ASSEMBLY MANUAL

"Graphics and specifications may change without notice".

Laser-Cut

Balsa and Plywood

Construction Kit

Specifications:

Wingspan--------------- 70.9 in--------------- 180 cm.

Wing area--------------- 1033.2 sq.in-------- 66.7 sq.dm.

Weight------------------ 7.7 lbs-------------- 3.5 kg.

Length------------------ 57.8 in-------------- 146.8 cm.

Engine------------------ 10cc - 15cc gasoline.

-------------------------- .60 -.91 glow engine.

-------------------------- 1200-1500 Watt Brushless Motor.

Radio-------------------- 4 channels with 5 servos.

Electric conversion: Optional.

INTRODUCTION.

Thank you for choosing the **Master Scale Kit Edition Classic Ugly Stick 70.9"** Build Up Kit by SG Models. The **Master Scale Kit Edition Classic Ugly Stick 70.9"** was designed with the beginner to intermediate sport flyer in mind. It is a trainer 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 aero plane 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 **Master Scale Kit Edition Classic Ugly Stick 70.9"** is simply a joy to build and fly.

• **This instruction manual is designed to help you build a great flying aero plane.**

• **Please read this manual throughly before starting assembly of your Master Scale Kit Edition Classic Ugly Stick 70.9".**

• **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.

- 10cc-15cc gasoline engine.
- .60 - .91 glow engine.
- 1200-1500 Watt Brushless Motor.
- Computer radio 4 channels with 5 servos.
- Glow plug to suit engine.
- Propeller to suit engine.
- Protective foam rubber for radio system.
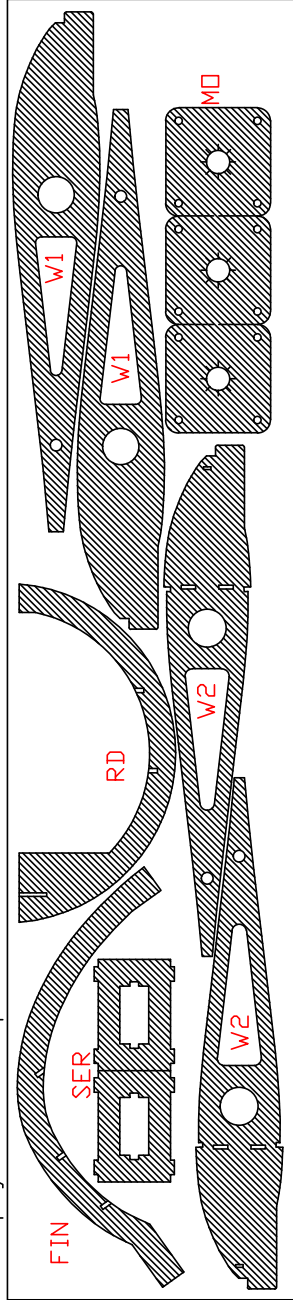
TOOLS & SUPPLIES NEEDED.

- Thick cyanoacrylate glue.
- 30 minute epoxy.
- 5 minute epoxy.
- Hand or electric drill.
- Assorted drill bits.
- Modeling 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.
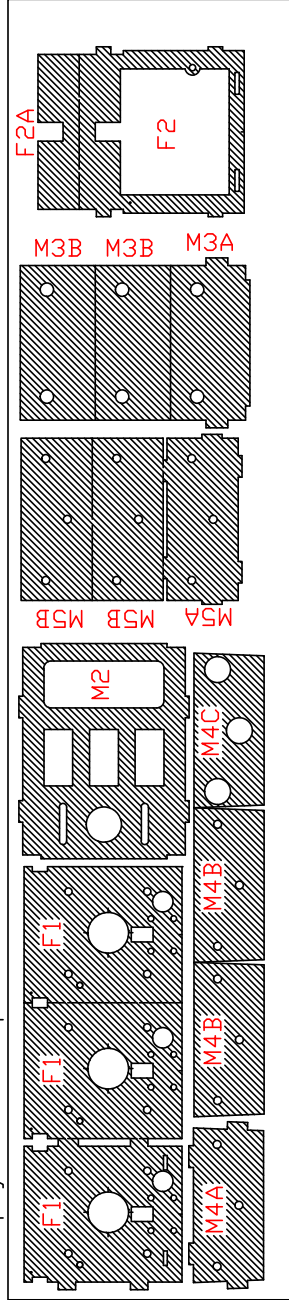- Hobby heat iron for covering

- **Die cut Partern for all Kit.**

DIE-CUT PATTERNS

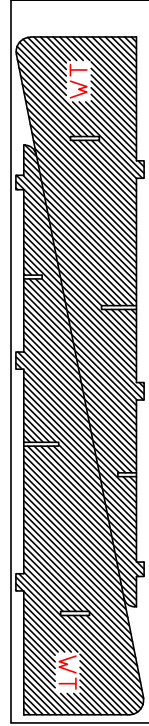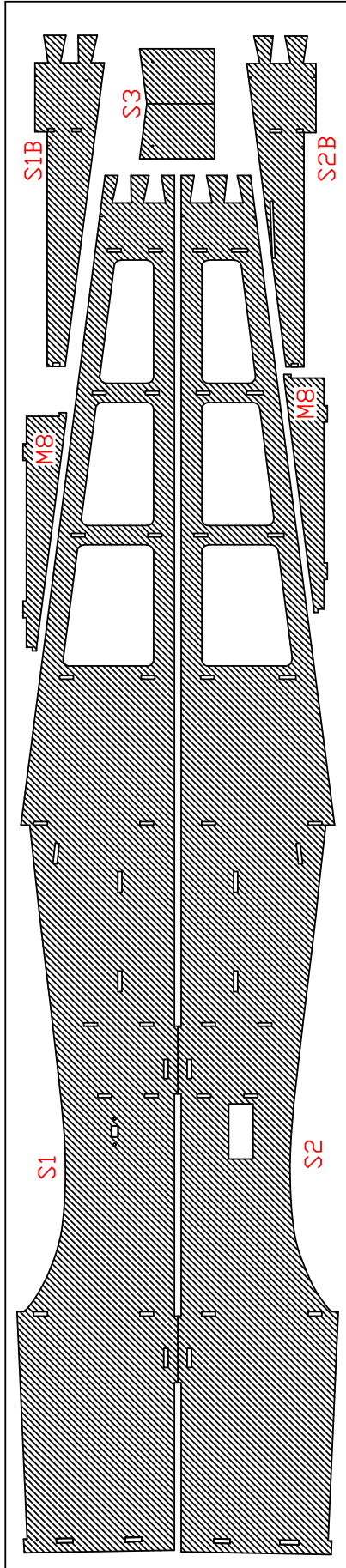3mm plywood (1 per kit)
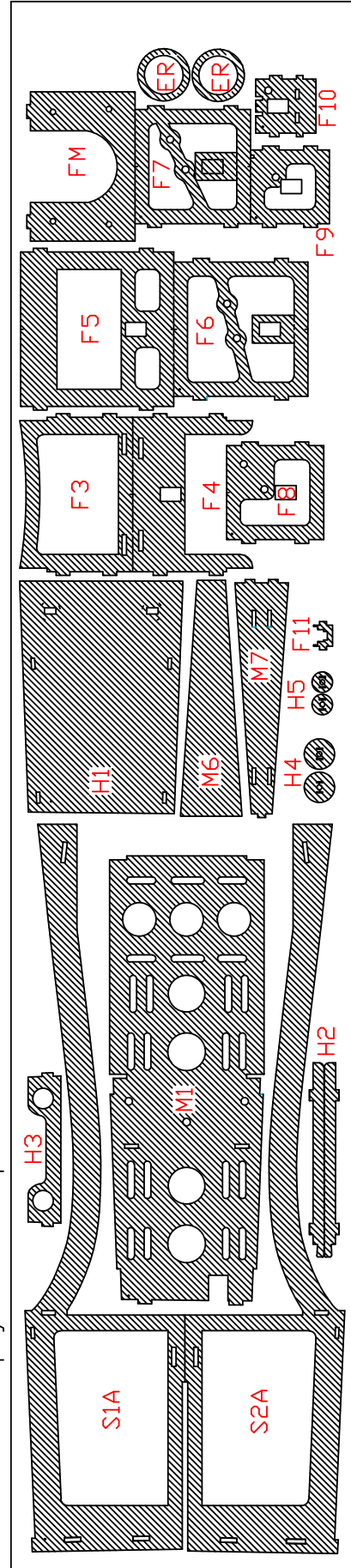
3mm plywood (1 per kit)

6mm balsa (1 per kit)

W1
W1
MO
W2
W2
RD
SER
FIN
F2A
F2
M3B   M3B   M3A
M3B   M3B   M3A
M2
M4C
M4B
M4B
M4A
F1
F1
F1
WT
WT

DIE-CUT PATTERNS

2.7mm balsa plywood (1 per kit)

