ASSEMBLY MANUAL

SEAGULL MODELS

SG SINCE 1998 MODELS

CHALLENGER

BALSA BUILD UP KIT

Code: SEA200K

NOTE: Specifications and contents subject to change or improvement without notice.

Laser-Cut

Balsa and Plywood

Construction Kit

Specifications:

Wingspan----------155 cm.
Wing area----------3950 sq.cm.
Weight----------2.6 - 2.8 kg.
Engine----------0.40 - 0.46 cu.in -2 stroke
Recommended R/C----------4 channels minimum.
Flying skill level----------Sports Trainer.
Electric conversion: Optional.

INTRODUCTION.

Thank you for choosing the **CHALLENGER Build Up Kit by SG Models.**
The Challenger was designed with the beginner to intermediate sport flyer in mind. It is a sport airplane which is quick to construct and easy to fly.
The airframe is conventionally built using balsa, plywood to make it strong, yet the design allows the aeroplane to be kept light. You will find that most of the cutting out work has been done for you already. It comes complete with a motor mount, hardware kit and hinges.
The **CHALLENGER** is simply a joy to build and fly.

- **This instruction manual is designed to help you build a great flying aeroplane.**
- **Please read this manual thoroughly before starting assembly of your CHALLENGER KIT.**
- **Use the component pictures on page 4 to indentify all parts before you start assembly.**

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.

ADDITIONAL ITEMS REQUIRED.

- .40-.46 2-stroke engine.
- Min. 4 channel radio with four servos.
- Film covering
- Glow plug to suit engine.
- Propeller to suit engine.
- Protective foam rubber for radio system.
- Silicone fuel line.
- Stick-on weights for balance (If necessary).

TOOLS AND SUPPLIES.

- Thick 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.
- Hobby heat iron for covering.

KIT CONTENTS.

FUSELAGE COMPONENTS

- (1) Laser cut fuselage components.
- (1) Throttle pushrod & tube.
- (1) Servo tray.
- (1) Motor mount.
- (1) Rudder pushrod.
- (1) Elevator pushrod.

WING COMPONENTS

- (1) Laser cut wing components.
- (1) Aluminium wing tube.

TAIL SECTION COMPONENTS

- (1) Laser cut stabilizer and rudder.
- (1) Laser cut horizontal stabilizer with elevator.

HARDWARE PACK

- Includes hinges, horns, screws, fuel tank, landing gear wire, straps, wheels, wheel collars, spinner, glue, sanding block.

NOTE: Specifications and contents subject to change or improvement without notice..

TIPS FOR GETTING STARTED.

• Set yourself up a building table or bench with a flat surface big enough to assemble the wing and fuselage. Preferably a table or bench with a wood surface that you can stick building pins into.

NOTE: Check with your parents or partner that it is ok FIRST!

• Lay out the included plans on the work table and secure it to the work table with pins or tape.

• If you want to keep the plans clean for future use, you can cover them with plastic cling wrap or a sheet of clear plastic before you get started.

• Identify the components required for each step using the plans and component pictures on page 4.

• Take your time and test fit components before gluing.

• Place over plans to help with alignment and pin in place where possible.

• Make sure the components are held in the correct position prior to adding glue. **NOTE: This is particularly important when using fast acting glues like CA (Cyno Acrylate).**

• Allow the glue to set completely before moving assembled components

• Once you get familiar with the process and to get the strongest airframe, you may want to tack the components together with CA first (and uses accelerator for an instant set), the go back over the joins with white wood glue and make a gusset of glue. (This kit includes a complementary bottle of white wood glue).

• Do not apply too much white glue, just a thin film is enough.

• **Build it light to fly well - Don't build it heavy, thinking it will survive a crash.**

• When sanding balsa, use a light touch as balsa is a strong but very light timber and it would be very easy to sand too much away.

• Be very careful when handling sharp hobby knives and blades, you do not want to cut yourself.

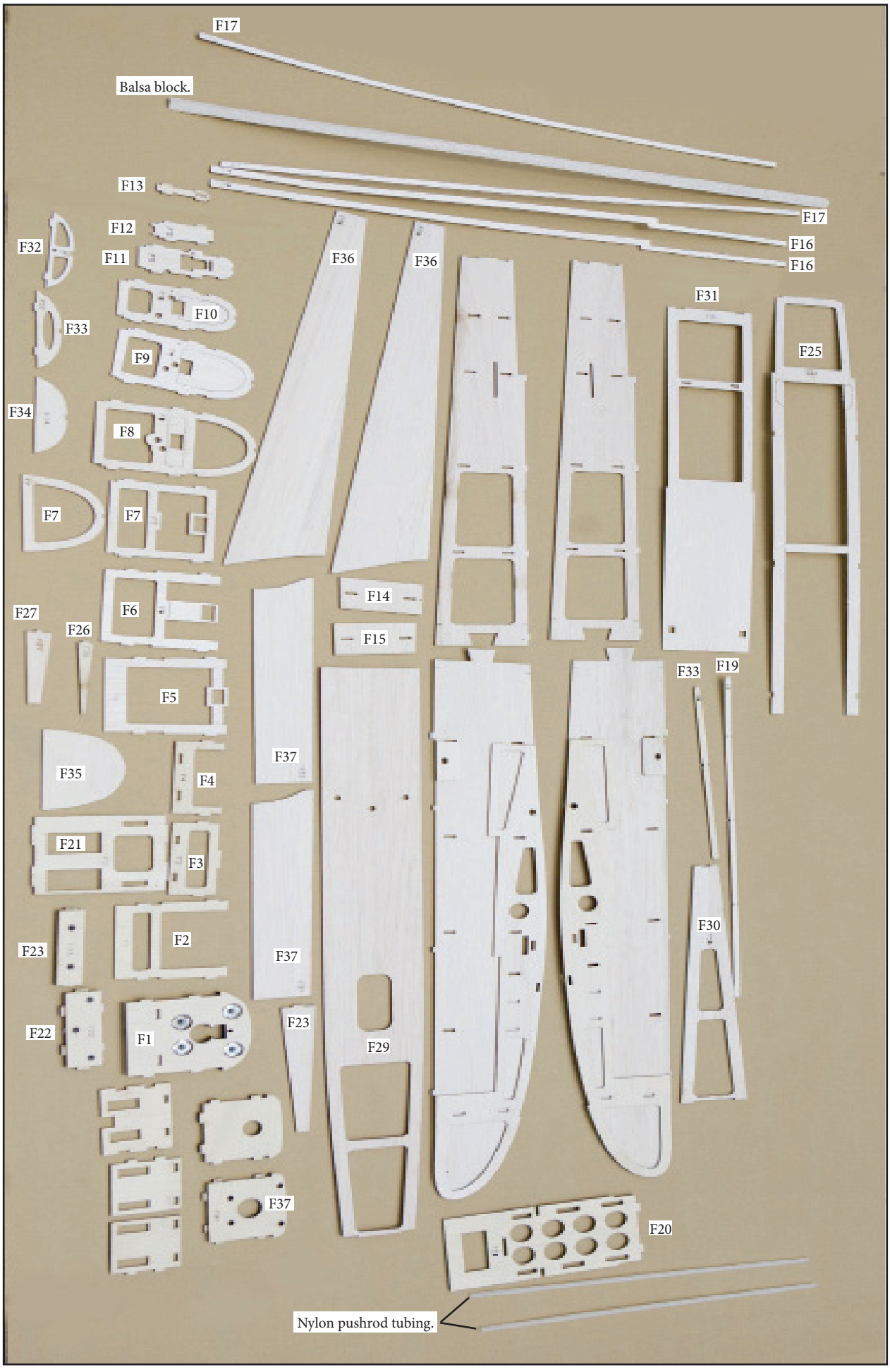
• If you get glue on your hands, make sure you clean it off immediately, for your own safety and to prevent glue getting onto surfaces that it shouldn't.

• Tackle the build in small steps, completing each one before moving onto the next. In no time at all the build will be complete and you will be able to show it off to your friends.

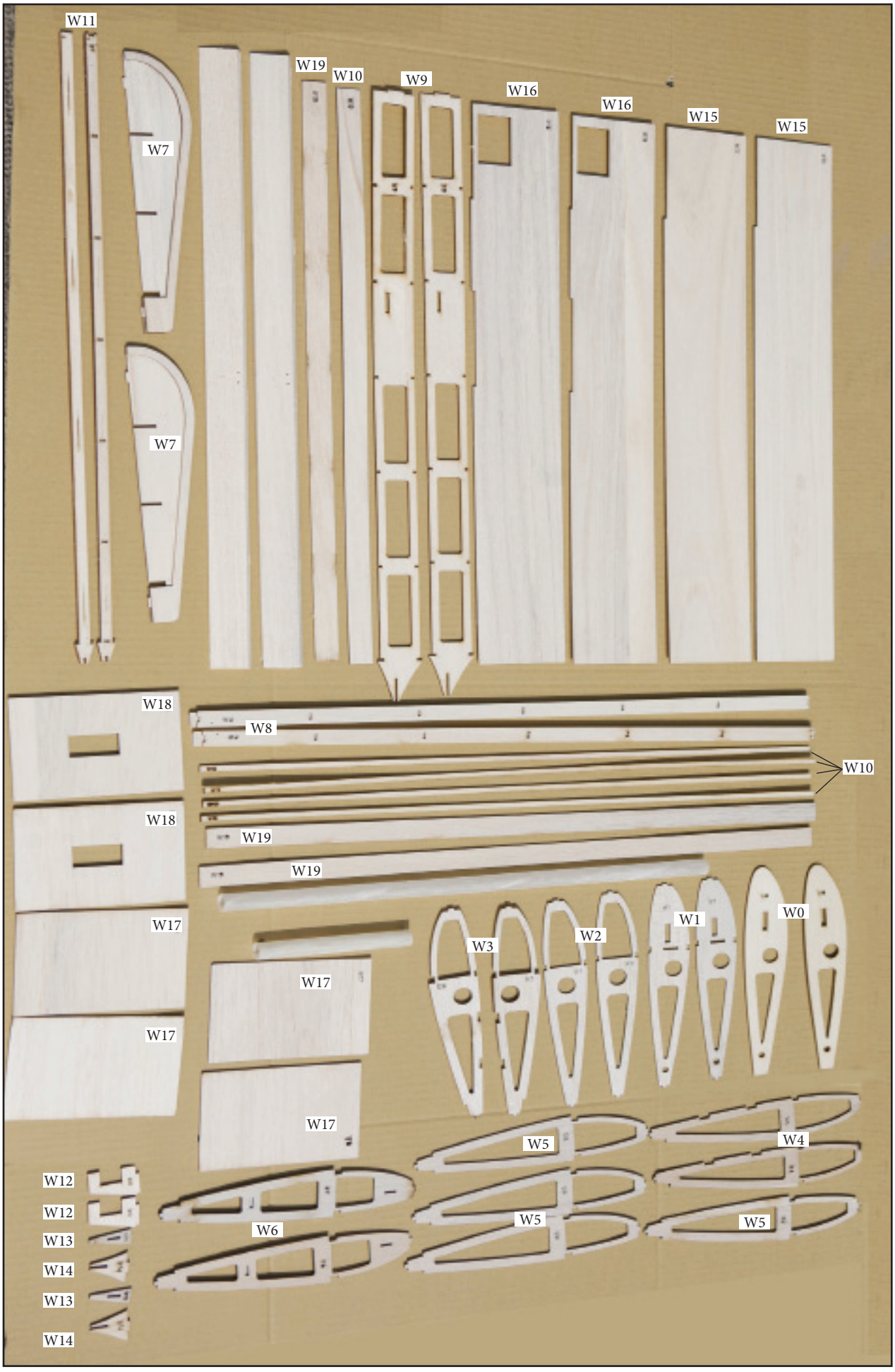
• If you are unsure how to proceed at any stage, stop and reread the instructions or seek help from an experienced modeller or from your local hobby shop.

Good luck with your build and after reading the rest of the instructions, your are ready to start.

FUSELAGE COMPONENTS.



WING COMPONENTS.

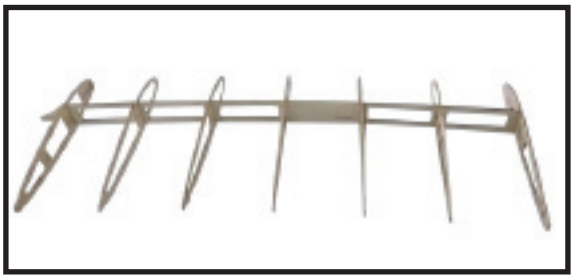


WING PANEL CONSTRUCTION.

This section shows you how to construct one half of the wing. Repeat the instructions for the other half.

1) Locate plywood Main Wing Spar and ribs . Slide the ribs into their corresponding positions.

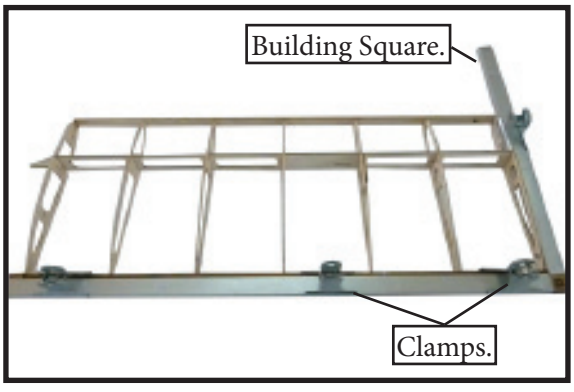
2) Rotate each wing rib so they are sitting upright, perpendicular to building board.



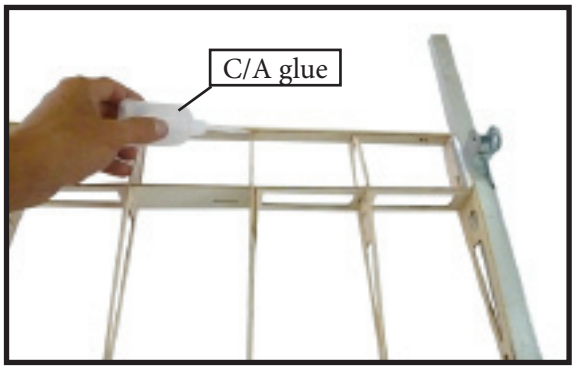
3) Locate and position the plywood leading edge spar , the trailing edge spar and spar caps .

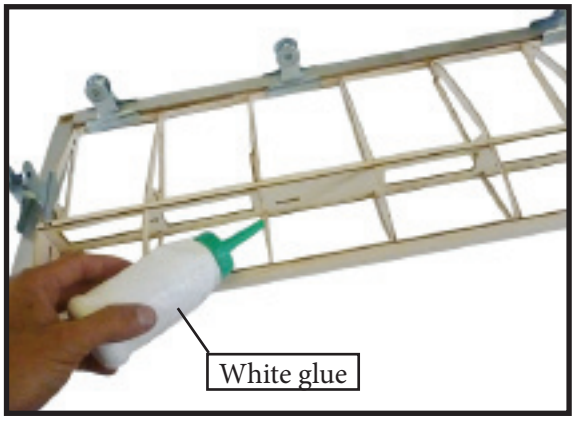
4) Use a building square and a number of clamps to hold the wing structure while you spot glue it with CA.

NOTE : Make sure each join is positioned correctly before you apply a drop of CA. CA dries very quickly when two pieces of wood come together.

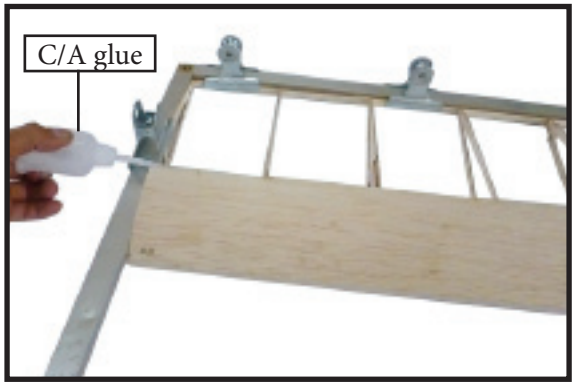


5) After the CA has set, go back and re-glue every join on the wing panel with white glue. Use white glue to secure the leading edge balsa block in position.



