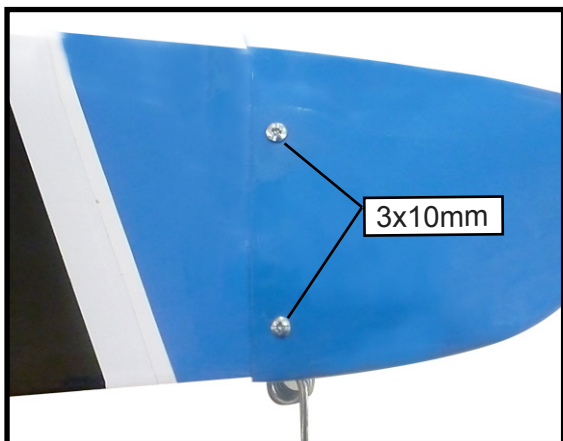


COWLING

1) Slide the fiberglass cowl over the motor and line up the back edge of the cowl with the marks you made on the fuselage then trim and cut as shown.

2) While keeping the back edge of the cowl flush with the marks, align the front of the cowl with the crankshaft of the engine. The front of the cowl should be positioned so the crankshaft is in nearly the middle of the cowl opening. Use the spinner backplate as a guide. Hold the cowl firmly in place using pieces of masking tape.






3) 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 filler valve. Secure the cowl to fuselage using the M3x10mm screws.



INSTALLING THE SPINNER.

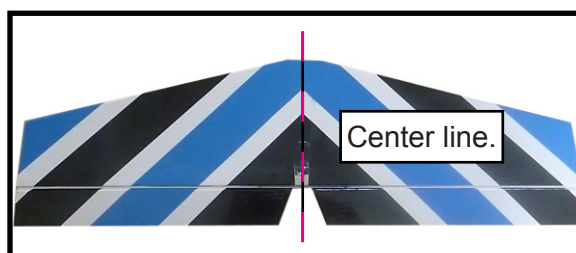
Install the spinner backplate, propeller and spinner cone. The spinner cone is held in place using two 3 x 15mm wood screws.

 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.



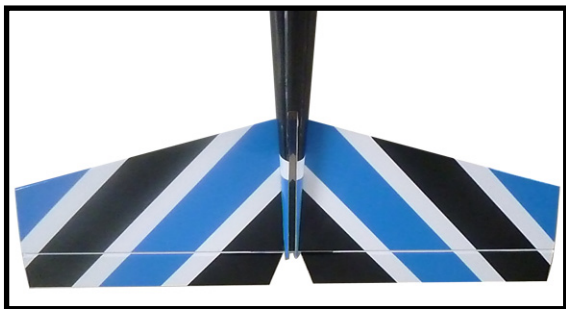
HORIZONTAL STABILIZER.

1) Using a ruler and a pen, locate the center-line 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.

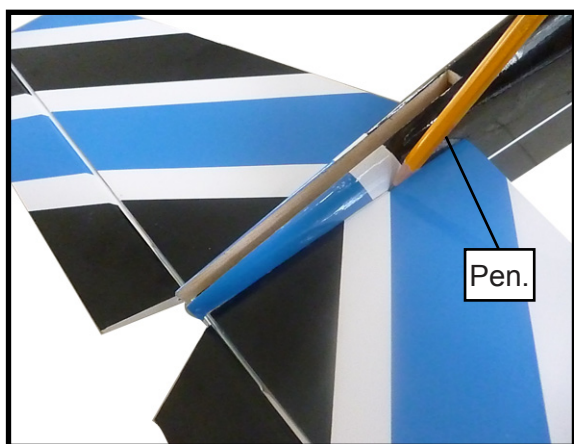


2) Using a modeling knife, carefully remove the covering from over the vertical stabilizer mounting slot in the top of the fuselage.