S3

S1B

S2B

M8

M8

S1

S2

2.7mm balsa plywood (1 per kit)

FM

ER

ER

F7

F10

F5

F6

F9

F3

F4

F8

H1

M6

M7

F11

H5

H4

H3

M1

H2

S1A

S2A

DIE-CUT PATTERNS

2.7mm balsa plywood (1 per kit)

2.7mm balsa plywood (1 per kit)

WT2
WT1
AIL
WSP
WG
WG
W3
W3
W3
W3

W6
W6
W7
W8
W5
W7
W8
W5
W7
W8
W4
W5
W7
W4
W8
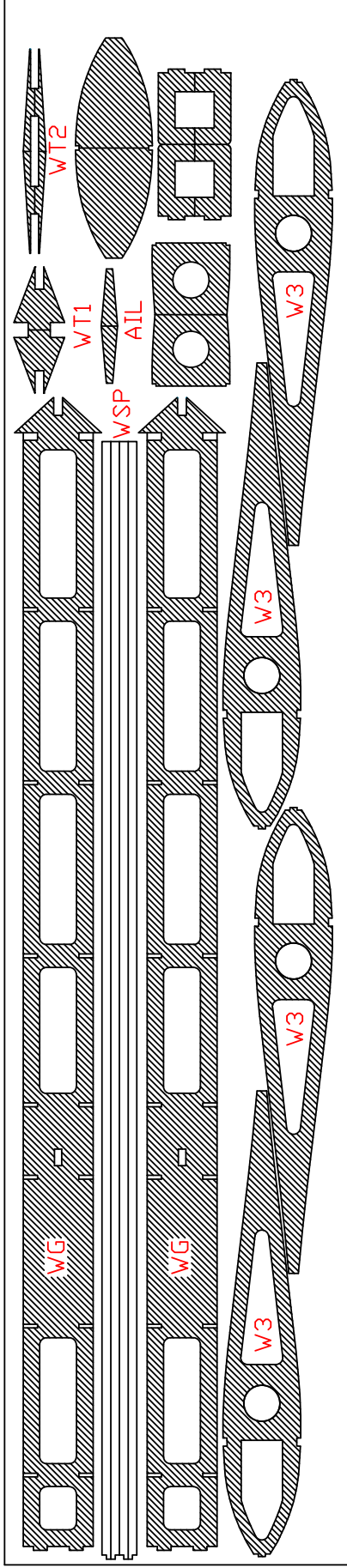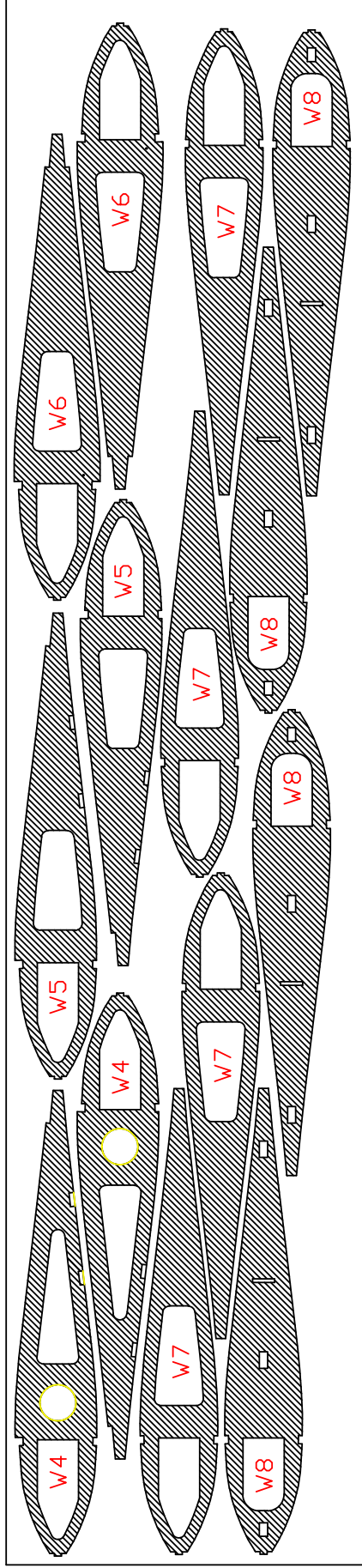
DIE-CUT PATTERNS

2mm balsa (1 per kit)

SH1

SH2

SH3

SH4

2mm balsa (2 per kit)

WSH1

WSH2

WSH3
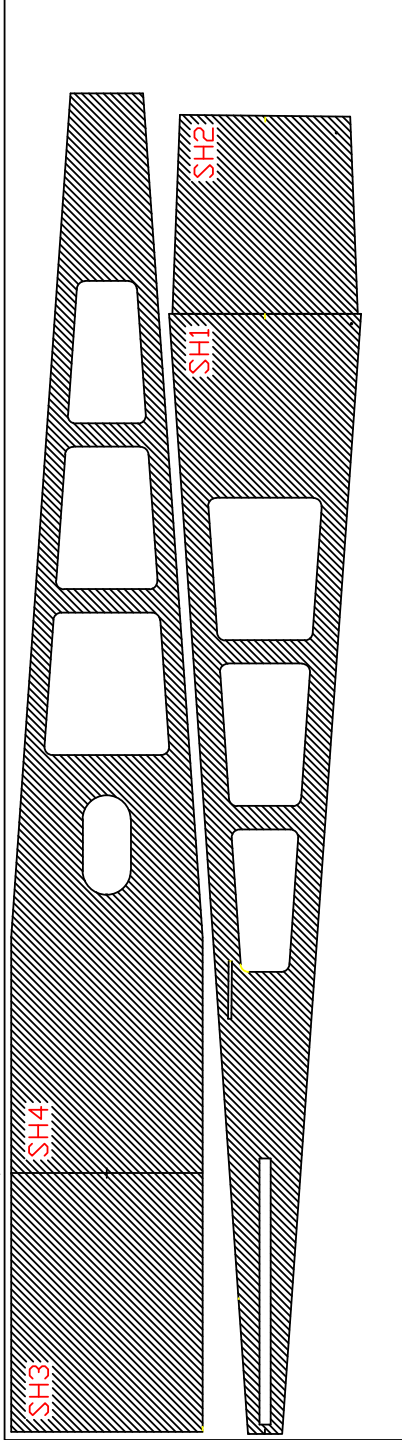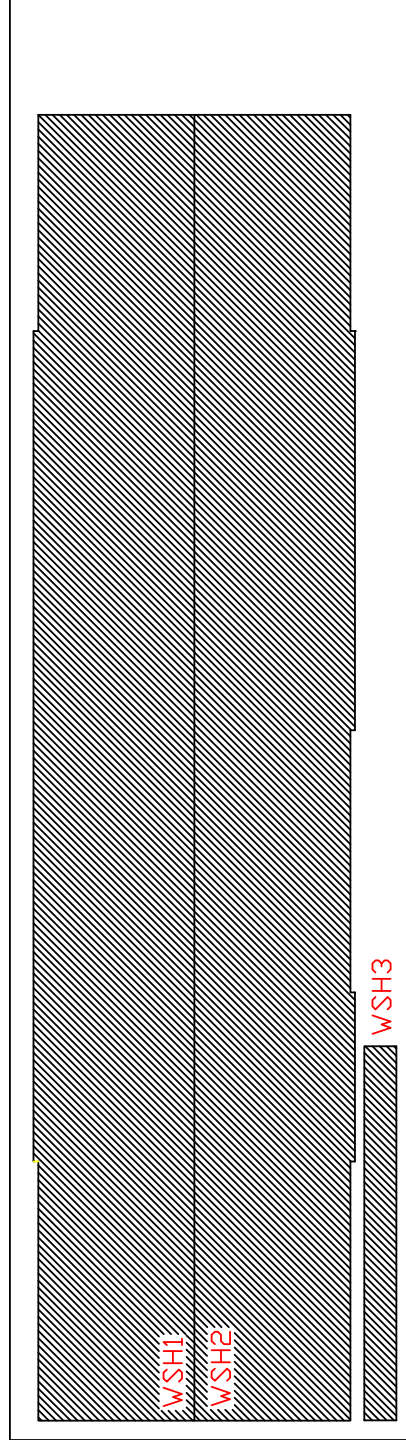
DIE-CUT PATTERNS

2mm balsa (2 per kit)

WSH4 WSH5 WSH6 WSH7 WSH7

2mm balsa (1 per kit)