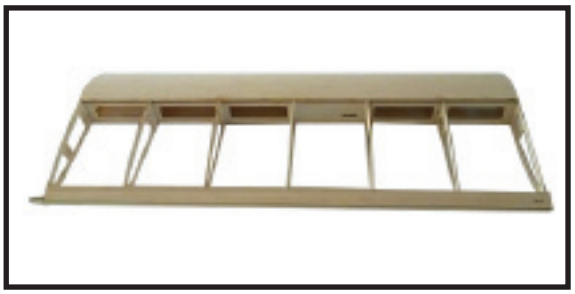


6) Locate the leading edge sheeting . Fix the bottom sheet first securing with CA then going back over each join with white glue.
Turn the wing panel over and apply plenty of white glue to each rib edge, forward of the wing spar.
Position the sheet in place then use CA to tack the sheet onto the spar caps and leading edge working you way around the entire sheet.

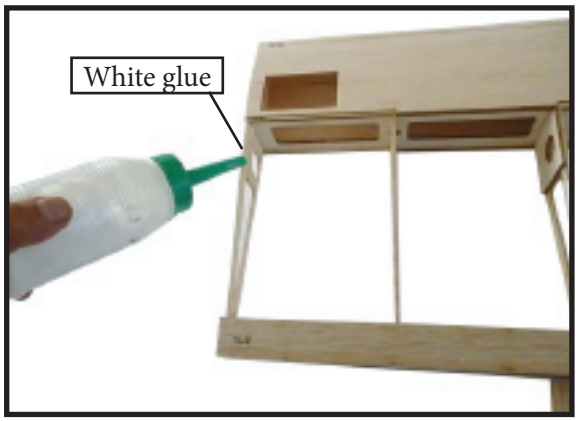


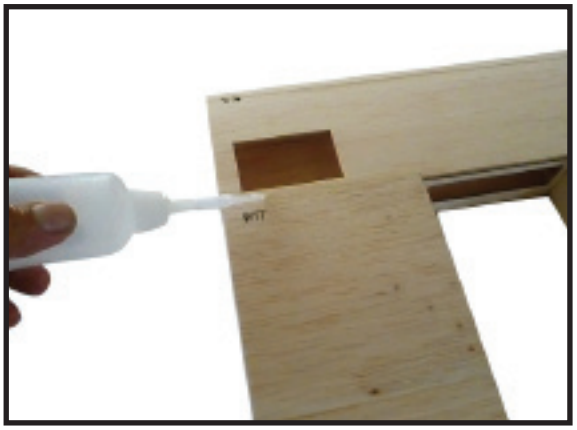
7) Locate the trailing edge sheeting . Use the same method as in (6) to secure the trailing edge sheeting.

8) Your wing panel should now look like this.

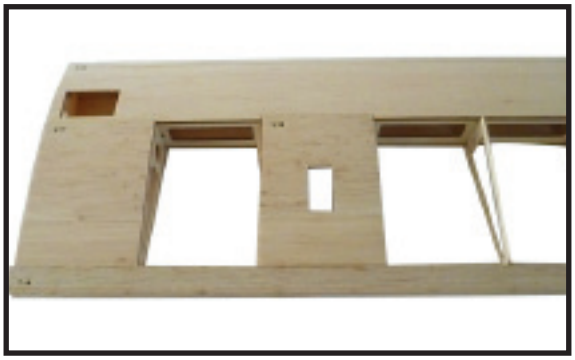


9) Locate the centre panel sheeting .
This is fitted to the top of the wing panel using the smae method as in (6).

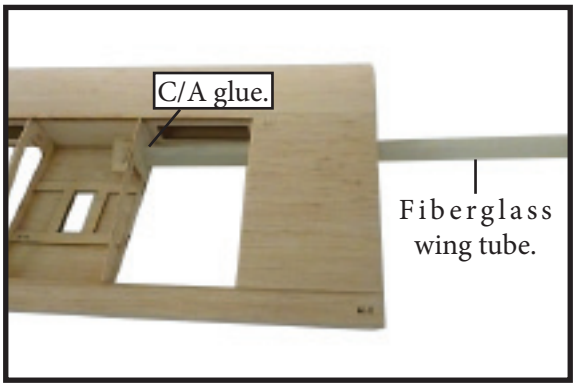


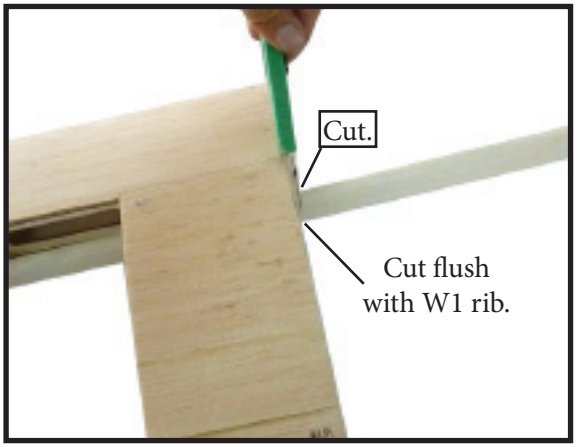


10) Your wing panel should now look like this.

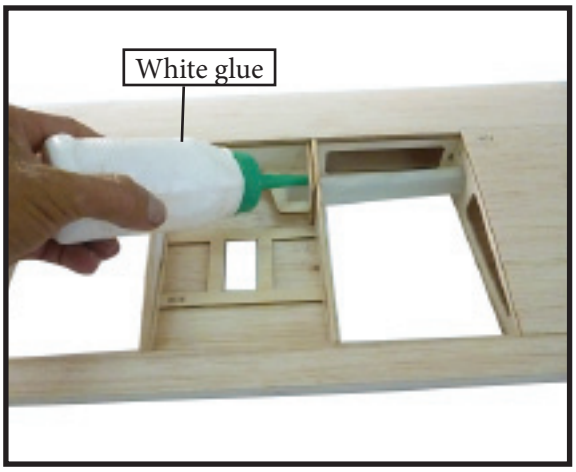


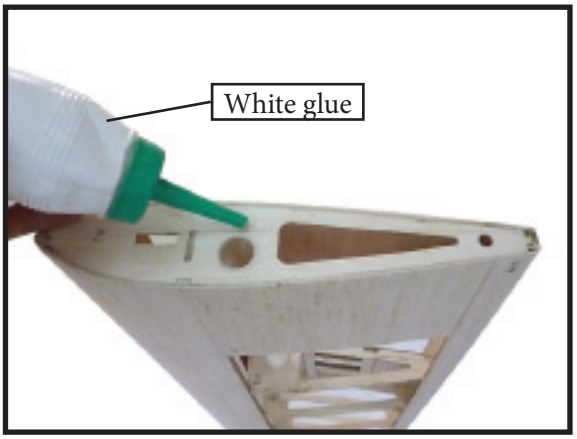
11) Insert the fiberglass tube into wing panel . Tack glue in place with CA then apply white glue liberally to each join.
Cut the fiberglass tube flush with the outside of W1.



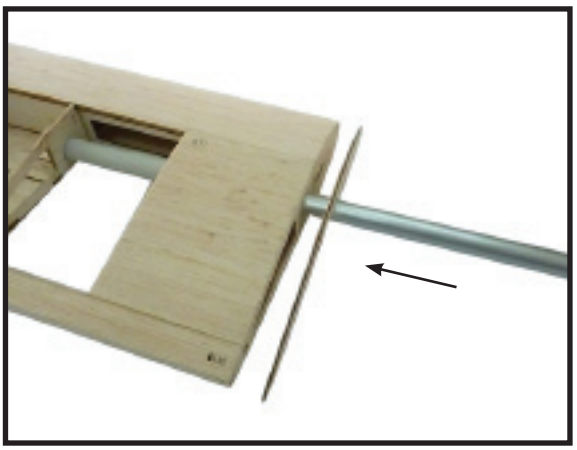


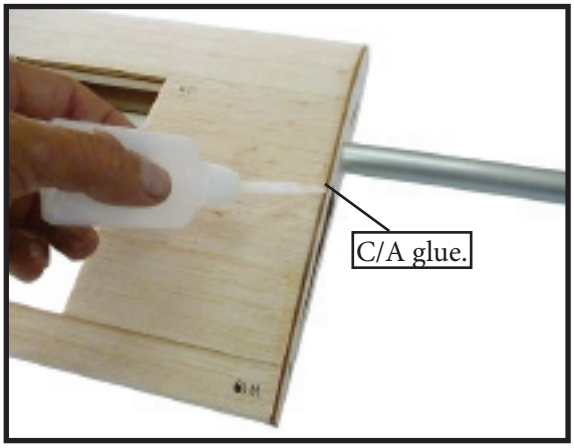
12) Locate the centre panel sheeting.
This is fitted to the bottom of the wing panel using the same method as in (6).
Line up with the cut out .
(Later when the two wing halves are joined together, this is where the aileron servo will be located.)





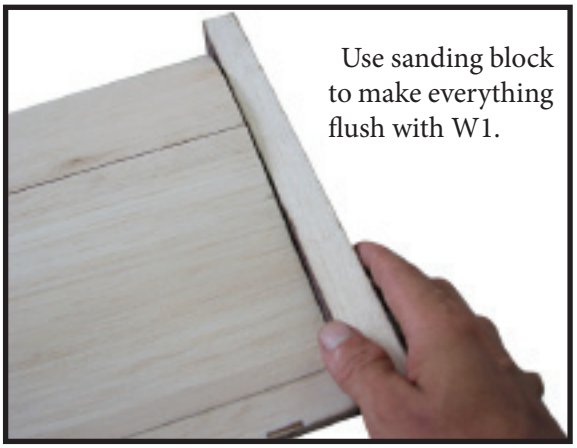
Next step, insert aluminum tube with root rib into wing panel. Tack glue root rib in place with CA.





13) Carefully saw off any overhang material, then block sand the root ends of the spars, leading edge, and trailing edge flush with the pre-angled with rib.
Use a large sading block and sand slowly to keep the end of the wing panel straight and true.

NOTE : Try not to sand into wing or round off the end ribs. Keep it square !

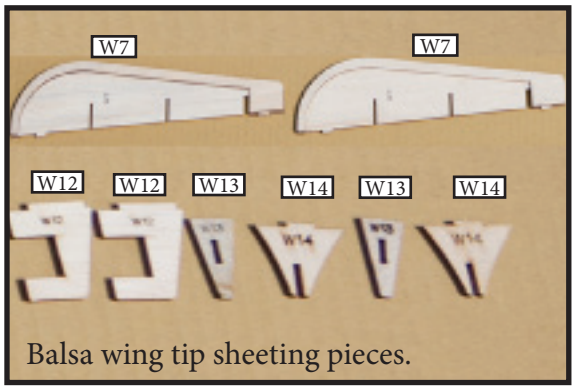


14) Now you can go back to the start and create a mirror image of the first wing panel.

NOTE : Be very careful to make a left hand and right hand wing panel (not two left or two right panels which would be very embarressing).

INSTALLING THE WING TIP.

15)



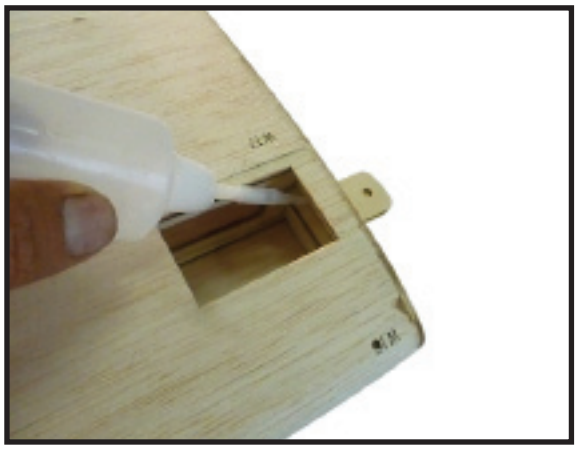
Balsa wing tip sheeting pieces.

16)

17)

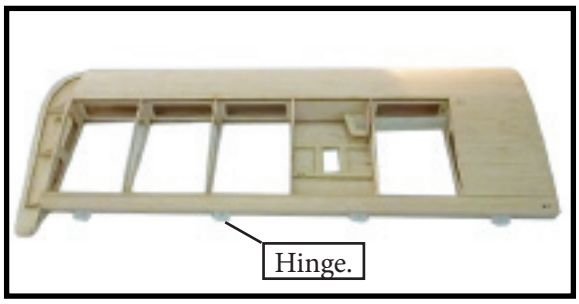
18) INSTALLING ATTACH POINT.

19)



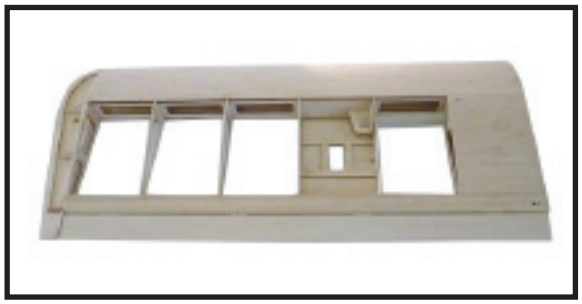
20)

21) Locate the aileron and check that all the slots have been cut.
Check that all the slots have also been cut in the wing panel.
Test fit the hinges by inserting a a single easy hinge halfwway into each slot in the trailing edge of the wing.
Place a pin through the hinge to prevent the hinge sliding into the wing.
NOTE : DO NOT GLUE THE HINGES IN AT THIS TIME !



22) Now carefully slide the aileron onto the exposed half of the easy hinges, and onto the exposed arm of the torque rod, all at the same time. You will find it easiest to slide the ailerons onto the hinges at angle, one hinge at a time, starting from the tip end, instead os trying to push it straight onto the hinges at once.

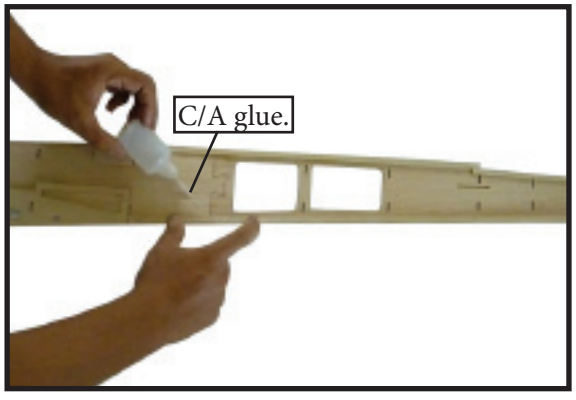
ONCE AGAIN, DO NOT GLUE THE HINGES IN AT THIS TIME.



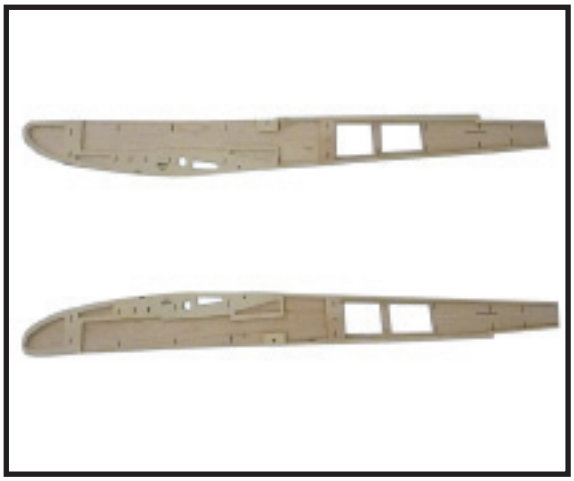
Gently sand the entire trailing edge straight using sanding block.

FUSELAGE CONTRUCTION.

23) Locate and assemble fuselage front and fuselage rear .
Lay flat on plastic surface an apply CA glue.
Wipe off any excess glue before it dries so that there won't be a glue lump at the joint.
Repeat for the other fuselage side using Front and Rear..