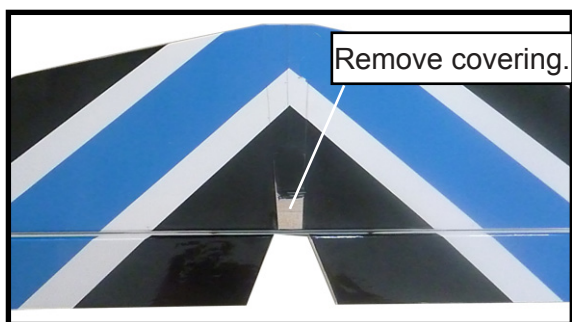
3) Slide the stabilizer into place in the precut slot in the rear of the fuselage. The stabilizer should be pushed firmly against the front of the slot.




4) 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.



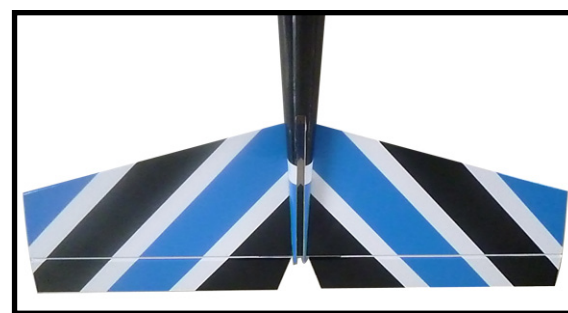
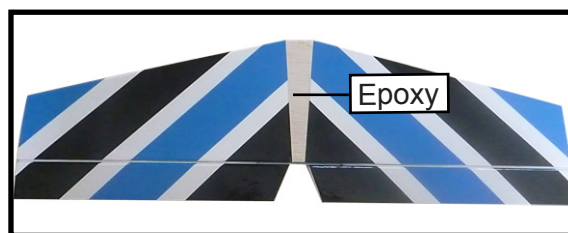
5) Remove the stabilizer. Using the lines you just drew as a guide, carefully remove the covering from between them using a modeling knife.



 *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.*

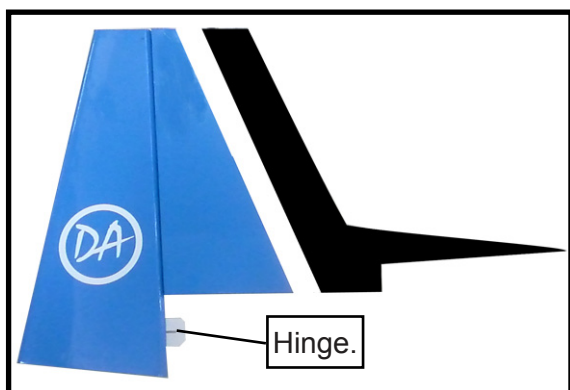
6) Using a modeling knife, carefully remove the covering that overlaps the stabilizer mounting platform sides in the fuselage. Remove the covering from both the top and the bottom of the platform sides.

7) 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.

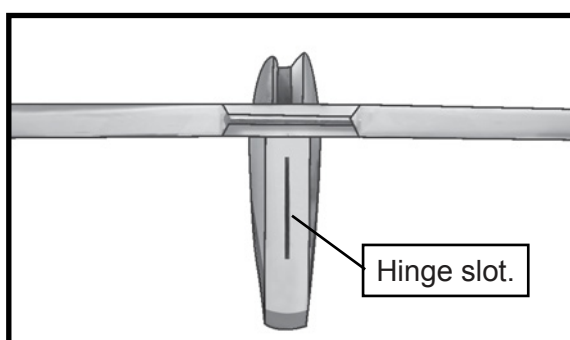


8) After the epoxy has fully cured, remove the masking tape or T-pins used to hold the stabilizer in place. Carefully inspect the glue joints. Use more epoxy to fill in any gaps that may exist that were not filled previously and clean up the excess using a paper towel and rubbing alcohol.

VERTICAL STABILIZER INSTALLATION.