WSH8 WSH8 WSH8 WSH8
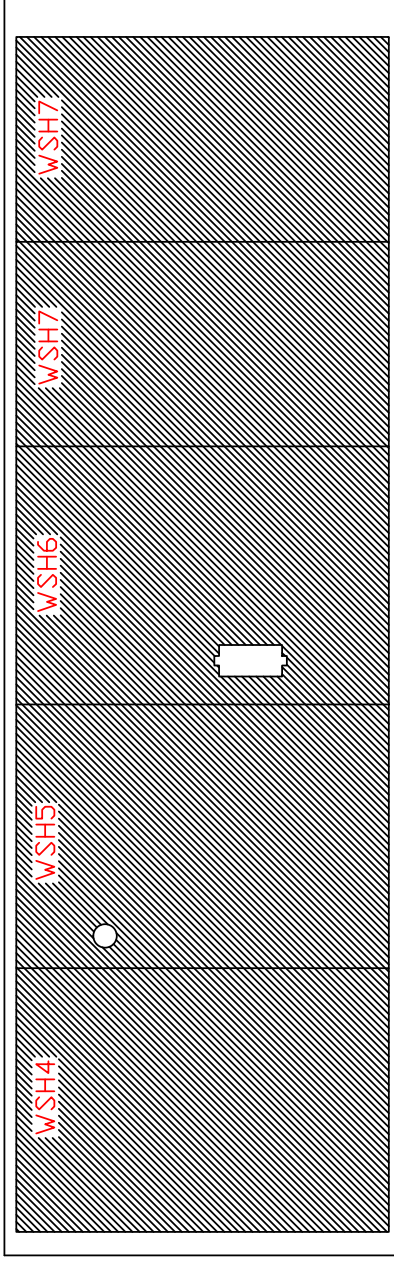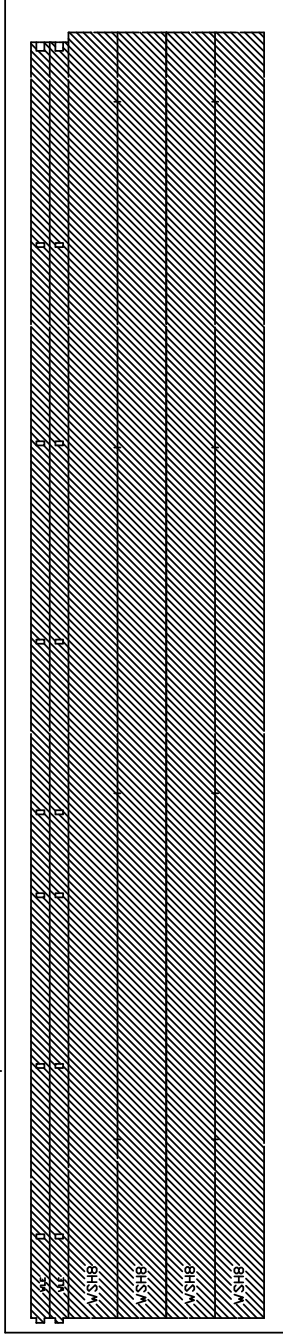
2.5mm balsa (1 per kit)

FIN RD RD FIN
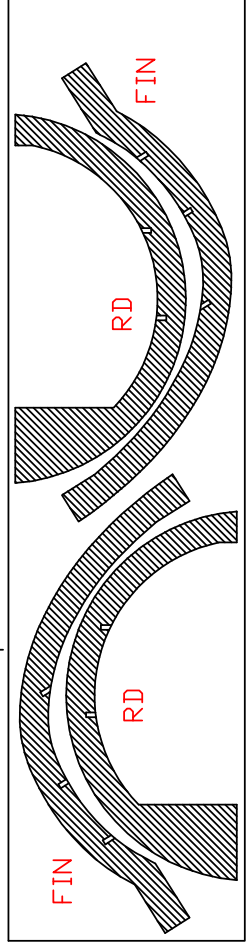
- Special part for Wing and Tail.

SPECIAL PARTS

8mm balsa (1 per kit)

FIN

8mm balsa (1 per kit)

STA

8mm balsa (1 per kit)

ELE

6mm balsa (2 per kit)

AIL
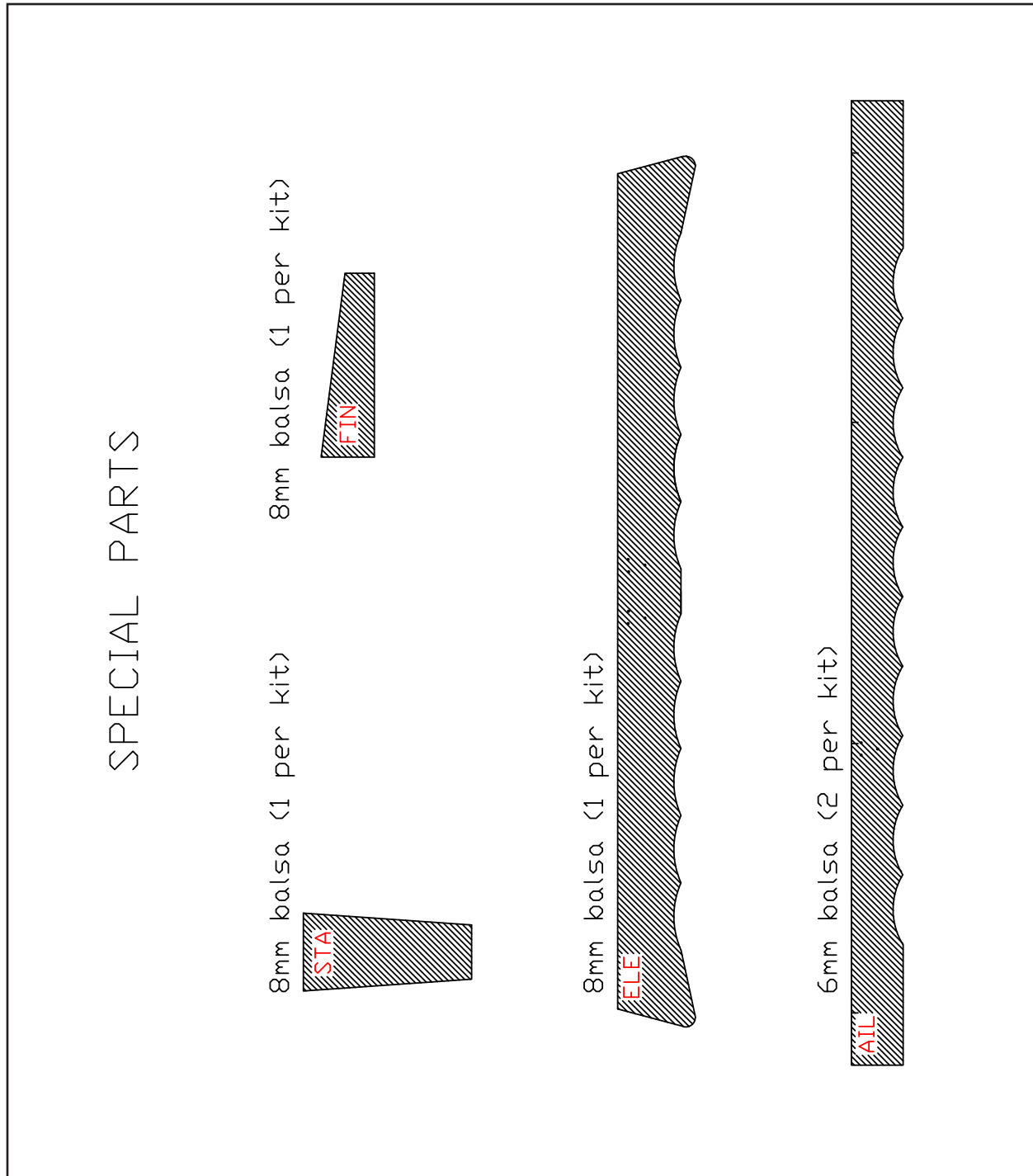
- Balsa stick for stabilizer, Rudder and Fin.
- 8 x 10 x 700mm balsa (4 per kit)
- 8 x 12 x 160mm balsa (2 per kit)
- 3 x 8 x 180mm balsa (17 per kit)

- Balsa stick for trailing edge of wing.

- 12 x 8 x 810mm balsa (2 per kit)

- Balsa Block- Center Section Trailing Edge (2 per kit)

- **Hardware Pack.**

• Includes hinges, horns, screws, fuel tank, landing gear wire, straps, wheels, wheel collars, spinner, glue, sanding block, aluminum wing tube, pushrod and nylon pushrod tubing.
• 8mm dia. x 20mm Dowels for wing joiner .