24) Locate the nose doublers and wing seat doublers, use white glue to secure.
Allow glue to set before proceeding.
Make sure you have assembled them as shown below so that you end up with both a left and right fuselage side.



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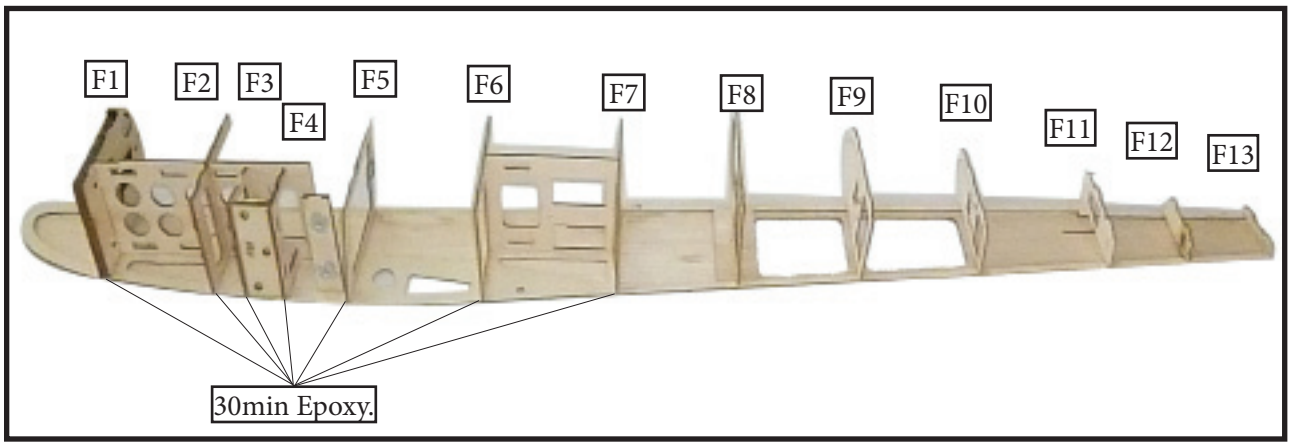
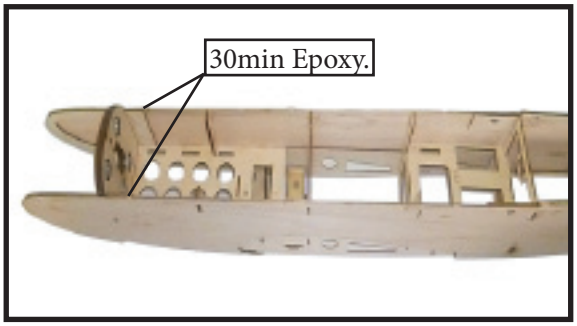


Use White glue to secure formers F8~F13.
Use 30min epoxy to glue , F1~F7 in place. Work quickly apply white glue to the tops of F8~F13 and 30min epoxy to F1~F7.
Place the other fuselage side in place and hold in place with rubber bands or masking tape wrapped around the fuselage in several places. Make sure the fuselage is straight down the center line.
(Use the plan, make sure F2. F3, F4 F5, F6 and F7 are square to fuselage sides.)

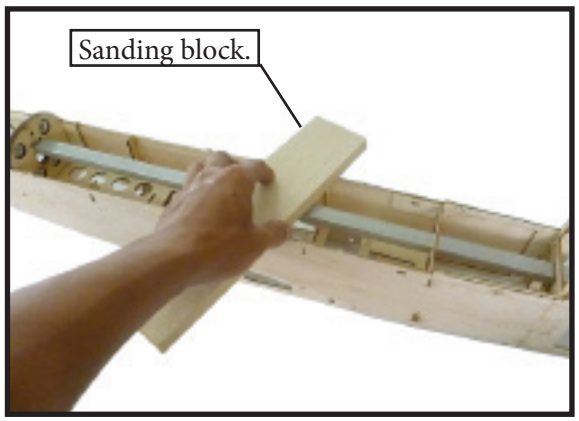
26)Before glue dries, check the fuselage is square down the centreline. Then leave to set fully.

27) Two pieces of Balsa Triangle stock are provided to reinforce the firewall-to-fuselage joint. Cut notches in the Balsa Triangles where necessary to clear the blind nuts and pushrod holes, and then glue the Balsa Triangles in place on back of fuselage former using 30min epoxy.



28) Insert aluminum tube into fuselage.

29) Gently sand over the hole for fuselage using sanding block, then going back over each join with white glue as below picture.



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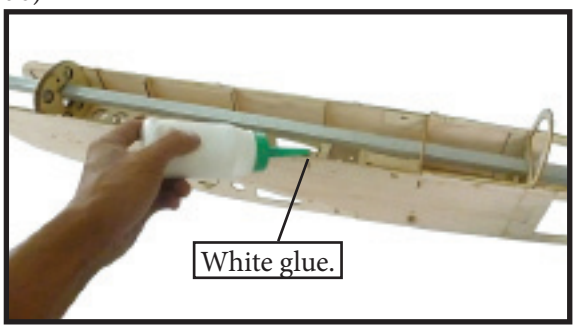

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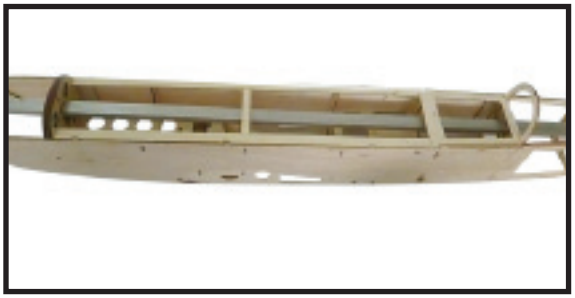
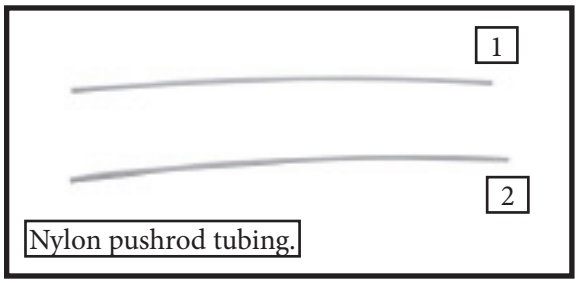
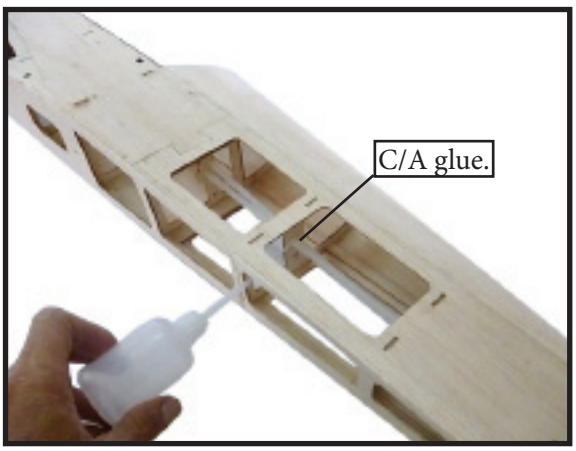
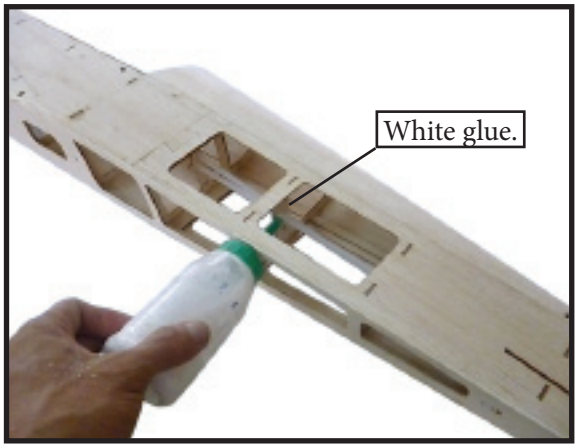


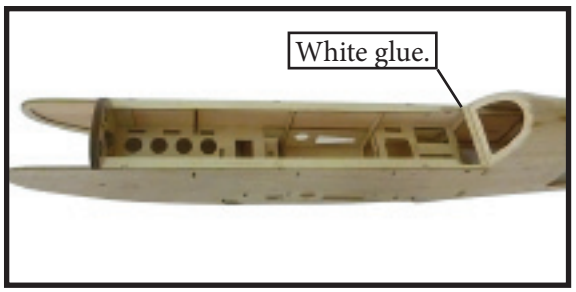
32) Two pieces of Nylon pushrod tubing are provided for making the outer sleeves of the elevator and rudder pushrods.



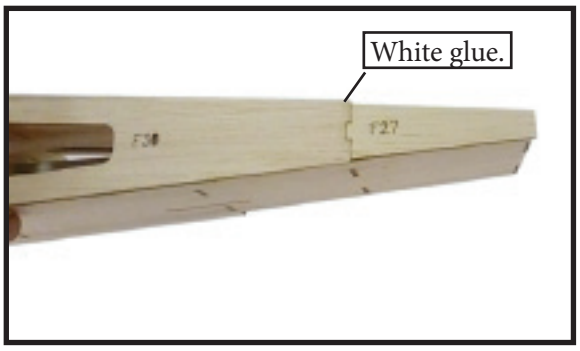




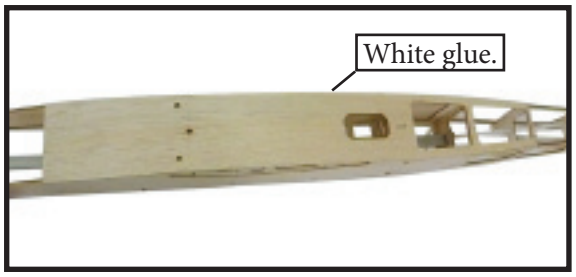
33) Sheet top of fuselage.



34) Sheet tail area.

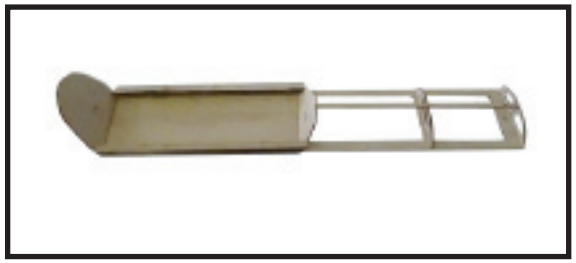


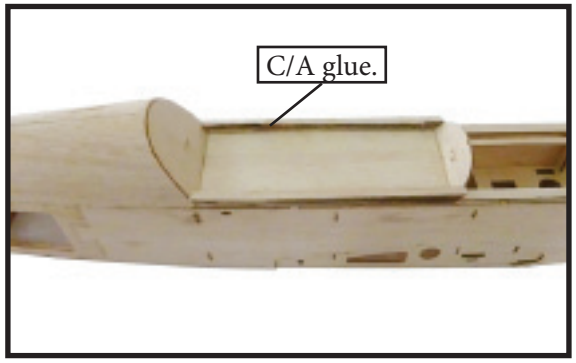
35) Sheet underside of fuselage.



36) Carefully block sand the hatch area to remove any bumps, glue spots, or mismatch between the fuselage sides, the doublers, and the top of former fuselage.
Be careful not to sand a curve in the fuselage sides which would cause an unsightly gap when the hatch is installed.

37) Locate the die-cut plywood hatch. Inspect both side and choose the best looking side for the top. Also locate the side braces/ hatch retainers.





STABILIZER AND ELEVATOR.

38) Sand the leading edges of the horizontal stabiliser and the elevator then use a hobby knife to cut slots in the trailing edge of the horizontal stabiliser and leading edge of the elevator.

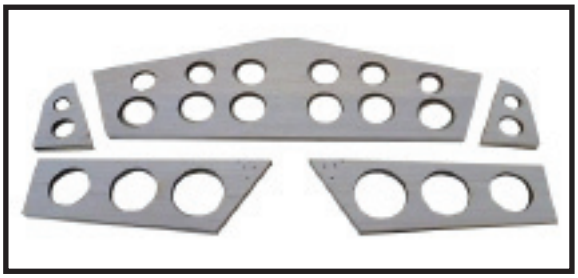
Make sure the slots are cut on the centre lines of the trailing edge of the horizontal stabiliser and the leading edge of the elevator. So that the elevator will work correctly without binding.

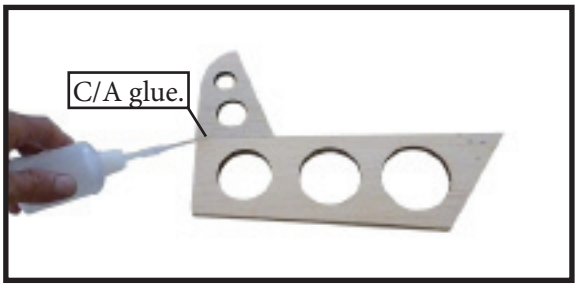
Also make sure the slots are deep enough to allow half the hinge to be inserted into the slot.

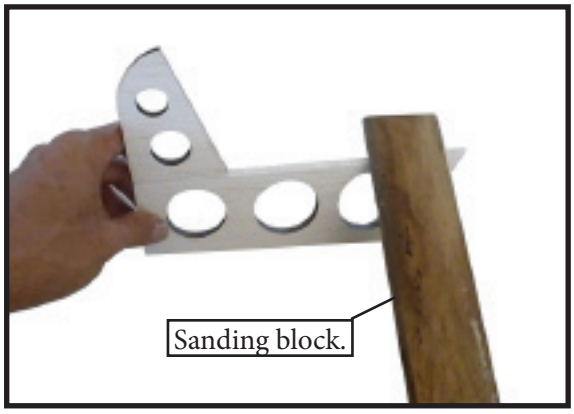
After all the slots have been cut, insert a single hinge halfway into each hinge slot in the stabilizer (or fin, or wing, as the case may be).

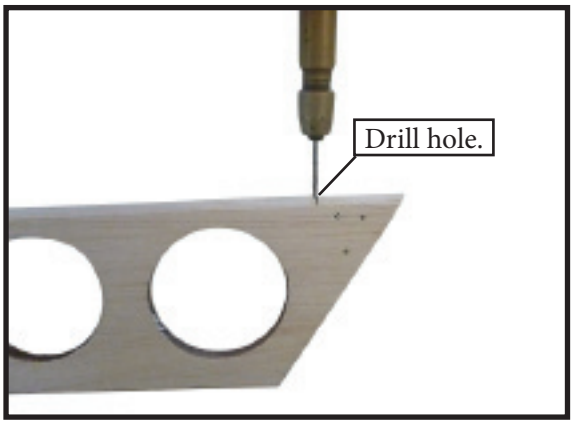
If the hinge is difficult to push in, re-insert the knife and move it back and forth in the slot a few more times and then try again.

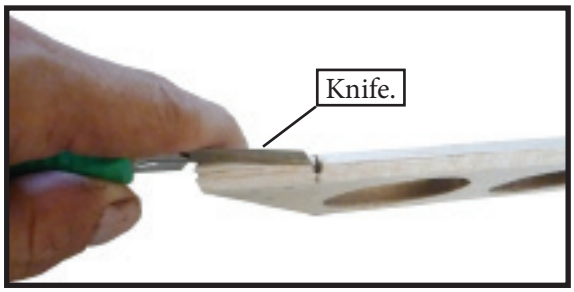
NOTE: DO NOT GLUE THE HINGES IN AT THIS TIME!