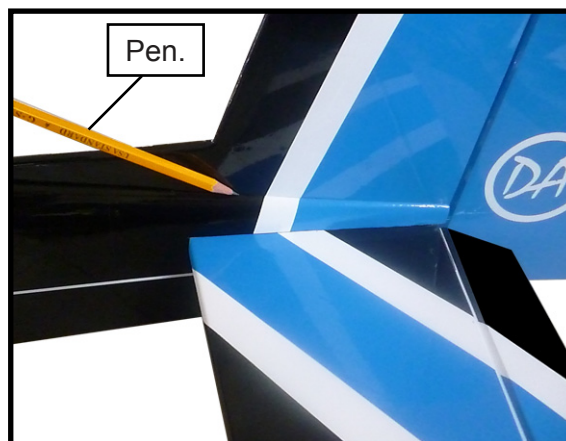
1) Using a modeling knife, remove the covering from over the precut hinge slot cut into the lower rear portion of the fuselage. This slot accepts the lower rudder hinge.



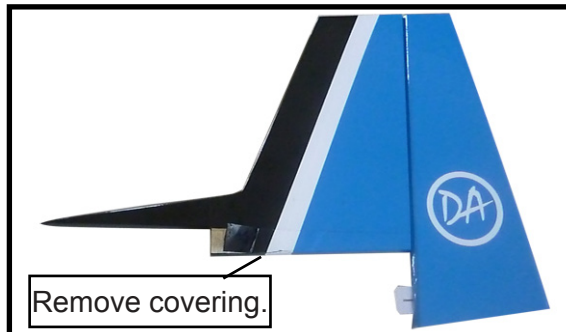
2) Slide the vertical stabilizer into the slot in the top of the fuselage. The rear edge of the stabilizer should be flush with the rear edge of the fuselage and the lower rudder hinge should engage the precut hinge slot in the lower fuselage. The bottom edge of the stabilizer should also be firmly pushed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



3) 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.

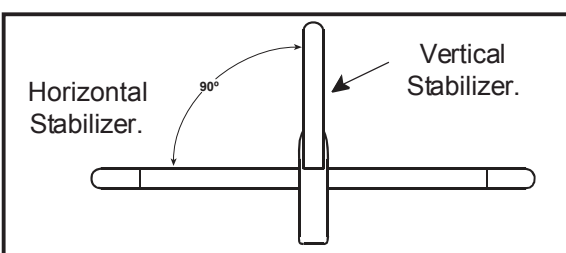


4) Remove the stabilizer. Using a modeling knife, remove the covering from below the lines you drew.

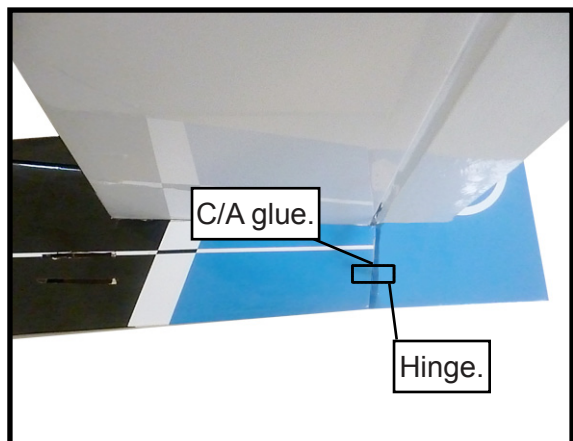
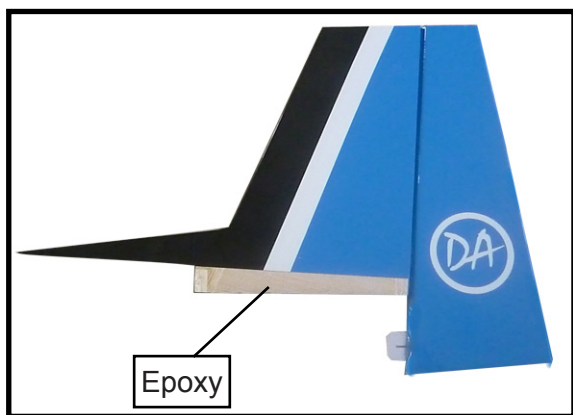


! When cutting through the covering to remove it, cut with only enough pressure to only cut through the covering itself. Cutting into the balsa structure may weaken it.