- **Documentaion.**

• Plan Sheet
• Instruction book

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 kit content.
• 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 (Cyano 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).
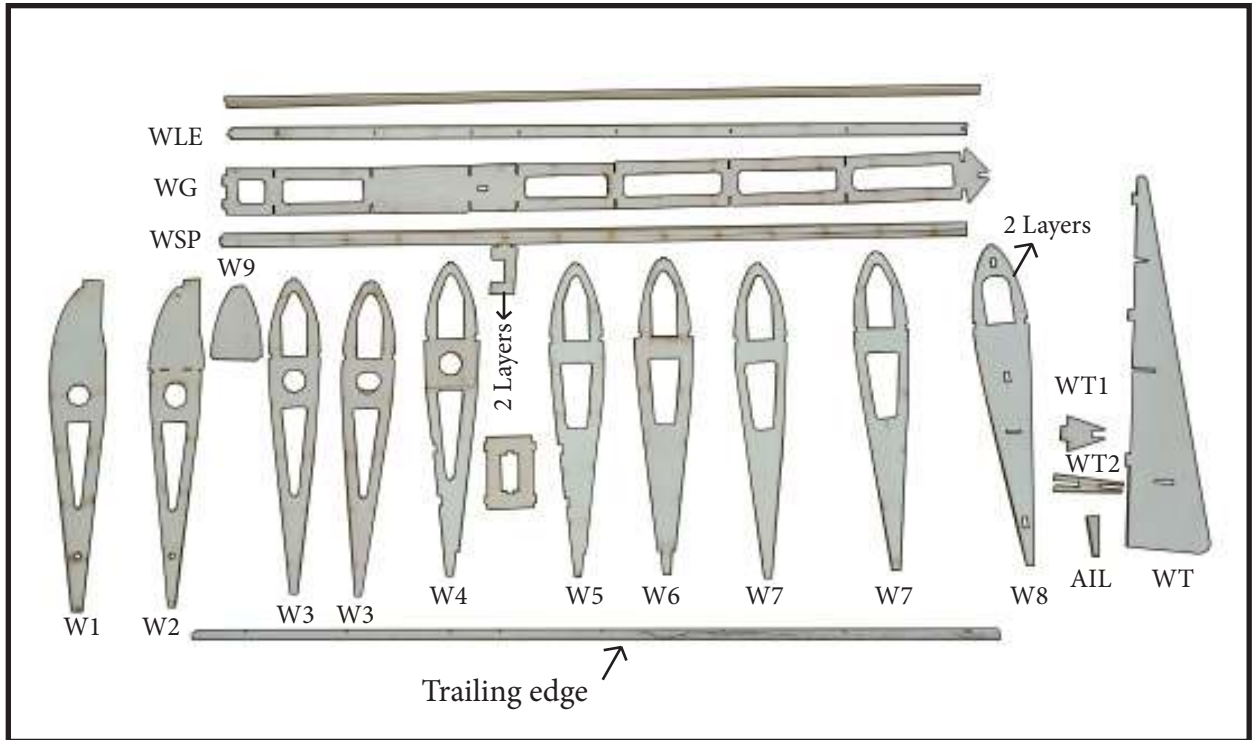• Do not apply too much white glue, just a thin film is enough.
• Build it light to fly well - Don't build it heavy, thinking it will survive a crash.
• When sanding balsa, use a light touch as balsa is a strong but very light timber and it would be very easy to sand too much away.
• Be very careful 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 modeler or from your local hobby shop.
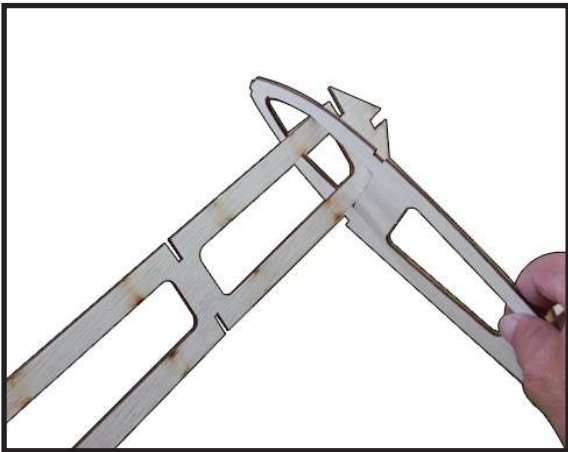***Good luck with your build and after reading the rest of the instructions, you are ready to start.***

WING PANEL CONSTRUCTION.

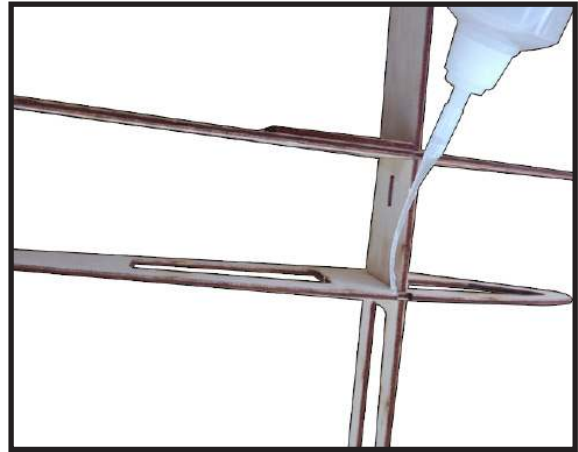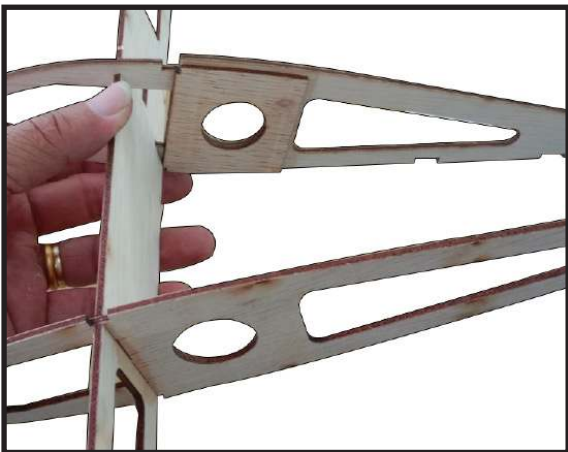- This section shows you how to construct one half of the wing. Repeat the instructions for the other half.
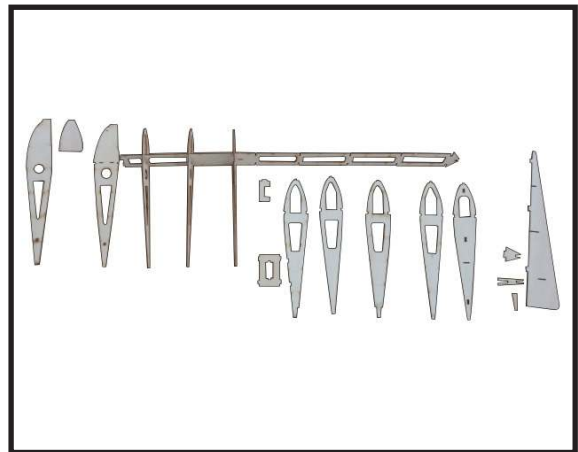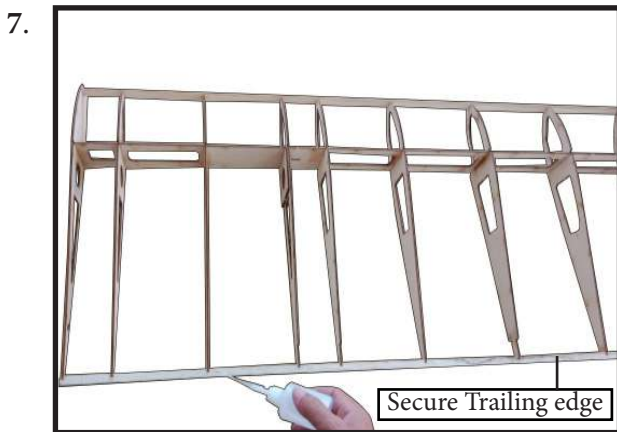
1.

WLE

WG

WSP

W9

2 Layers

2 Layers

WT1

WT2

W1   W2   W3   W3   W4   W5   W6   W7   W7   W8   AIL   WT
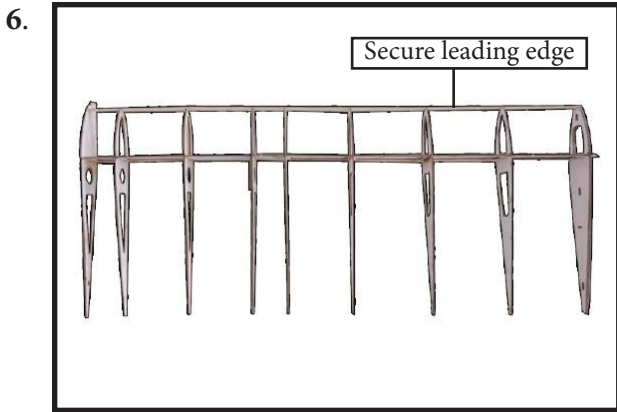
Trailing edge

2.