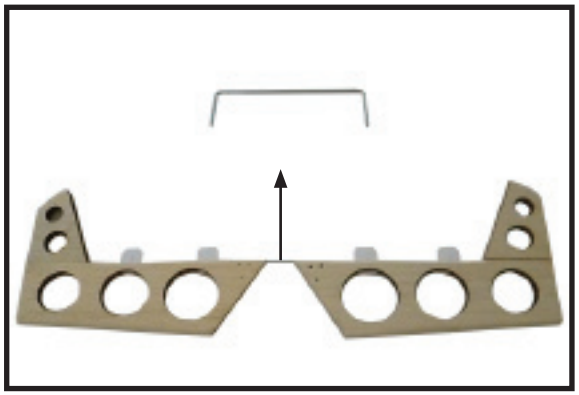


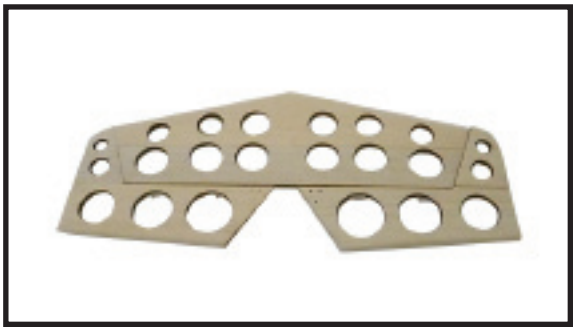








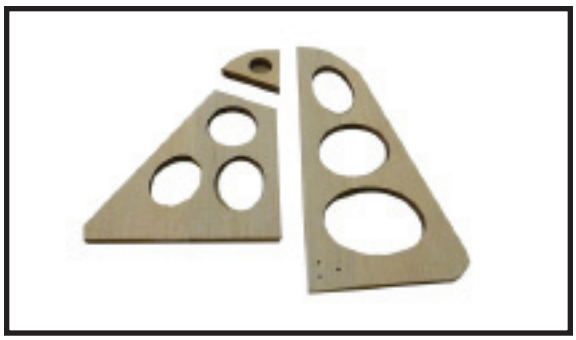


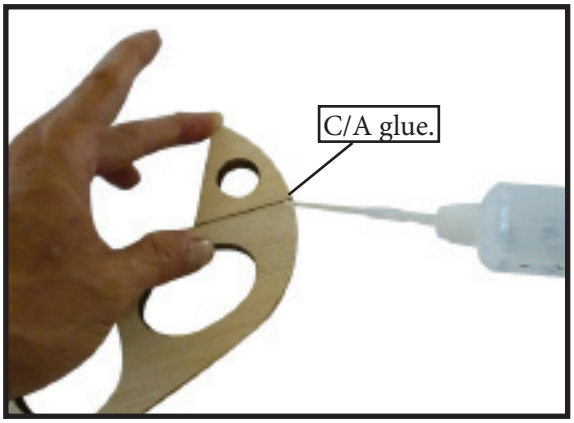


FIN AND RUDDER.

39) Using ruler as a guide, carve and sand the front of the leading edge to a round shape.

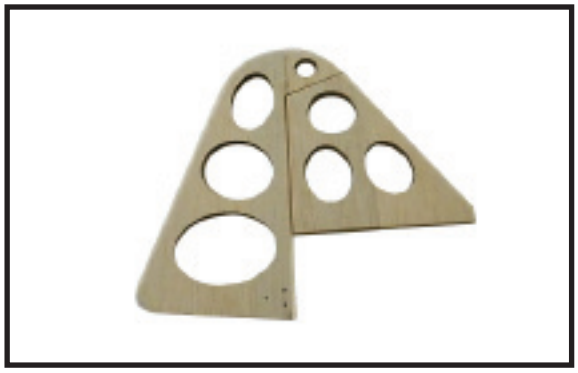
NOTE : Leave the trailing edge, top end, and bottom of the Fin flat and square.



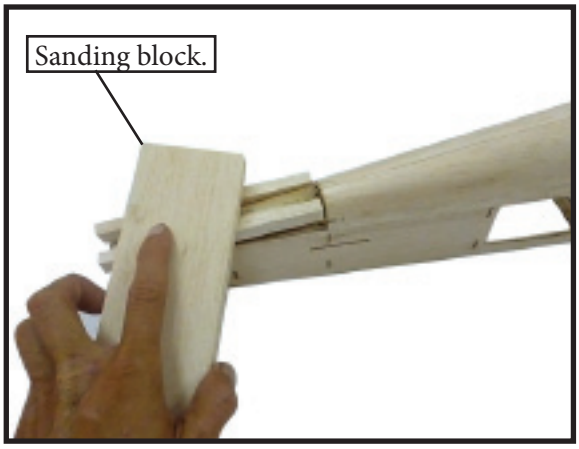


40) Cut slots for the hinges in the fin and rudder. Then set the Fin and Rudder aside for covering.

NOTE: DO NOT GLUE THE HINGES IN AT THIS TIME!

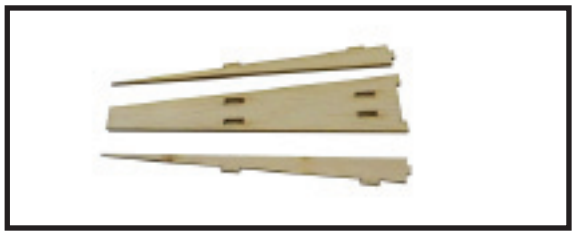


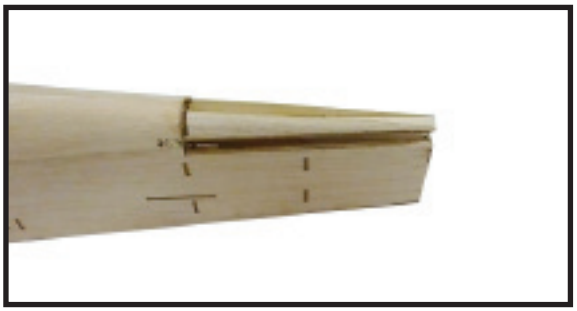
41) Using sanding block once more for both fin and rudder.

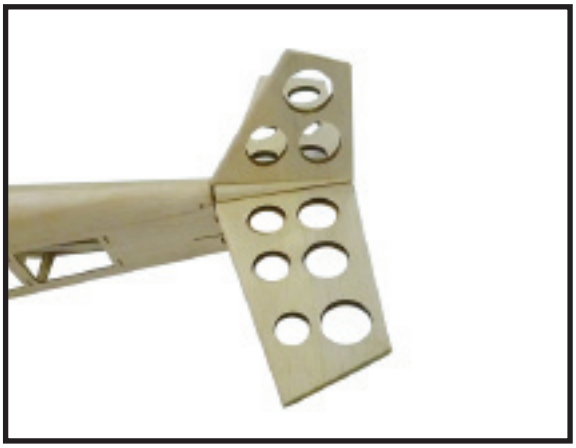


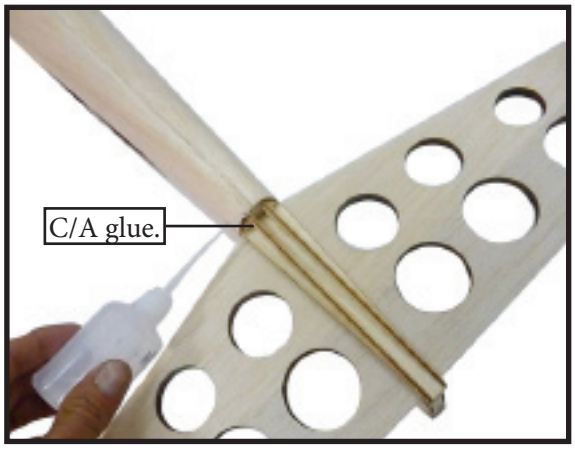
FIT TAIL TO FUSELAGE.

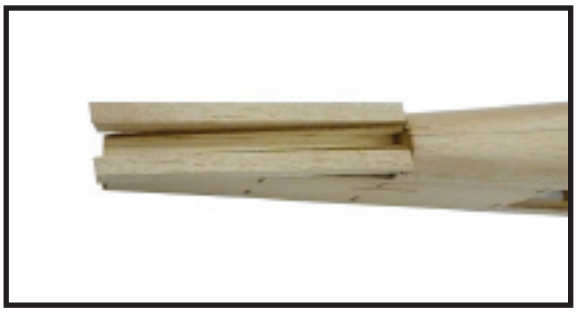
42) See below pictures.







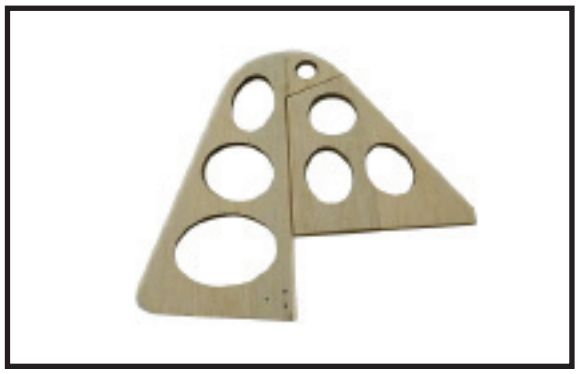




COVERING THE CHALLENGER.

NOTE : Always be careful when trimming excess covering material off the wood parts that you don't "score" or cut into the wood. Scoring a critical structural component of the airplane could seriously weaken its strength and possibly cause an in-flight failure.
You can cover your Challenger Kit in any colour or brand of film you like. Keep the colour scheme simple if you are new to covering.
The following pages show the Challenger being covered with slightly sticky, factory printed film in the Seagull factory, you do not have to reproduce this, so be creative and come up with your own scheme.
Follow the instructions for the type and brand of film covering you choose.

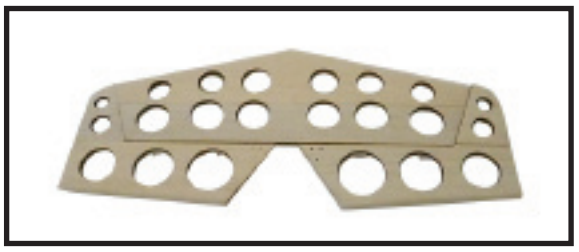
1) COVER THE VERTICAL STABILIZER.

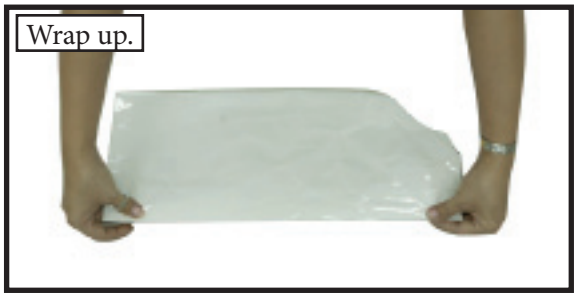


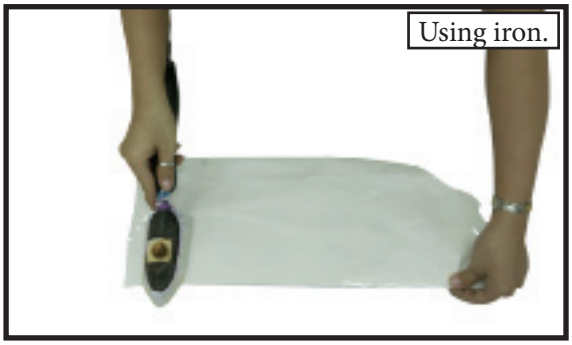
NOTE : *When applying covering to an open structure, like this Fin, you should completely adhere the covering to all the outside edges of the structure first. Then go back and shrink the middle of the covering tight.*

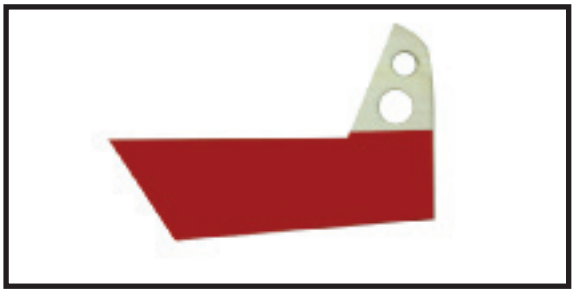
2) COVER THE HORIZONTAL STABILIZER.

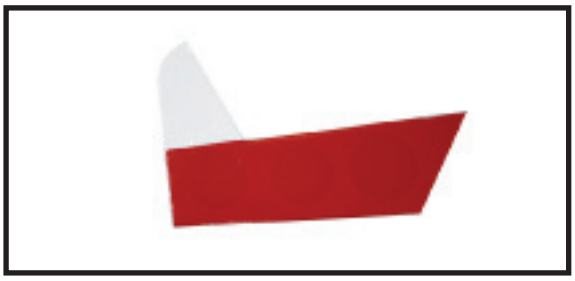
Covering the horizontal stabilizer is virtually the same as covering the vertical stabilizer.

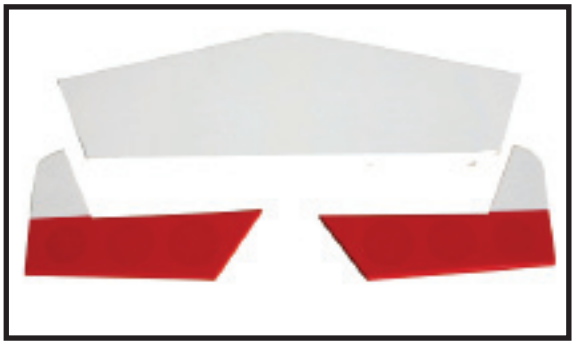




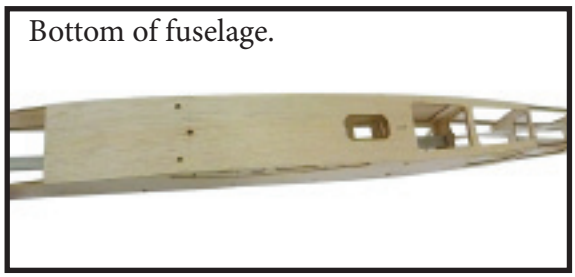


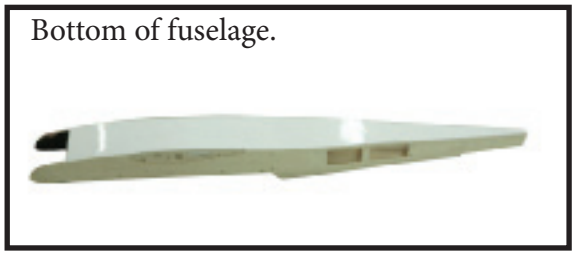


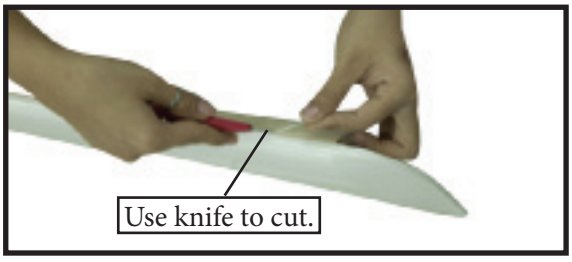


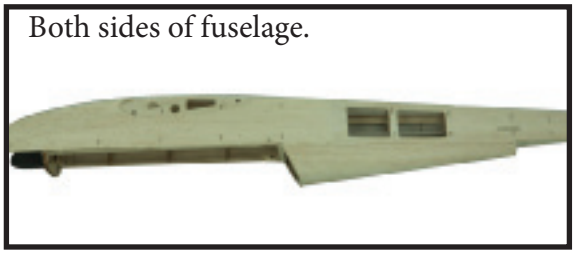


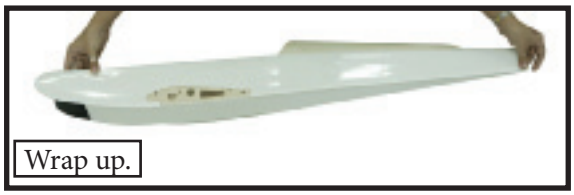
3) COVER THE FUSELAGE.