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



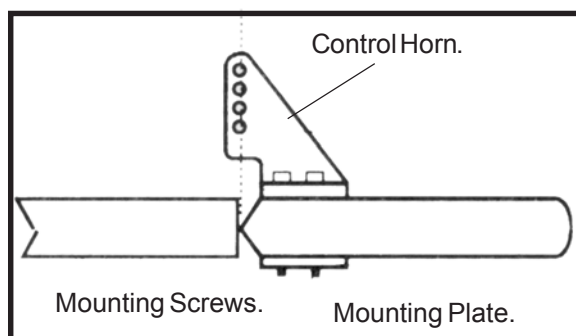
6) When you are sure that everything is aligned correctly, mix up a generous amount of 30 Minute Epoxy. Apply a thin layer to the mounting slot in the top of the fuselage and to the sides and bottom of the vertical stabilizer mounting area. Apply epoxy to the bottom and top edges of the filler block 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.



CONTROL HORN INSTALLATION.

1) Locate the nylon control horns- nylon control horn backplates and machine screws.

2) The position of elevator control horn on the left side of elevator. The clevis attachment holes should be positioned over the hinge line.

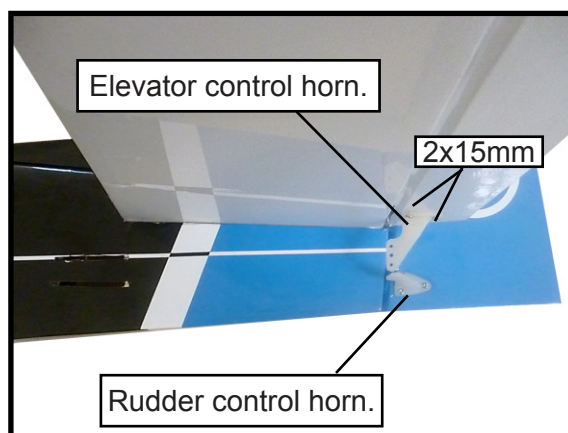


3) Using a 2mm drill bit and the control horns as a guide, drill the mounting holes through the elevator halves.