4.

3.

5.

- Locate plywood Main Wing Spars WG and ribs W1 ~W10.
- Slide the ribs into their corresponding positions.
- Rotate each wing rib so they are sitting upright, perpendicular to the building board.
- Use C/A glue to secure airfoil W1~ W10.

6.

Secure leading edge

7.

Secure Trailing edge

- Locate and use C/A glue to secure Leading edge WLE, Trailing edge (special balsa – 810mm long).

8.

9.
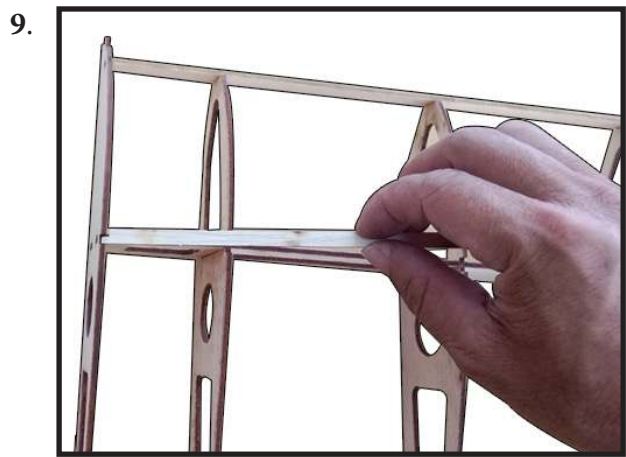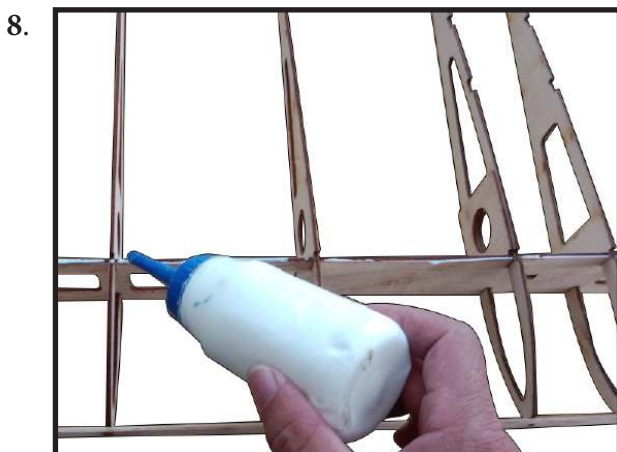
- Use white glue for Main Wing Spars (WG) as shown. Locate plywood string (WSP)to Main Wing Spars at the both of wing side.

10.
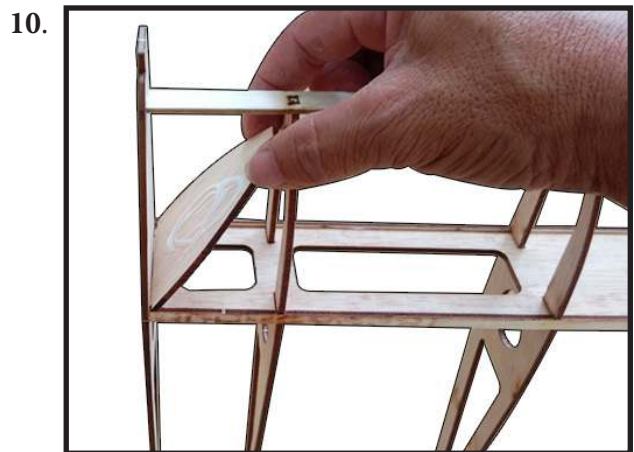
- Locate and use white glue to apply W9 to W1.

11.

12.
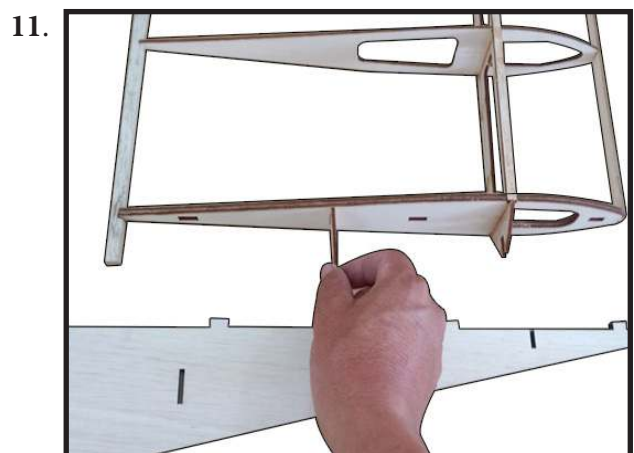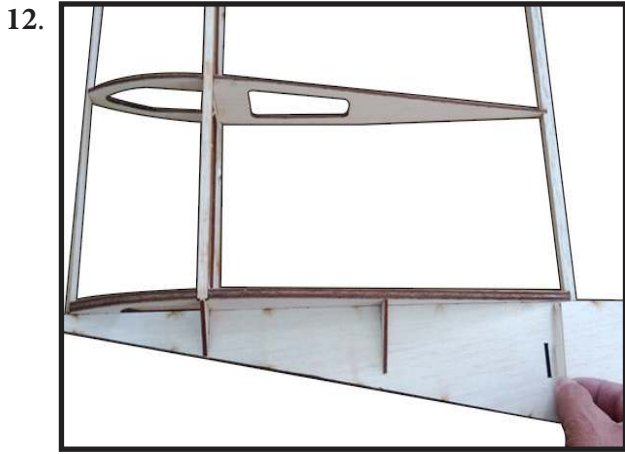
- Locate and use CA glue to assembly wing tip.

13.

- Locate and use CA glue to assembly the airfoil (AIL) to wing tip as shown.

14.

- Locate and use CA glue to assemble the wing tube lock (WL) to leading edge as shown.

15.

- Locate and use white glue to apply the balsa block stick to leading edge as shown.

16.
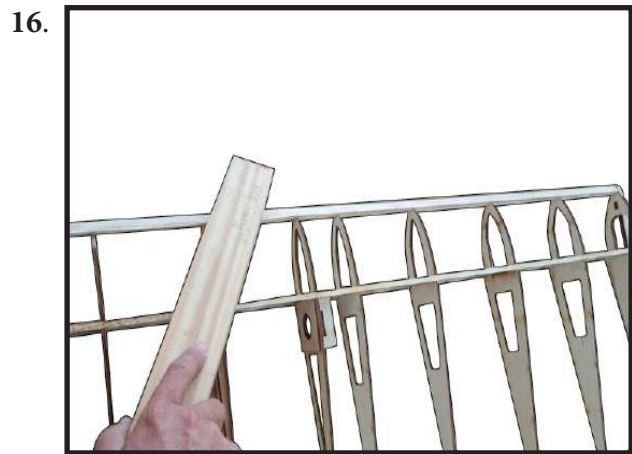
- Carefully block sand plywood string, airfoil as shown.

17.

The building square
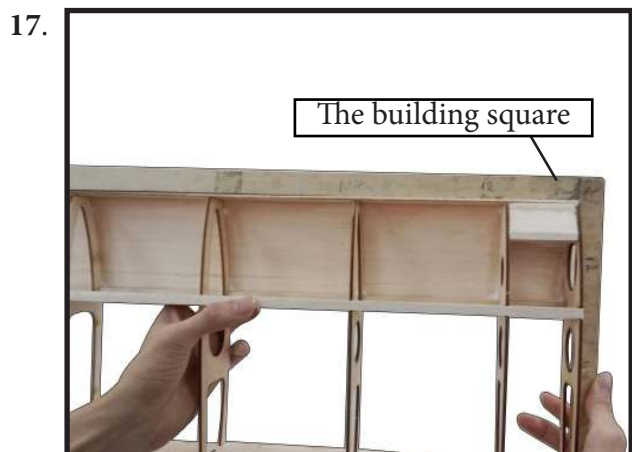
- Use a building square and a number of clamps to hold the wing structure while you spot glue it with CA to secure the sheet WSH1 (one top side of wing).

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.