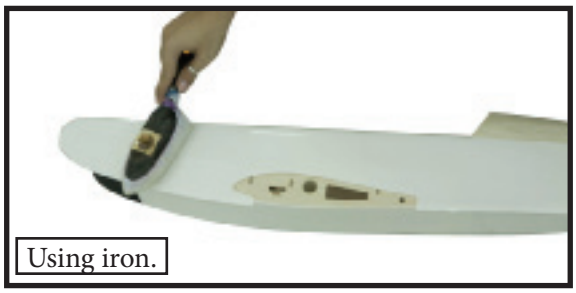


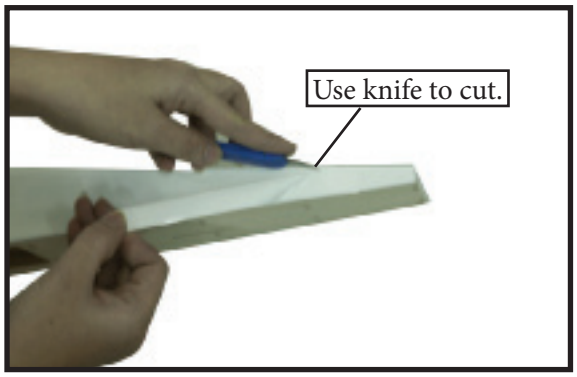


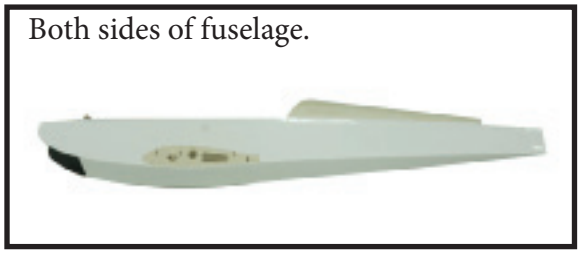








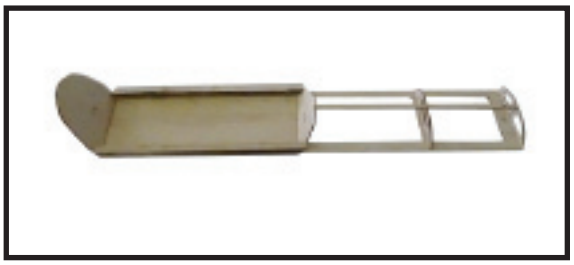


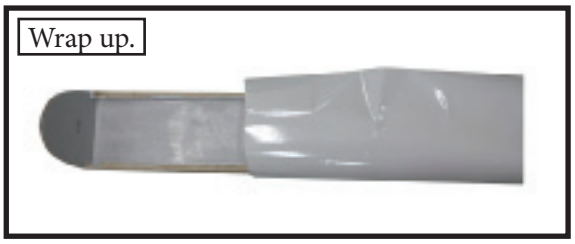


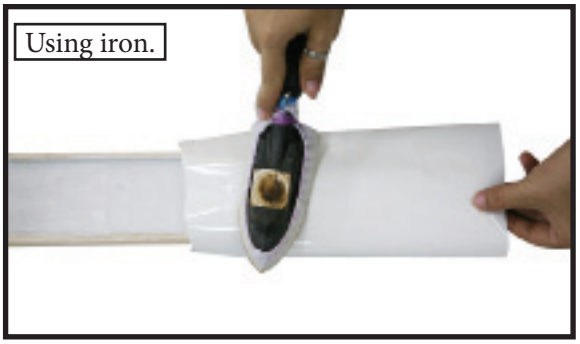
Process as same as above for top of fuselage.

4) <u>COVER THE HATCH.</u>

Start by applying an oversize piece of covering to the top of the hatch. Then turn it over and cut out the corners of the excess covering to make it easier to wrap and seal the covering around the edges.

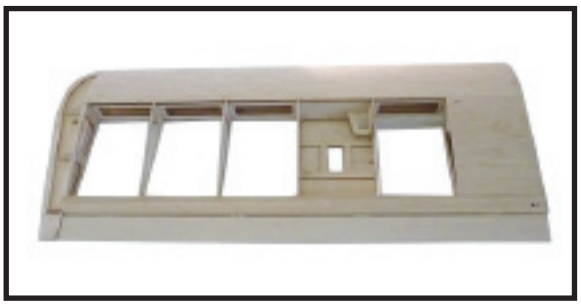






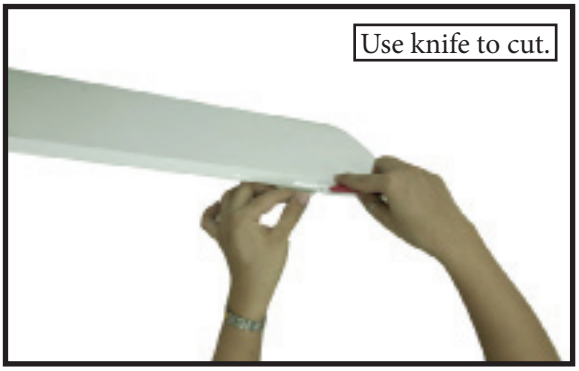
5) <u>COVER THE WING.</u>

Repeat the process as for covering the horizal stabilizer.



Wrap up.

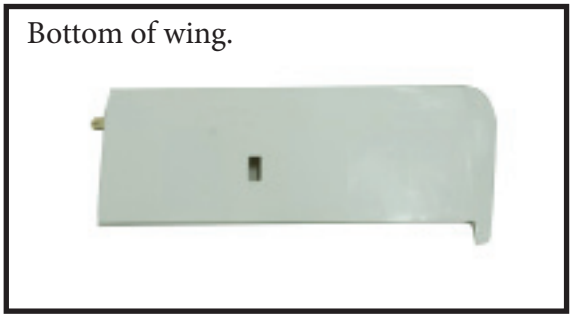
Using iron.



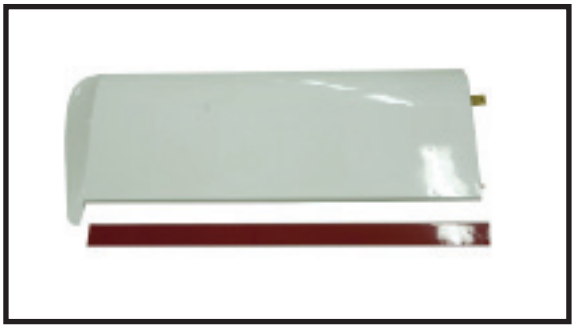
Use knife to cut.

Remove covering to install the servo.

Bottom of wing.



Process as same as above for aileron. Your wing panel should now look like this.



FINAL ASSEMBLY

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.

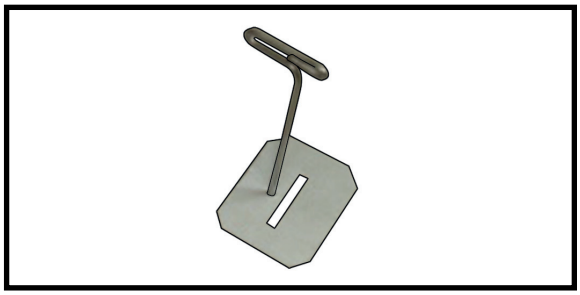
Please trial fit all parts. Make sure you have the correct parts and that they fit and are aligned properly before gluing! This will ensure proper assembly as the CHALENGER is made from natural materials and minor adjustments may have to be made.

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 de-bonder and acetone. Do not let these chemicals come in contact with the colours on the covering and the plastic parts.

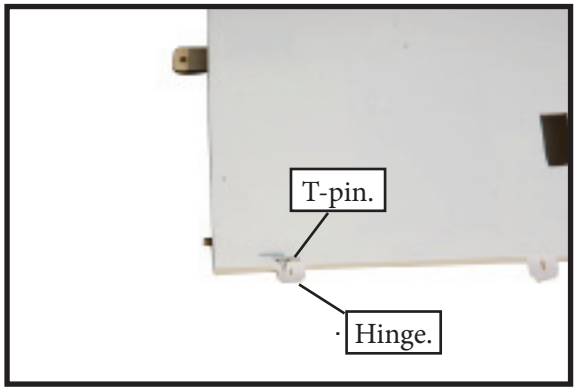
HINGING THE AILERONS.

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.*

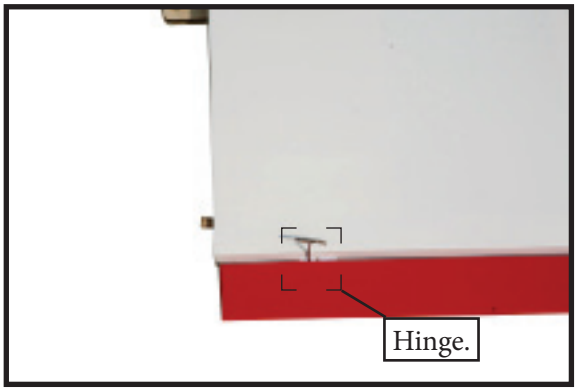
1) Carefully remove the aileron from one of the wing panels. Note the position of the hinges.



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.

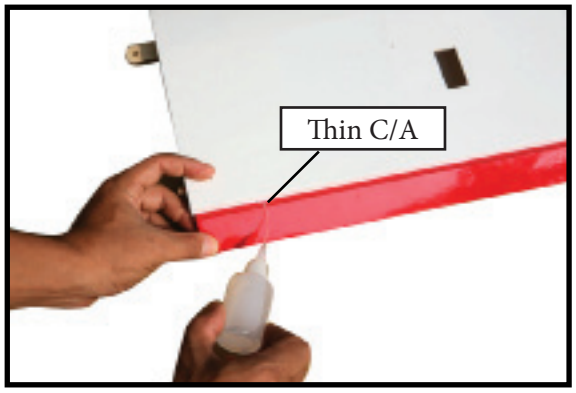


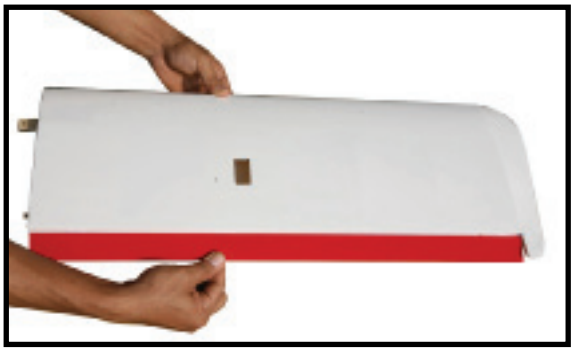
3) Slide the aileron on the wing panel until there is only a slight gap. The hinge is now centered on the wing panel and aileron. Remove the T-pins and snug the aileron against the wing panel. A gap of 1/64" or less should be maintained between the wing panel and aileron.



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 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.*



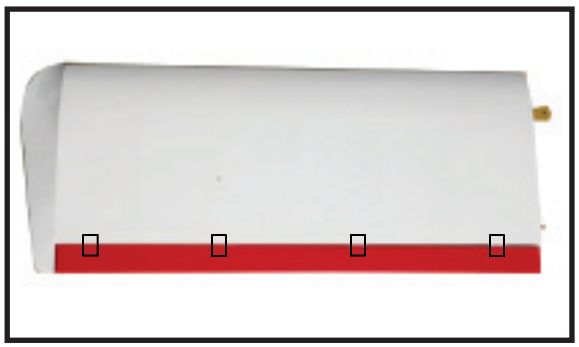


5) Turn the wing panel over and deflect the aileron in the opposite direction from the opposite side. Apply thin C/A glue to each hinge, making sure that the C/A penetrates into both the aileron and wing panel.

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.

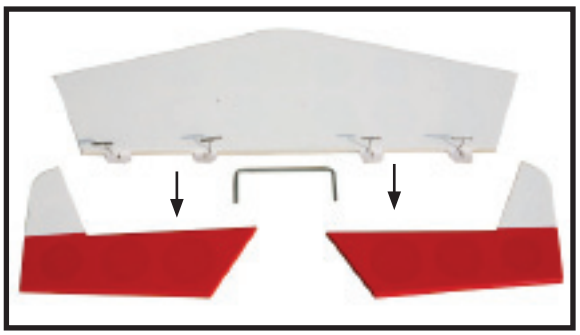
8) After both ailerons are securely hinged, firmly grasp the wing panel and aileron to make sure the hinges are securely glued and cannot be pulled out. Do this by carefully applying medium pressure, trying to separate the aileron from the wing panel. Use caution not to crush the wing structure.



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

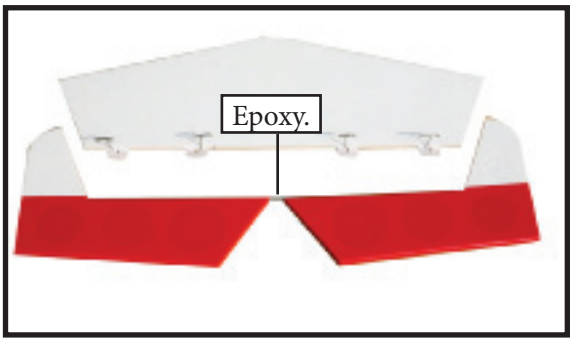
HINGING THE ELEVATORS.

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

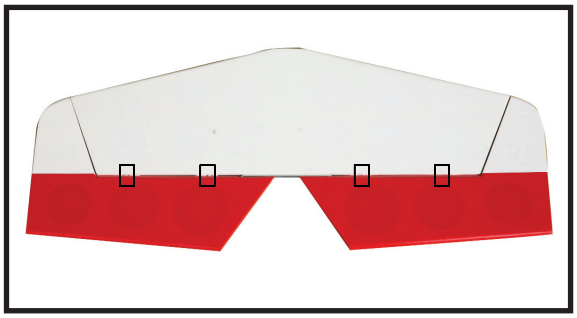


2) Carefully remove the elevator from one of the horizontal stabilizer panels. Note the position of the hinges.

3) Remove each hinge from the horizontal stabilizer panel and elevator and place a T-pin 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.

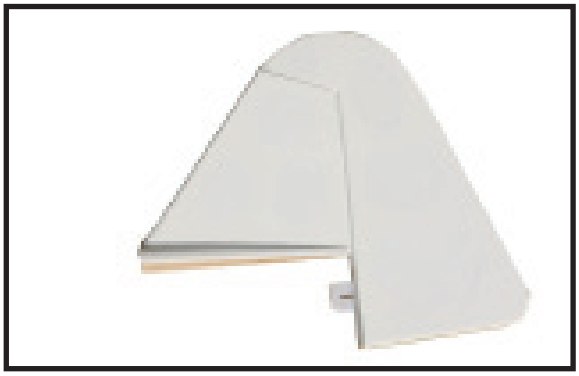


Glue the hinge hinges in place using the same techniques used to hinge the ailerons.



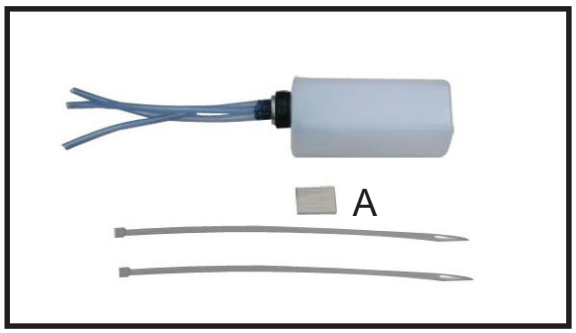
HINGING THE RUDDER.

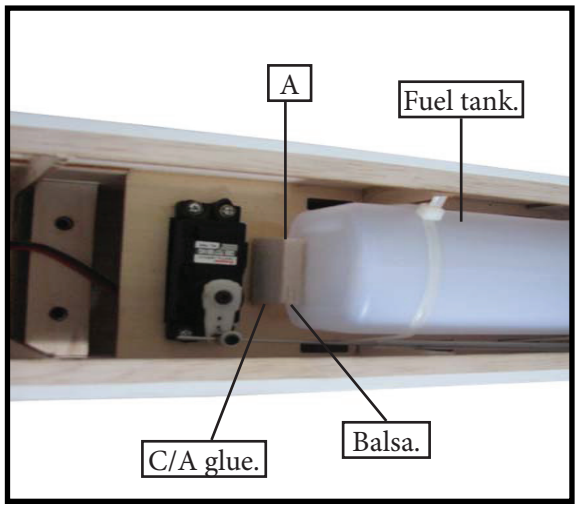
Glue the rudder hinges in place using the same techniques used to hinge the ailerons.