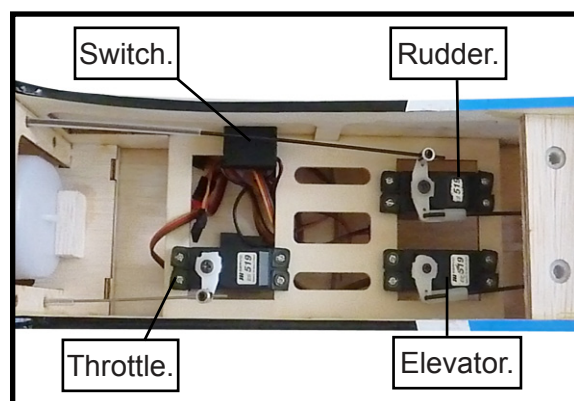
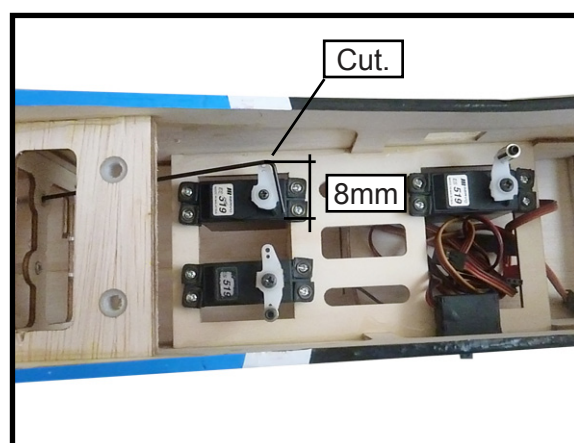
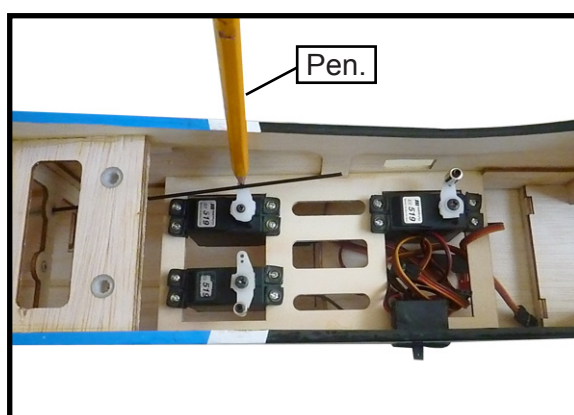
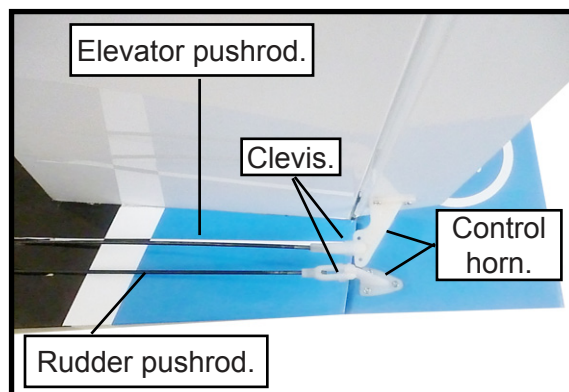
4) Mount the control horns then into the mounting backplates. Do not overtighten the screws or the backplates may crush the wood.

5) Position the rudder control horn on the left side of the airplane.

6) Install the rudder control horn using the same method as with the elevator control horns.



ELEVATOR - RUDDER PUSHROD INSTALLATION.

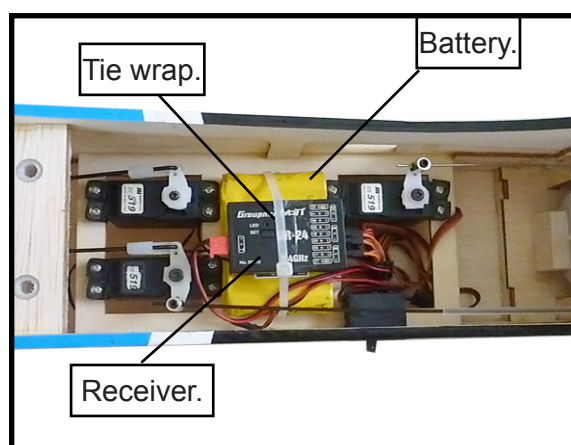


INSTALLING THE RECEIVER AND BATTERY.

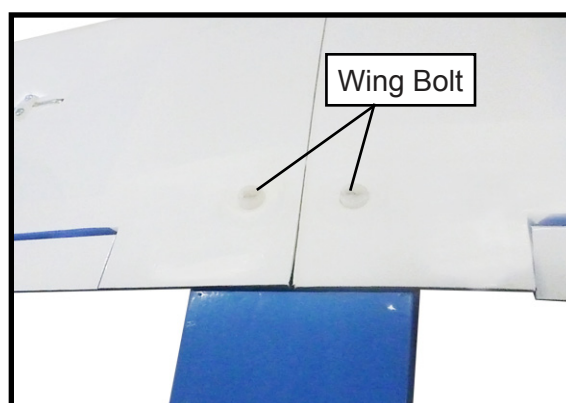
1) Plug the five servo leads and the switch lead into the receiver. Plug the battery pack-lead into the switch also.

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

3) Route the antenna out of the fuselage and secure it to the vertical stabilizer using a rubber band and a modified servo arm. See picture as below.