18.
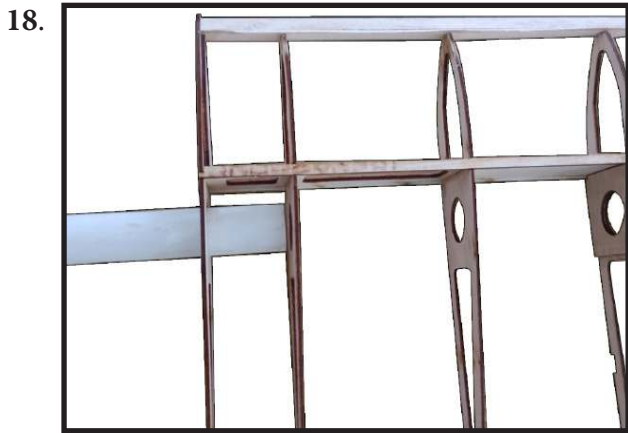
- Insert the carbon tube into wing panel from W1 to W4. Tack glue in place with CA glue, then apply white glue liberally to each join.

19.

- Use CA glue to secure the wing tube to the lock (WL) and the airfoils. And then cut the carbon tube flush with the outside of W1.

20.

- Use the white glue to secure wing tube.

21.

- Locate and use CA glue to secure the servo mount to the airfoils as shown.

22.

- The wing sheets.

23.
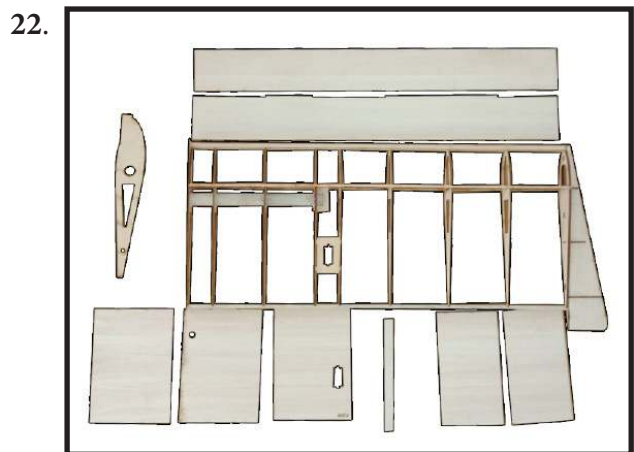
24.
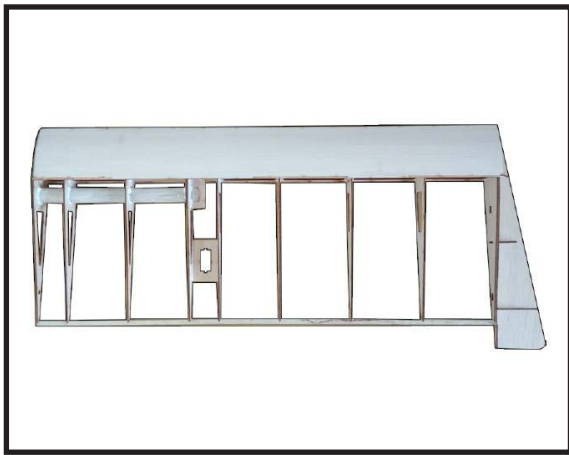
- Use the white glue at the edge of air-foil, leading edge for applying the sheet WSH1 and then fitted to the top of the wing panel using the same method as in repeat for the WSH2 (bottom side of wing). Your wing panel should now look like picture.

25.
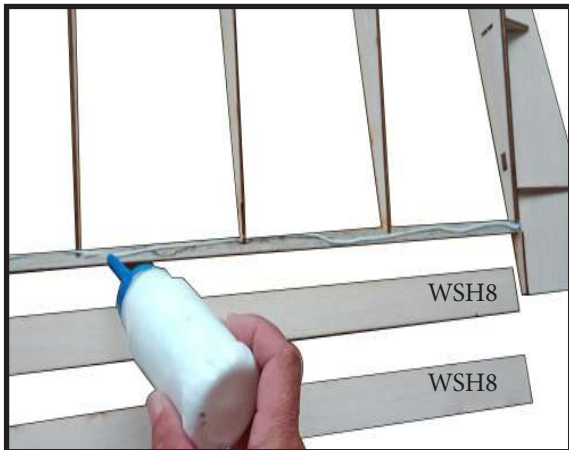
WSH8

WSH8

26.
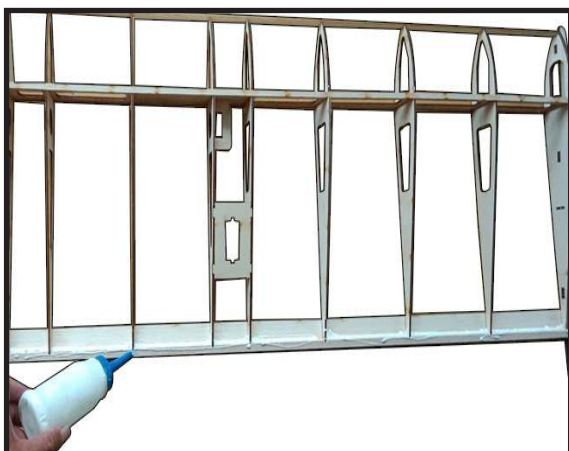
- The wing sheet of trailing edge.
- Locate the trailing edge sheeting. Use white glue to secure the trailing edge sheeting WSH8 (x2) at both sides.

27.

WSH5

28.

Center section trailing edge
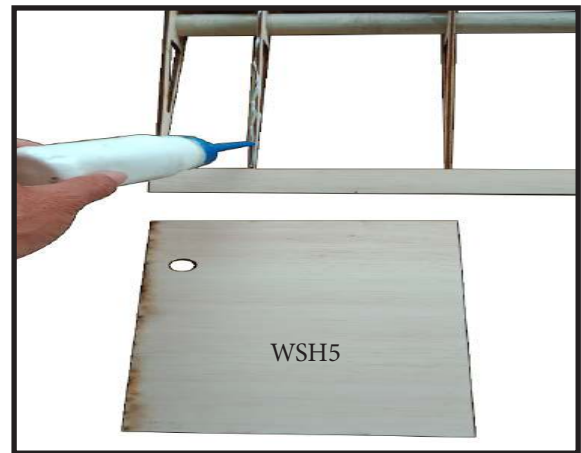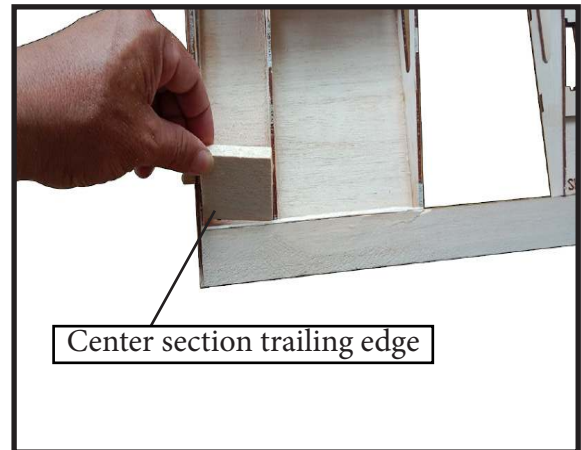
- Use white glue at airfoil edge (W1 ~ W3) to apply the sheet WSH5 (bottom wing sheet) as shown. And then Insert Balsa Block - Center Section Trailing Edge- to Trailing edge for the mount of bolt.

29.

WSH6   WSH7

30.

WSH5   WSH6   WSH7

31.

WSH4

- Use white glue at airfoil edge (W1 ~ W3) to apply the sheet WSH4 (top wing sheet); W4 ~ W6 to apply the sheet WSH6 (bottom wing sheet); W7 ~ W8 to apply the sheet WSH7 (top+bottom wing sheet) as shown. And then apply the sheet WSH3 (top wing sheet).

32.

Use sanding block to make everything flush with W1
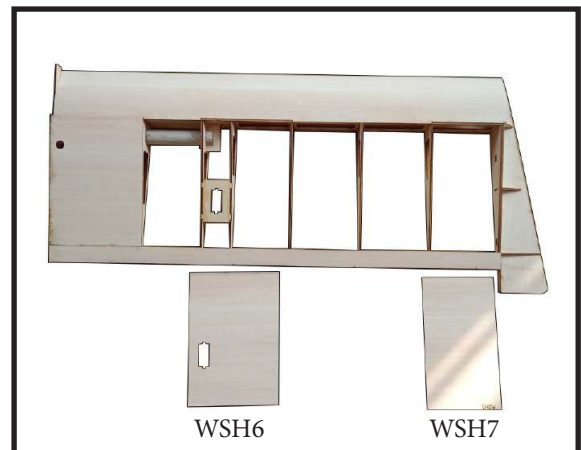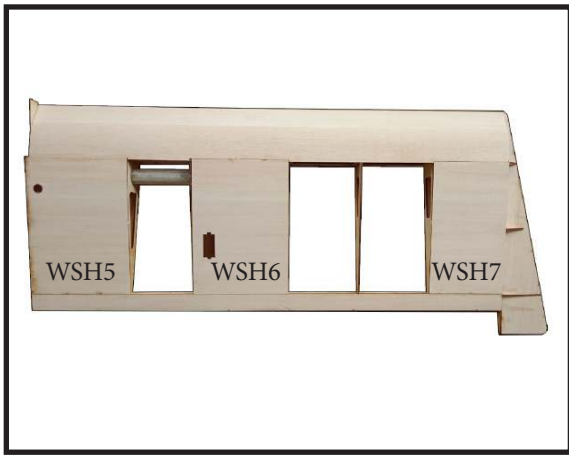
- Carefully saw off any overhang material, then block sand the root ends of the spars, leading edge, and trailing edge flush with the pre-angled wing rib. Use a large sanding block and sand slowly to keep the end of the wing panel straight and true.