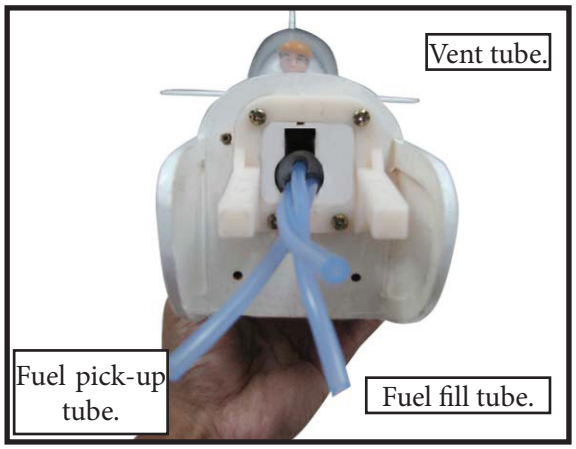


FUEL TANK INSTALLATION.

Please see below pictures.



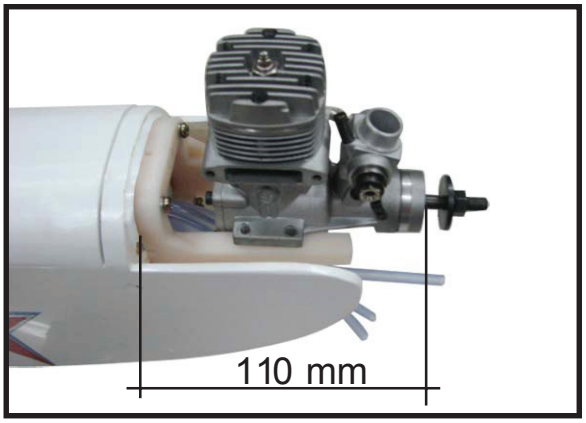




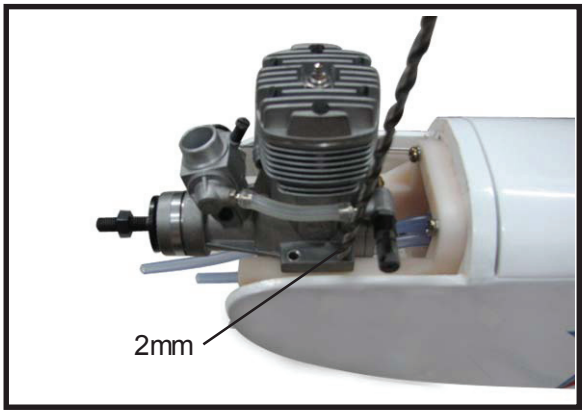
⚠ *Blow through one of the lines to ensure the fuel lines have not become kinked inside the fuel tank compartment. Air should flow through easily.*

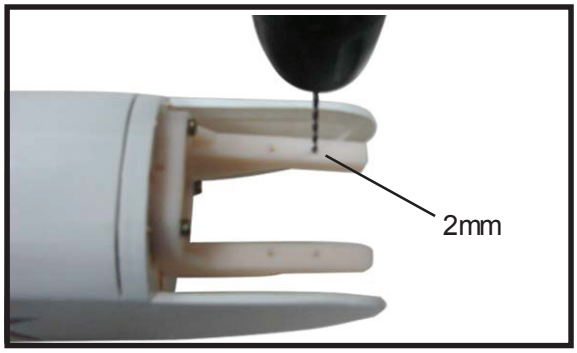
ENGINE MOUNT INSTALLATION.

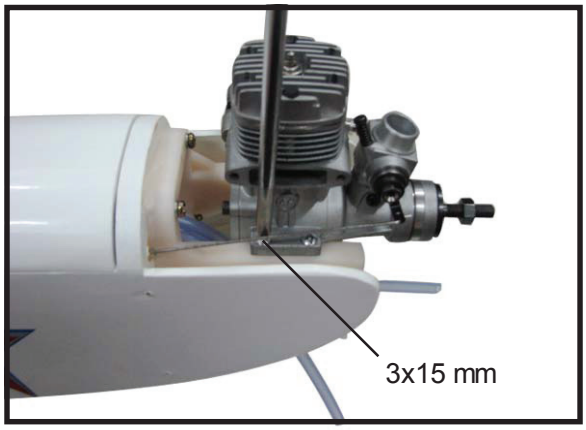
1) Position the engine with the drive washer (110mm) forward of the firewall as shown.



2) Use a pin drill and 2mm drill bit to drill a small indentation in the mount for the engine mounting screw..





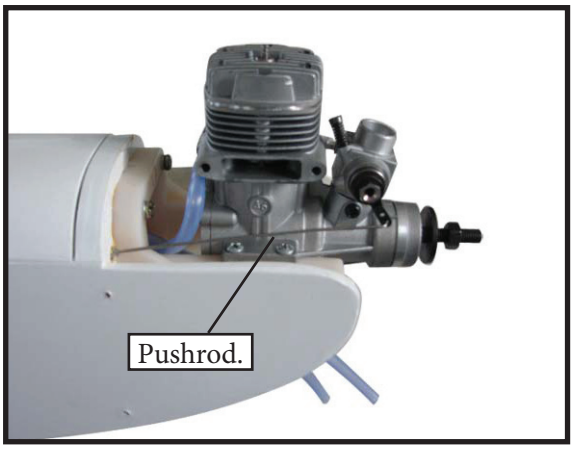


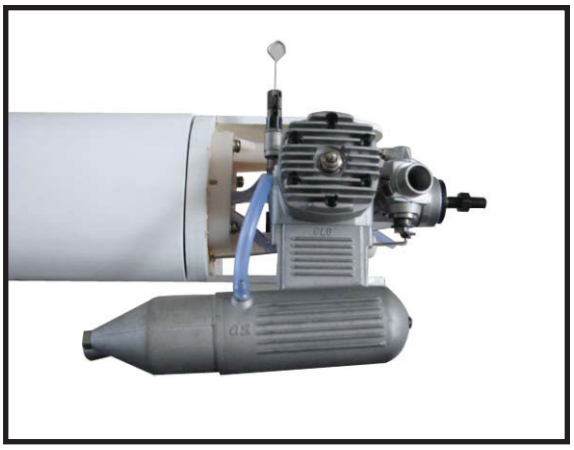
3) On the firewall has the location for the throttle pushrod tube (pre-drill).

4) Slide the pushrod tube in the firewall and guide it through the fuel tank mount. Use medium C/A to glue the tube to the firewall and the fuel tank mount

5) Connect the Z-bend in the 450mm throttle pushrod to the outer hole of the carburetor arm.

6) Slide the throttle pushrod wire into the tube. Position the engine between the mounts. Use four M3x15mm machine screws to secure the engine to the mount as shown.

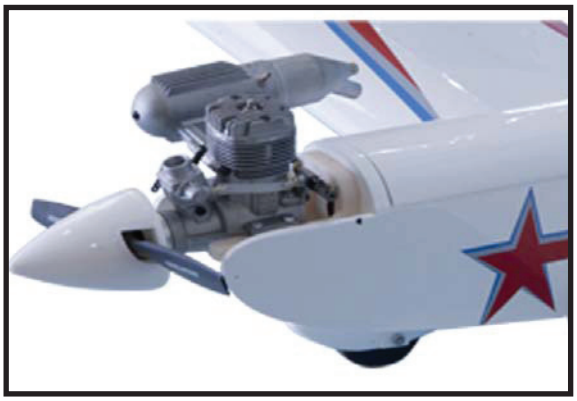




INSTALLING THE SPINNER.

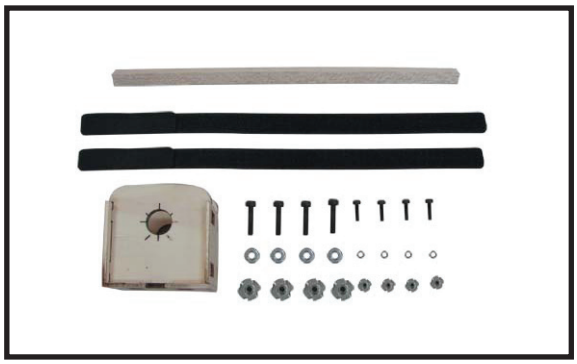
Install the spinner backplate, propeller and spinner cone.

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



ELECTRIC POWER CONVERSION.

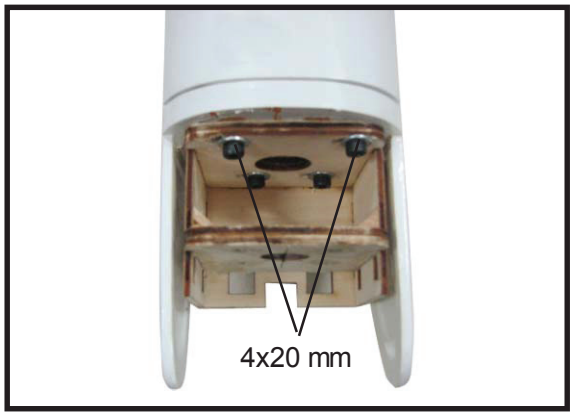
1) Locate the items neccessary to install the electric power conversion included with your model.

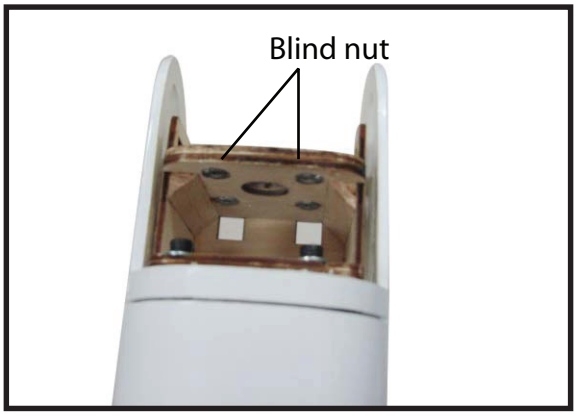


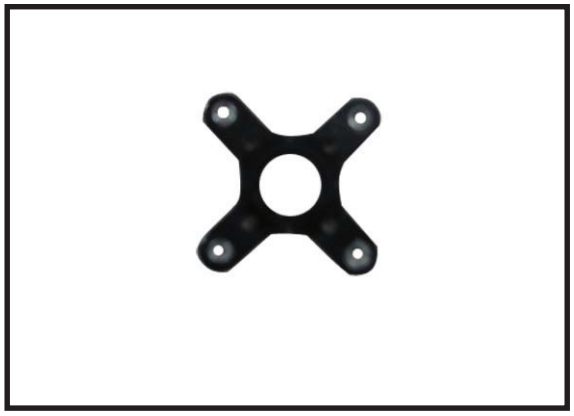
2) Recommendation EP parts as shown (not included with your model).

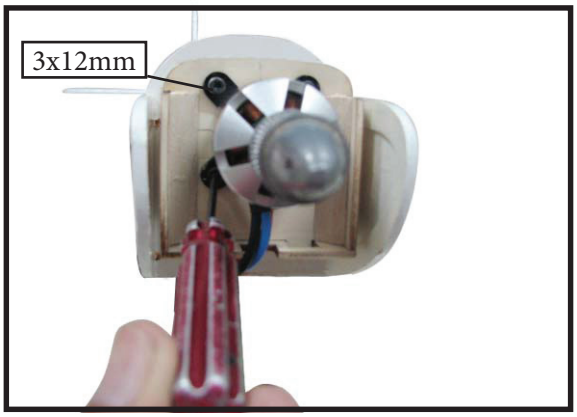
- Model size : .45-.52 size models
- Motor : 35mm 830 rev per volt
- Propeller : 12x6 - 13x6
- ESC : 50A
- Lipo Batteries : 4 cell 3200mA

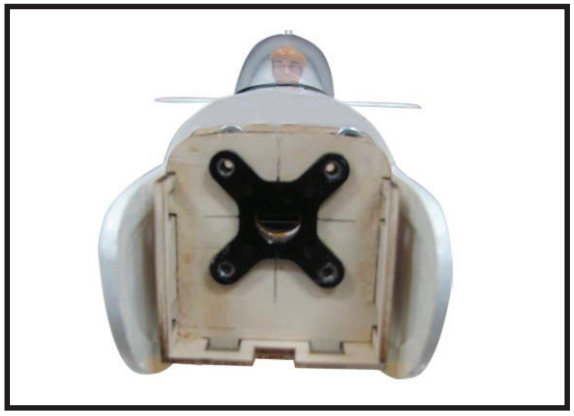
3) Attach the electric motor box to the firewall suitable with the cross lines drawn on the electric motor box and firewall. Using epoxy and balsa stick to secure the motor box to the firewall. Please see pictures below.

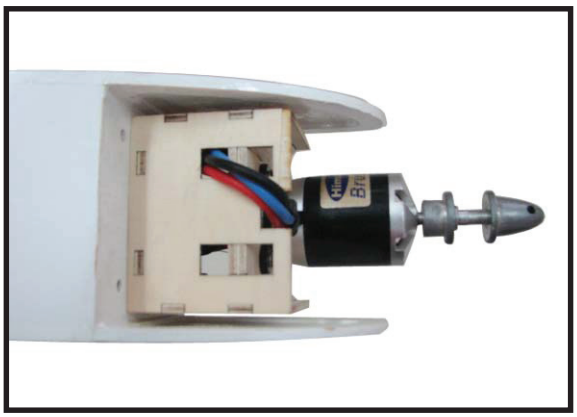


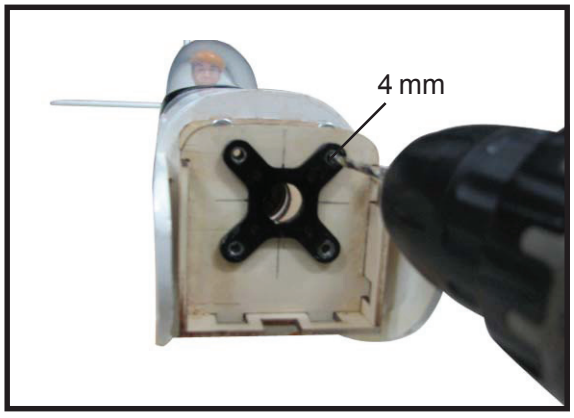


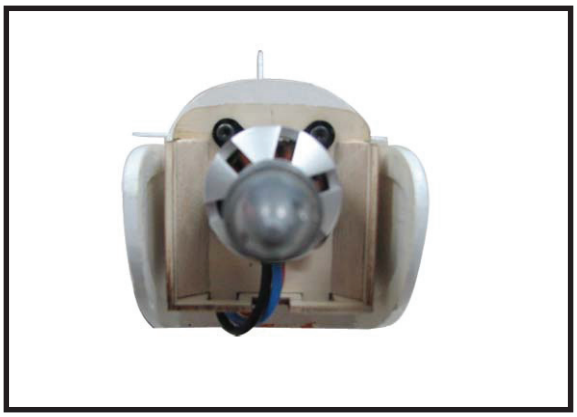




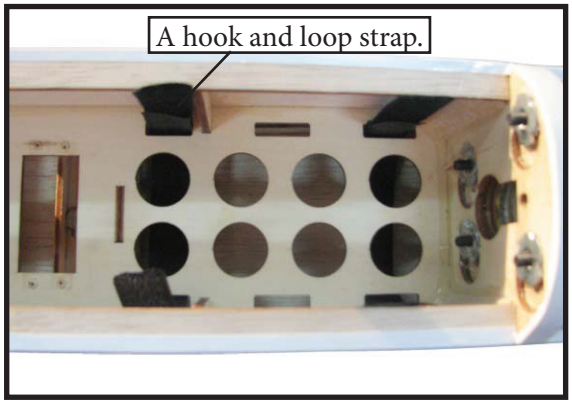


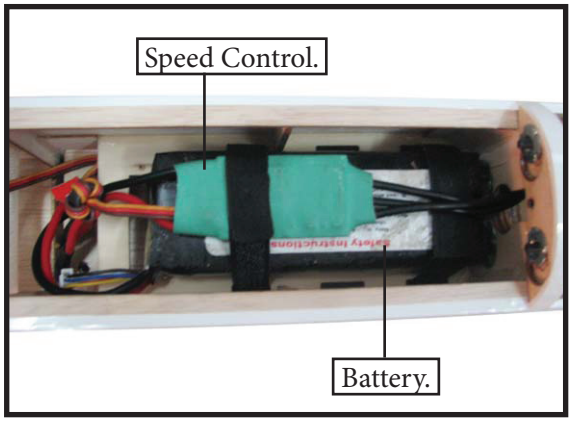






4) Attach the motor to the front of the electric motor box using for 4mm blind nut, four M3x12mm hex head bolts to secure the motor. Please see picture as shown.