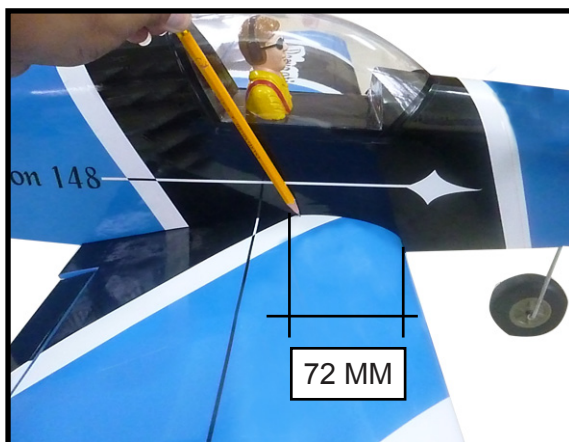
ATTACHMENT WING- FUSELAGE.



BALANCING.

1) It is critical that your airplane be balanced correctly. Improper balance will cause your plane to lose control and crash. THE CENTER OF GRAVITY IS LOCATED 72MM BACK FROM THE LEADING EDGE OF THE WING AT THE WING ROOT.

2) If the nose of the plane falls, the plane is nose heavy. To correct this first move the battery pack further back in the fuselage. If this is not possible or does not correct it, stick small amounts of lead weight on the fuselage sides under the horizontal stabilizer. If the tail of the plane falls, the plane is tail heavy. To correct this, move the battery and receiver forward or if this is not possible, stick weight onto the firewall. When balanced correctly, the airplane should sit level or slightly nose down when you lift it up with your fingers.



CONTROL THROWS.

1) We highly recommend setting up the RECREATION 148 using the control throws listed at right. We have listed control throws for both Low Rate (initial test flying) and High Rate (aerobatic flying).

2) Turn on the radio system, and with the trim tabs on the transmitter in neutral, center the control surfaces by making adjustments to the clevises or adjustable servo connectors. The servo arms should be centered also.

3) When the elevator, rudder and aileron control surfaces are centered, use a ruler and check the amount of the control throw in each surface. **The control throws should be measured at the widest point of each surface!**

INITIAL FLYING/SPORT FLYING

Ailerons:	3/8" up	3/8" down
Elevator:	3/8" up	3/8" down
Rudder:	1/2" right	1/2" left

AEROBATIC FLYING

Ailerons:	1/2" up	1/2" down
Elevator:	5/8" up	5/8" down
Rudder:	1" right	1" left

Do not use the aerobatic settings for initial test flying or sport flying.

4) By moving the position of the adjustable control horn out from the control surface, you will decrease the amount of throw of that control surface. Moving the adjustable control horn toward the control surface will increase the amount of throw.

MAIDEN FLY.

We will not give you any instructions in this part. This is not the role of a manufacturer and it would be unrealistic and even dangerous to think we can make adjustments prior to first flight just by reading a document. It necessarily requires a minimum of experience and you must get closer to a driver or experienced trainer. This will verify the magnitude and direction of the control and various other settings. Also good battery recharging, fuel quality and other studio and field accessories.

We draw your attention to the danger of handling aircraft with electric motors. Unless it is equipped with sophisticated security, there is a very real risk of starting the engine inadvertently especially when you need to put all the radio equipment energized to start setting the servos. We recommend surrounding the propeller of a large, heavy cloth bath towel for example avoiding such injuries.

Also the recharging of lipos may pose a risk of fire or explosion. This happens when drivers hasty dangerously increase the rate of charge their batteries. The other drawback is to significantly reduce their lifespan.

To start your propulsive you must use specific start table, or any other devices provided in your club or recommended by your tutelage federation.

Never fly alone especially as our lands are often in remote locations where it is difficult to find assistance in the event of an accident.

If you follow these guidelines from the common sense you go in with a lot of fun in the world of model airplanes.

The *Direct Airscale* team wishes you good flights

 *a large Vietnamese experience for flying scale airplanes*