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

33.

34.

- Locate and use white glue to apply wing root W1 as shown.

35.

- Finish for the right wing and left wing. Finish for the right wing and left wing.

- Test fit alloy wing tube. Insert one half in one wing panel.

NOTE: DO NOT GLUE AT THIS STAGE.

36.

Test fit alloy wing tube. Insert one half in one wing panel

37.
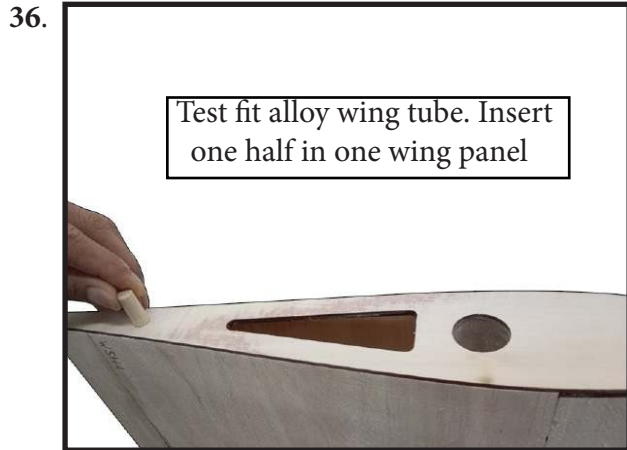
- Glue dowel in place with white glue and wait for it to dry .

38.

- Slide the other wing panel onto the tube and push the two halves together.

NOTE: DO NOT GLUE AT THIS STAGE

39.

40.

The aileron special balsa part (AIL)
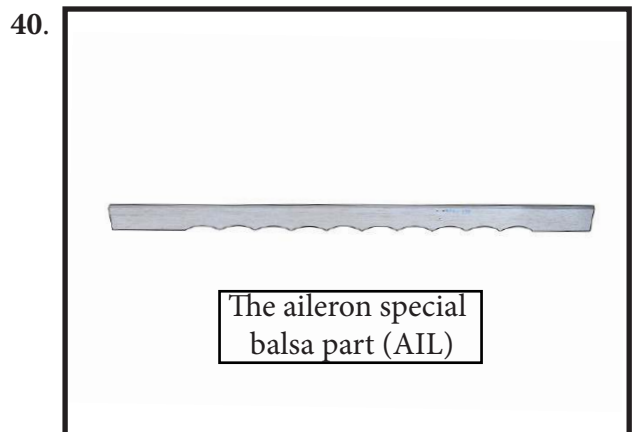
- Making the slots for the hinges on the trailing edge of wing by sawing machine or handmade. Locate the aileron special balsa part (AIL), and check that all the slots have been cut. Check that all the slots have also been cut in the wing panel.

41.

NOTE: DO NOT GLUE AT THIS STAGE

- 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.

- Your wing panel should now look like picture above.

42.

43.

44.
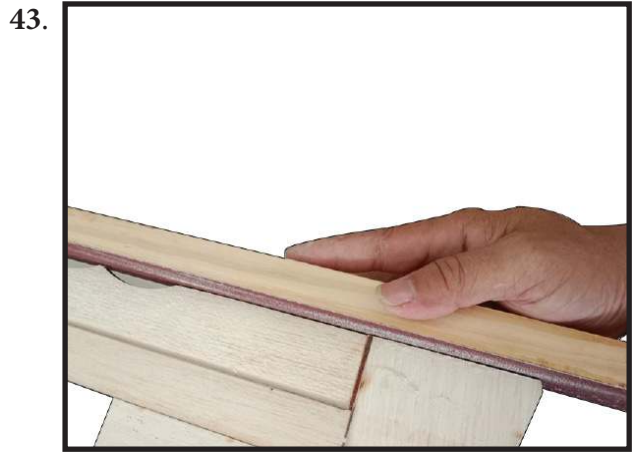
- Gently sand the entire trailing edge straight using sanding block.

FUSELAGE CONTRUCTION.

1.

Preparing fuselage component as shown

S3

S1

S2

M3
(3layers)

M5
(3layers)

M4
(3layers)

F2

F1
(3layers)

Motor (MO)
3layers
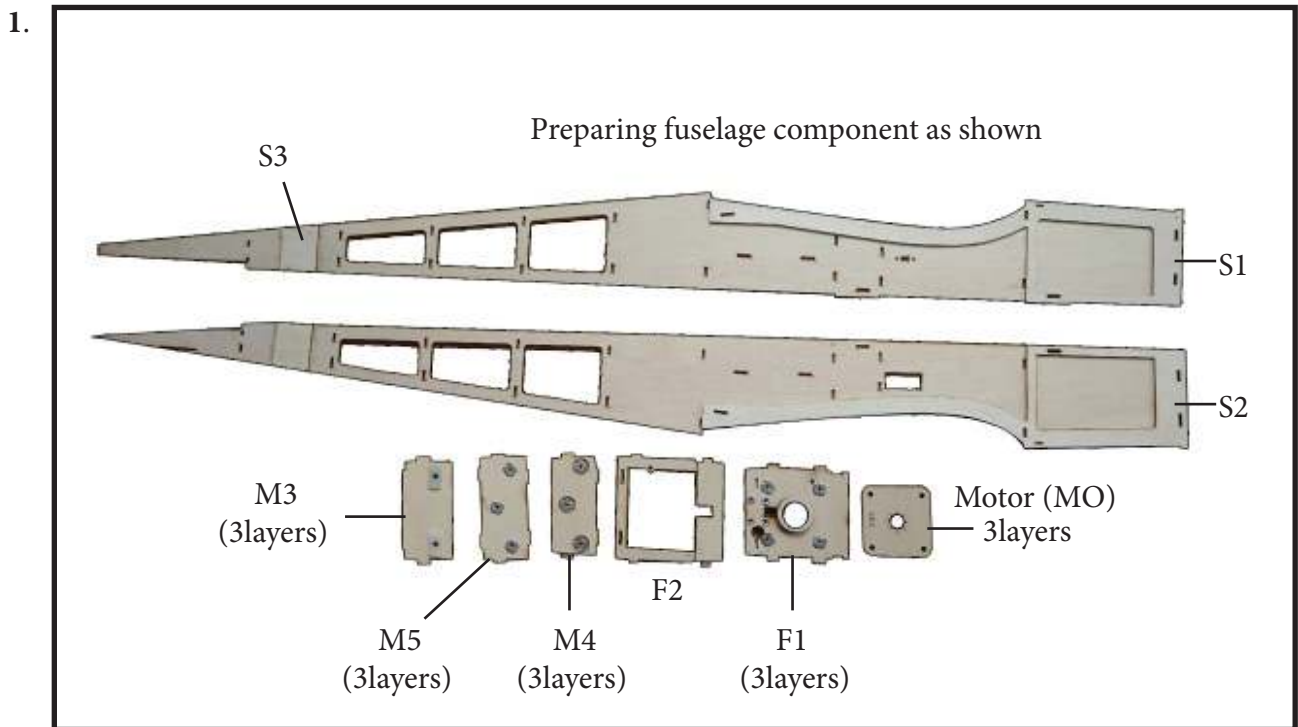
- Locate and assemble fuselage front S1 and fuselage rear S1B, join them by S3. Repeat for the other fuselage side using S2 front and S2B rear. Lay flat on plastic surface an apply CA glue. Wipe off any excess glue before it dries so that there won't be a glue lump at the joint.

-Locate and assemble the fuselage side doublers S1A and from nose to wing seat, use white glue to secure. Repeat S2A for the other fuselage side. Allow glue to set before proceeding. Make sure you have assembled them as shown so that you end up with both a left and right fuselage side.

- Locate and assemble 3 layer for motor mount (MO); 3 layer for engine mount (F1) and 2 layer for ring (ER)

- Locate and assemble 2 layer for F2 and F2A

- Locate and assemble 4 layer for landing gear   M4A(1pcs), M4B(2pcs) , M4C(1pcs); 3 layer for landing gear M5A(1pcs), M5B(2pcs) ; 3 layer for wing mount M3A(1pcs), M3B(2pcs).