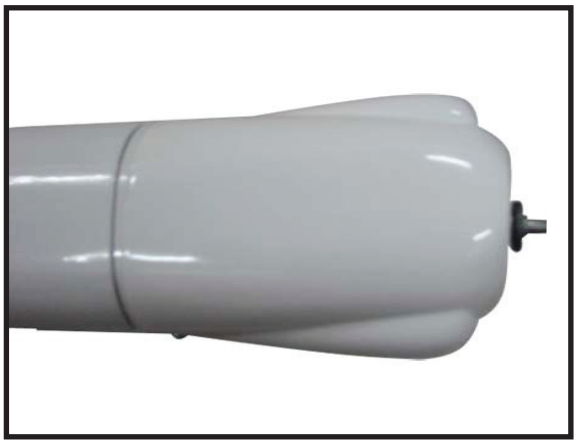




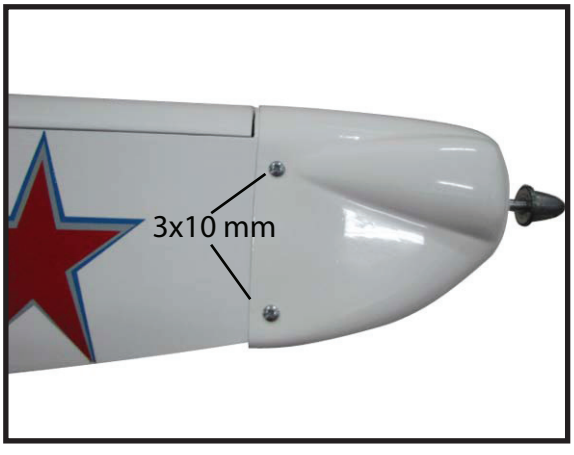
COWLING INSTALLATION.

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

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 cut out 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 3x10mm screws (4).



INSTALLING THE SPINNER.

Install the spinner backplate, propeller and spinner cone.

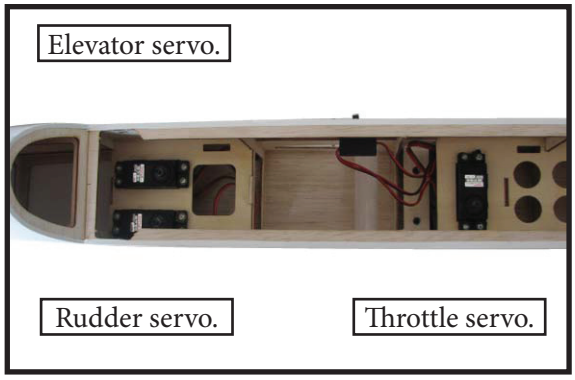
The propeller should not touch any part of the spinner cone. If it does, use a sharp modeling knife and carefully trim away the spinner cone where the propeller comes in contact with it.

INSTALLING THE FUSELAGE SERVO.

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.

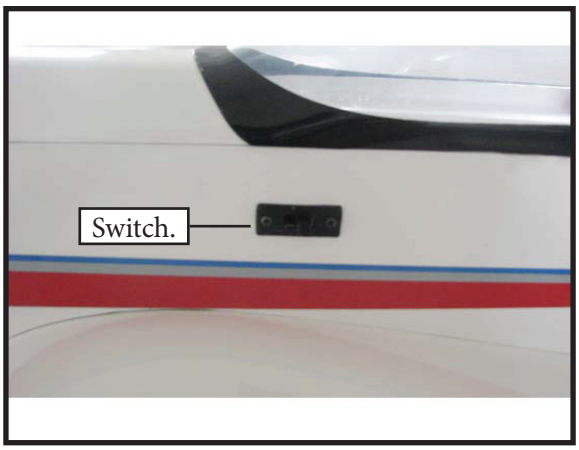
1) Install the rubber grommets and brass collets onto the throttle servo. Test fit the servo into the aileron servo mount.

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



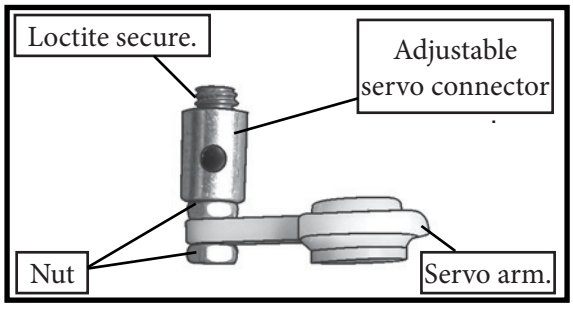
INSTALLING THE SWITCH.

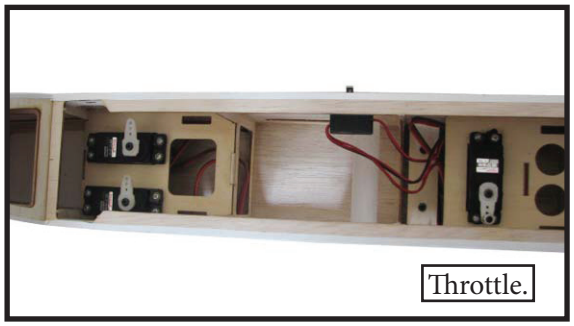
Install the switch into the precut hole in the side, in the fuselage.



THROTTLE SERVO ARM INSTALLATION.

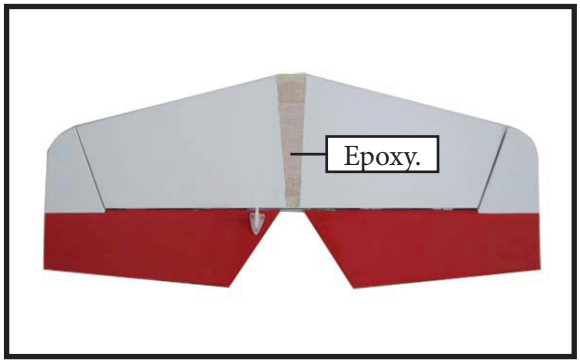
Install adjustable servo connector in the servo arm as same as picture below:

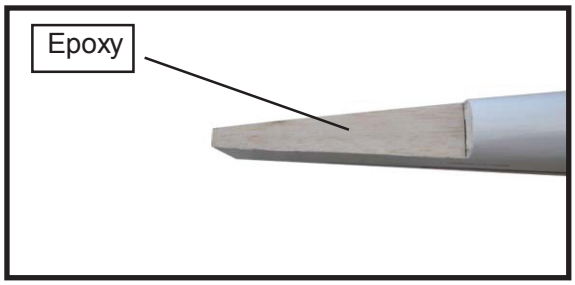


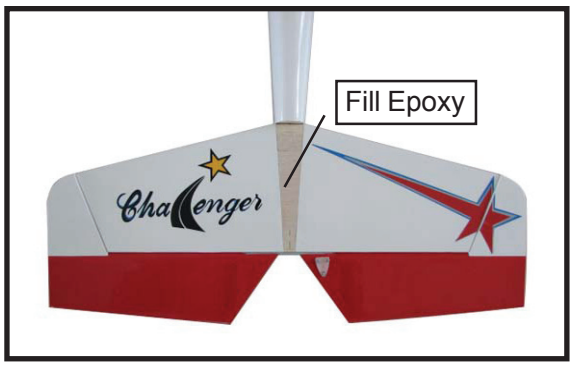


HORIZONTAL STABILIZER.

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.

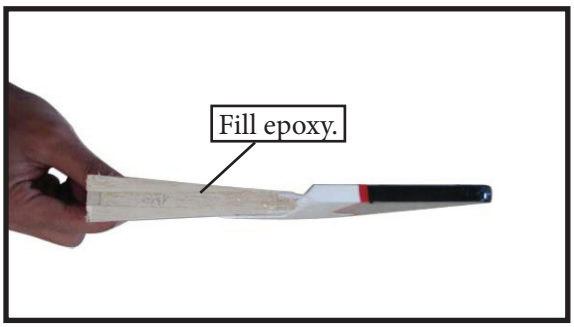






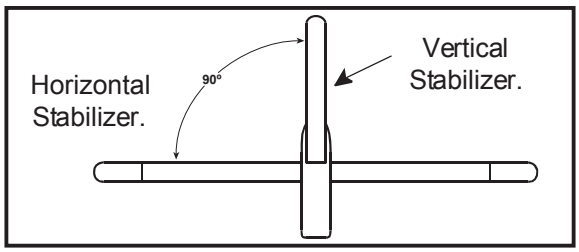
VERTICAL STABILIZER INSTALLATION.

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

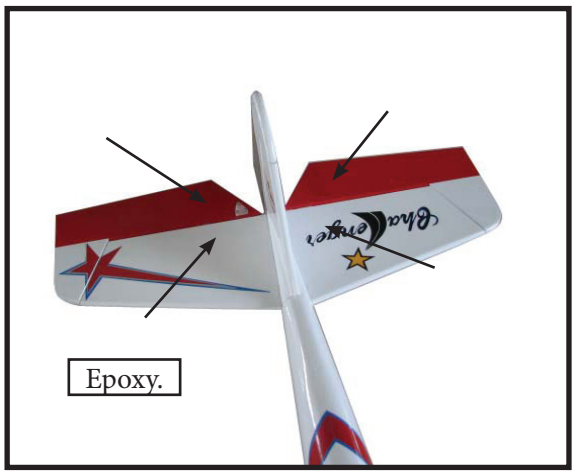


2) While holding the vertical stabilizer firmly in place, use a pen and draw a line on each side of the vertical stabilizer where it meets the top of the fuselage.

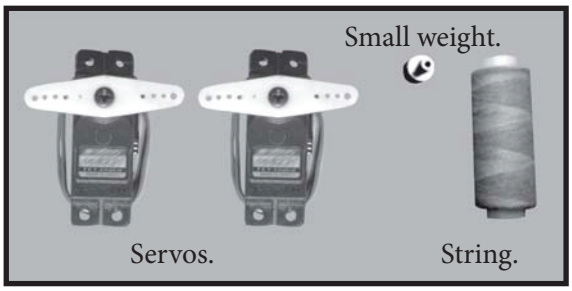
3) Slide the vertical stabilizer back in place. Using a triangle, check to ensure that the vertical stabilizer is aligned 90º to the horizontal stabilizer.



4) 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.



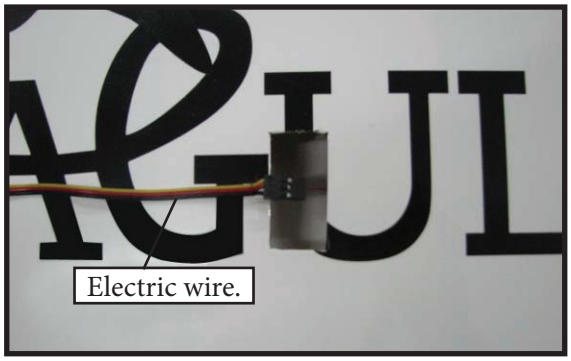
INSTALLING THE AILERON SERVOS.

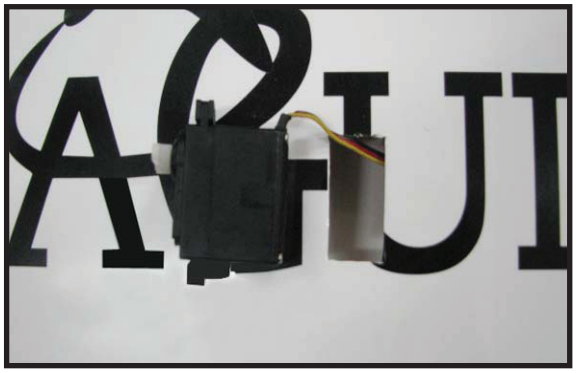


Because the size of servos differ, you may need to adjust the size of the precut opening in the mount. The notch in the sides of the mount allow the servo lead to pass through.

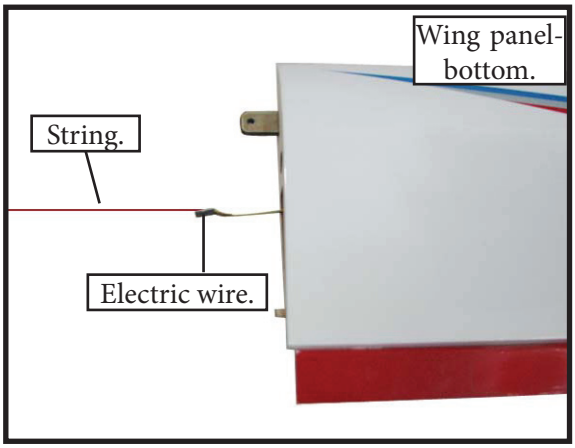
Using a small weight (Weighted fuel pick-up works well) and string, feed the string through the wing as indicated.

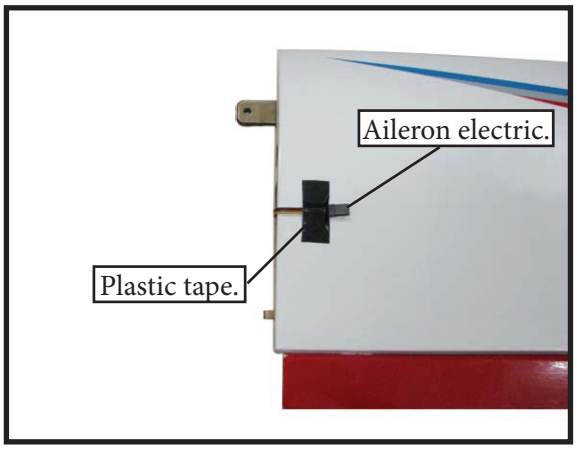
Attach the string to the servo lead and carefully thread it though the wing. Once you have string the lead throught the wing, remove the string so it can use for the other servo lead. Tape the servo lead to the wing to prevent it from falling back into the wing.



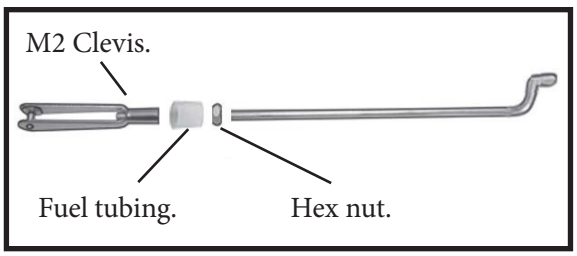


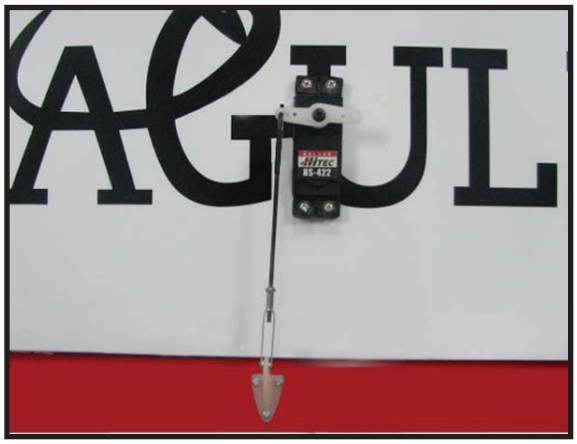
Secure the servos with the screws provided with your radio system.





Repeat the procedure for other wing haft.



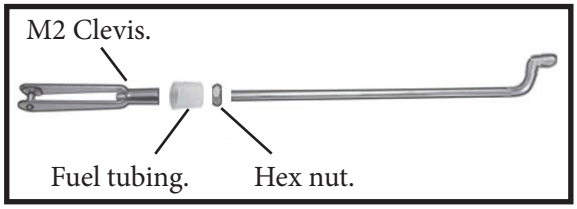


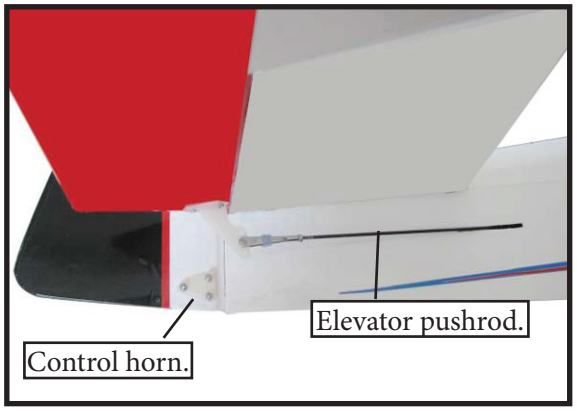
Repeat the procedure for other wing .

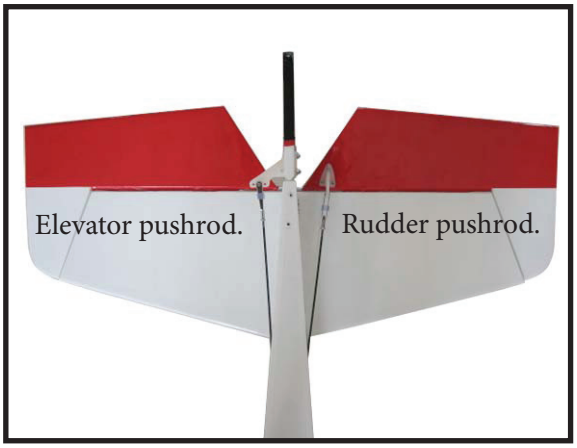
ELEVATOR - RUDDER PUSHROD INSTALLATION.

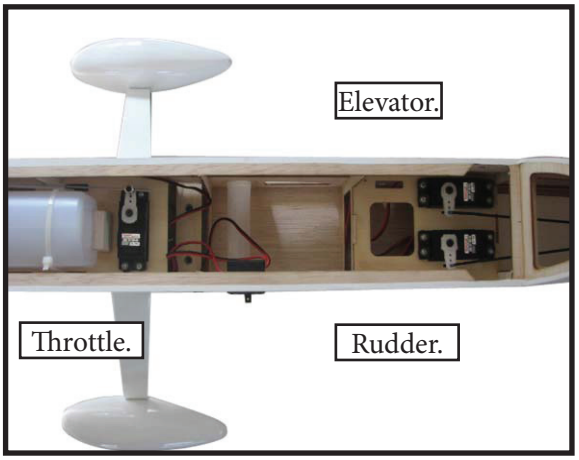
1) Thread one clevis and M2 lock nut on to each elevator control rod. Thread the horns on until they are flush with the ends of the control rods.

2) Elevator and rudder pushrods assembly follow pictures below.



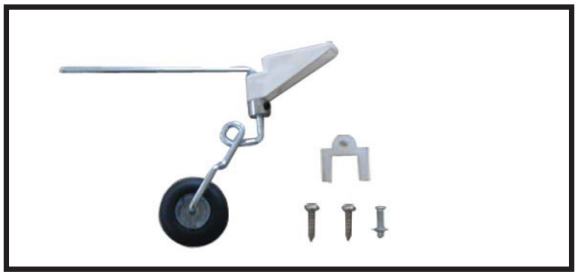


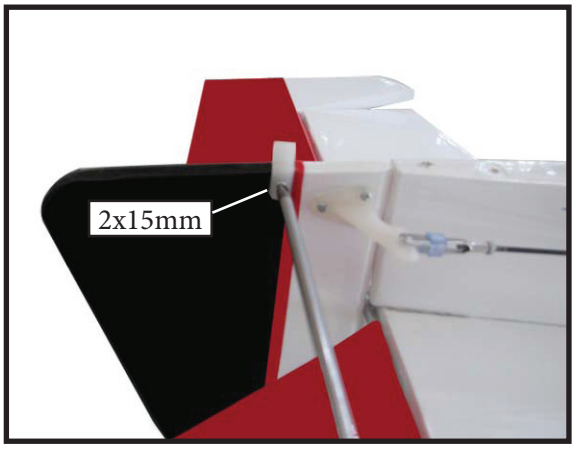


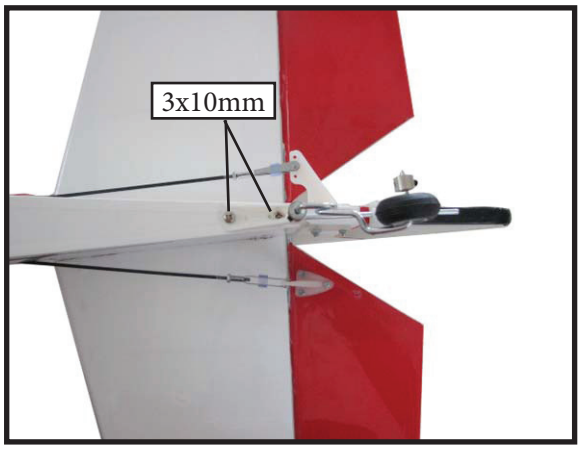


MOUNTING THE CONTROL CLASP.

Please pictures below.





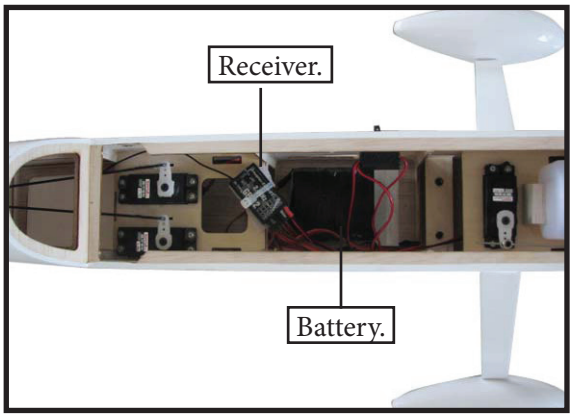


INSTALLING THE RECEIVER AND BATTERY.

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

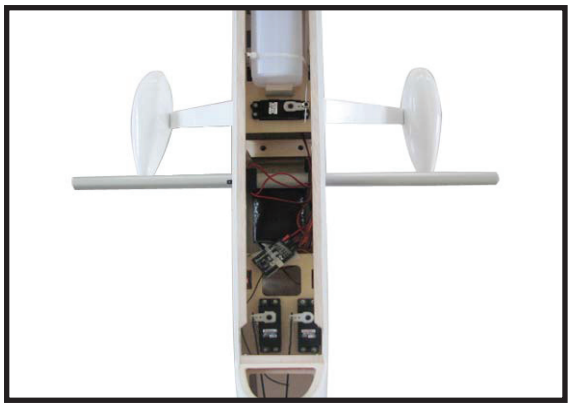
2) Wrap the receiver and battery pack in the protective foam rubber to protect them from vibration.

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

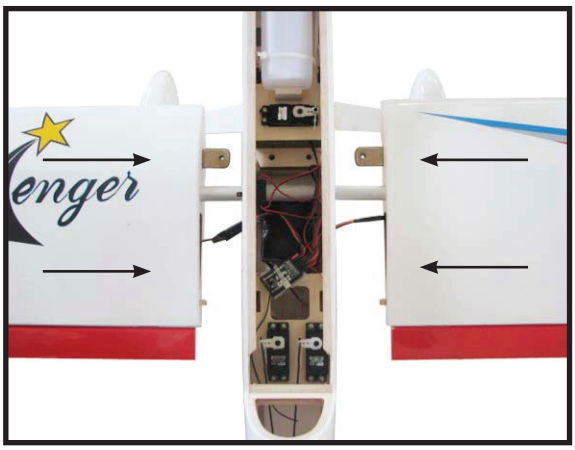


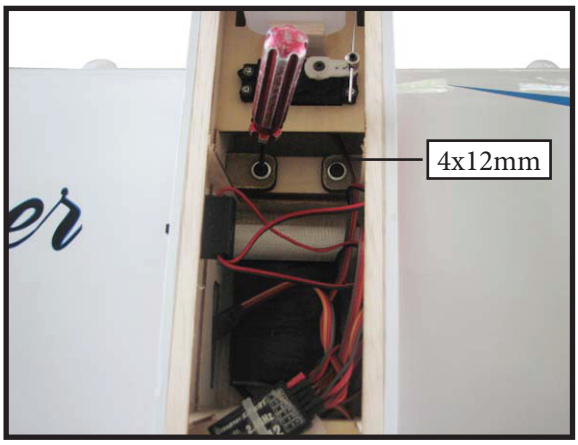
ATTACHMENT WING- FUSELAGE.

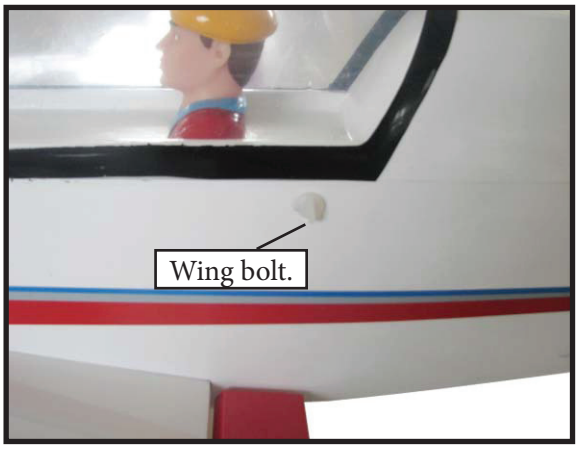
Attach the aluminium tube into fuselage.



Attach the aluminium tube into 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 **60 MM** BACK FROM THE LEADING EDGE OF THE WING AT THE WING ROOT.

2) Mount the wing to the fuselage. Using a couple of pieces of masking tape, place them on the top side of the wing **60mm** back from the leading edge of the wing at the wing root.

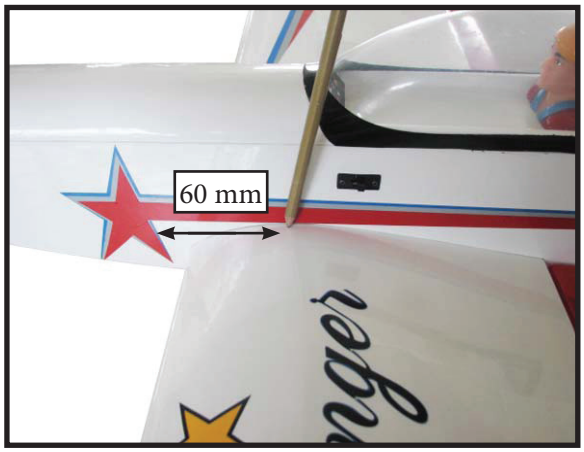
3) Turn the airplane upside down. Place your fingers on the masking tape and carefully lift the plane .

Accurately mark the balance point on the top of the wing on both sides of the fuselage. The balance point is located **60 mm** back from the leading edge of the wing at the wing root. This is the balance point at which your model should balance for your first flights. Later, you may wish to experiment by shifting the balance up to 10mm forward or back to change the flying characteristics. Moving the balance forward may improve the smoothness and arrow- like tracking, but it may then require more speed for take off and make it more difficult to slow down for landing. Moving the balance aft makes the model more agile with a lighter and snappier ”feel”. In any case,please start at the location we recommend .

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

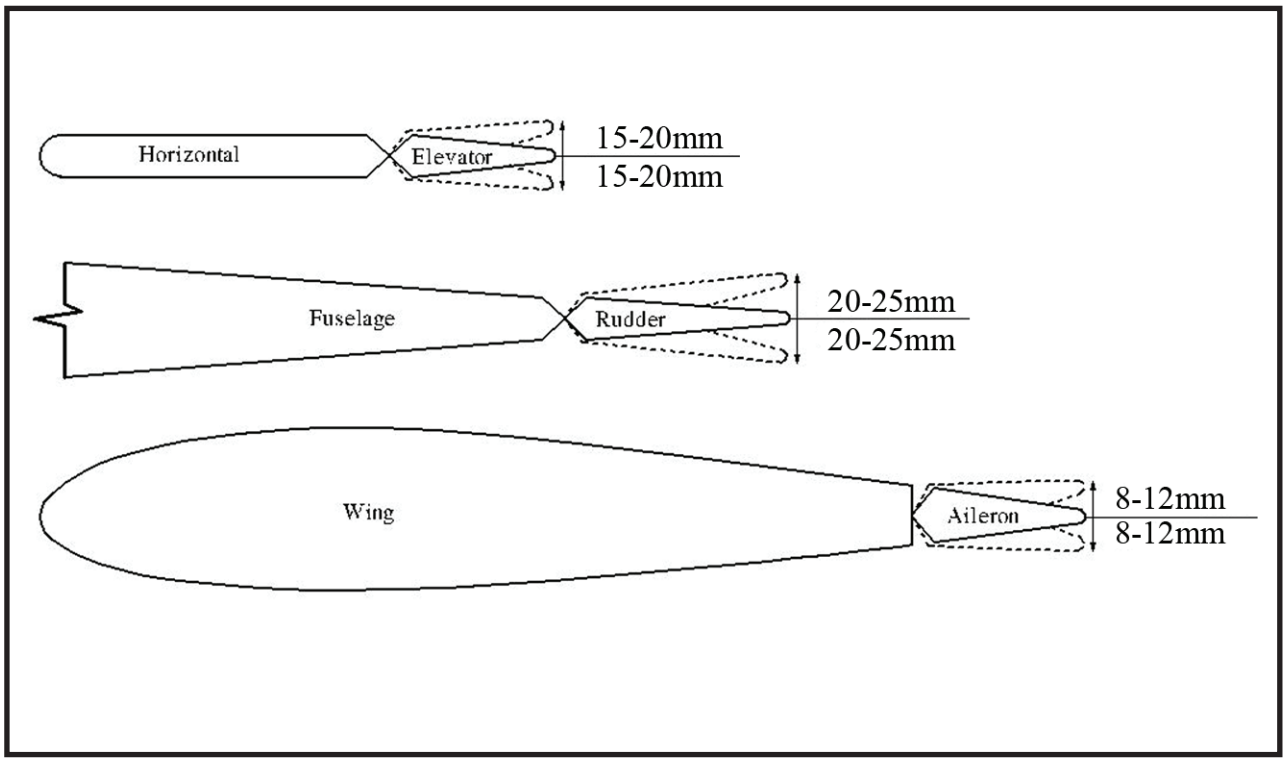
Lift the model. If the tail drops when you lift, the model is “tail heavy” and you must add weight* to the nose. If the nose drops, it is “nose heavy” and you must add weight* to the tail to balance.

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



CONTROL THROWS.

Ailerons :		Rudder :	
High Rate :		High Rate :	
Up :	12 mm	Right :	25 mm
Down :	12 mm	Left :	25 mm
Low Rate :		Low Rate :	
Up :	8 mm	Right :	20 mm
Down :	8 mm	Left :	20 mm
Elevator :			
High Rate :			
Up :	20 mm		
Down :	20 mm		
Low Rate :			
Up :	15 mm		
Down :	15 mm		



FLIGHT PREPARATION.

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

☐ A) Plug in your radio system per the manufacturer's instructions and turn everything on.

☐ B) Check the elevator first. Pull back on the elevator stick. The elevator halves should move up. If 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 **CHALLENGER KIT** 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 CHALLENGER KIT .

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

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