3.

4.

- Locate and assemble F2 doublers, mount M1 and landing gear mount M4 (4 layers) to fuselage side as shown.

2.

- Locate and assemble F2(F2A) doublers and battery/ fuel tank mount M1 as picture

5.

6.

7.
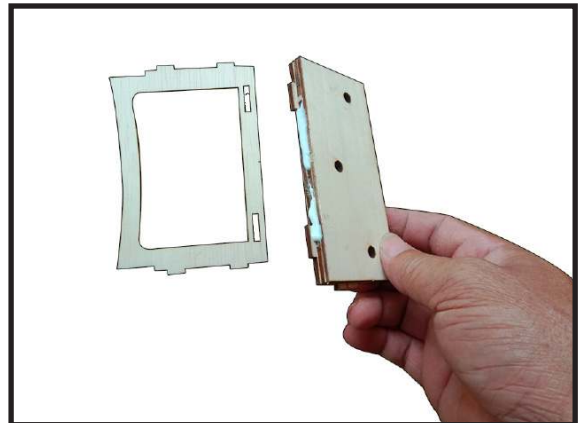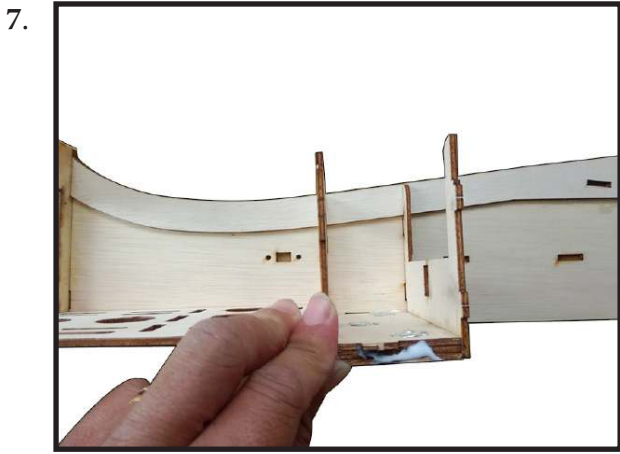
- Locate and assemble landing gear mount M5 (3 layers) to fuselage side as shown.

8.

9.
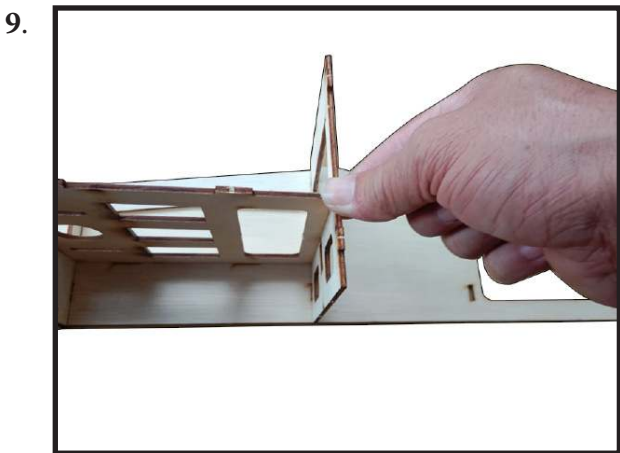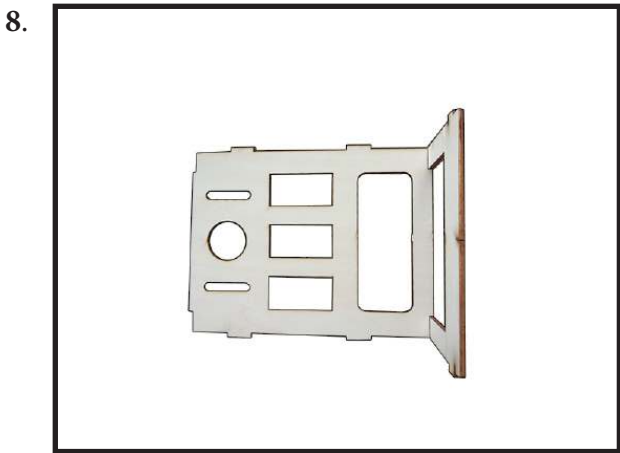
- Locate and assemble servo mount M2 and F5 to fuselage side as shown.
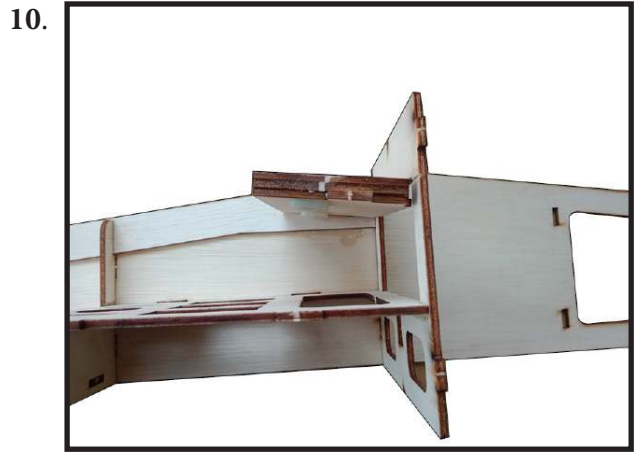
10.

- Locate and assemble wing mount MA3 (3 layers) to fuselage side as shown.

11.

- Locate and assemble wing mount MA3 (3 layers) to fuselage side as shown.

12.
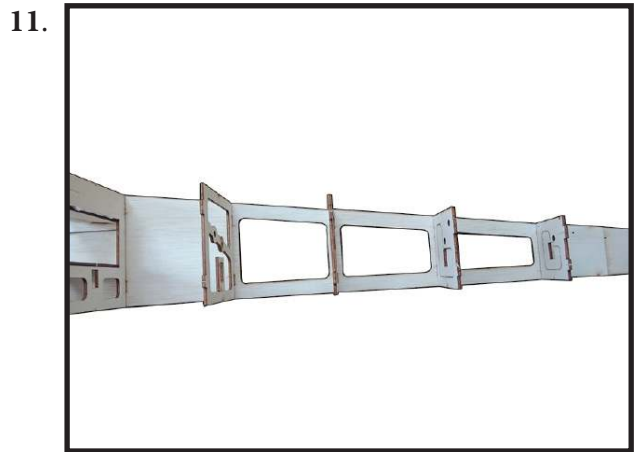
- Locate and assemble F10 to M7, M8 (2pcs) as shown.

13.
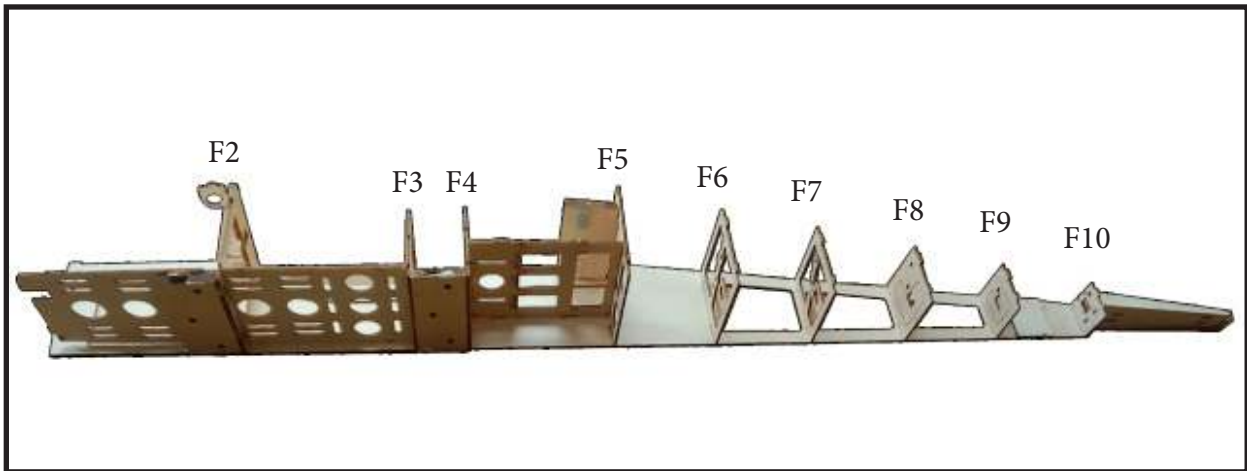
- Use C/A glue to secure formers F6~F9.
- Use 30min epoxy to glue F2(2pcs), F3, F4, F5, M1, M2, M3(3pcs), M4(4pcs), M5(3pcs), F10, M7 in place.
- Work quickly apply white glue to the tops of F6~F9 and 30min epoxy to F2(2pcs), F3, F4, F5, M1, M2, M3(3pcs), M4(4pcs), M5(3pcs), F10, M7.

14.
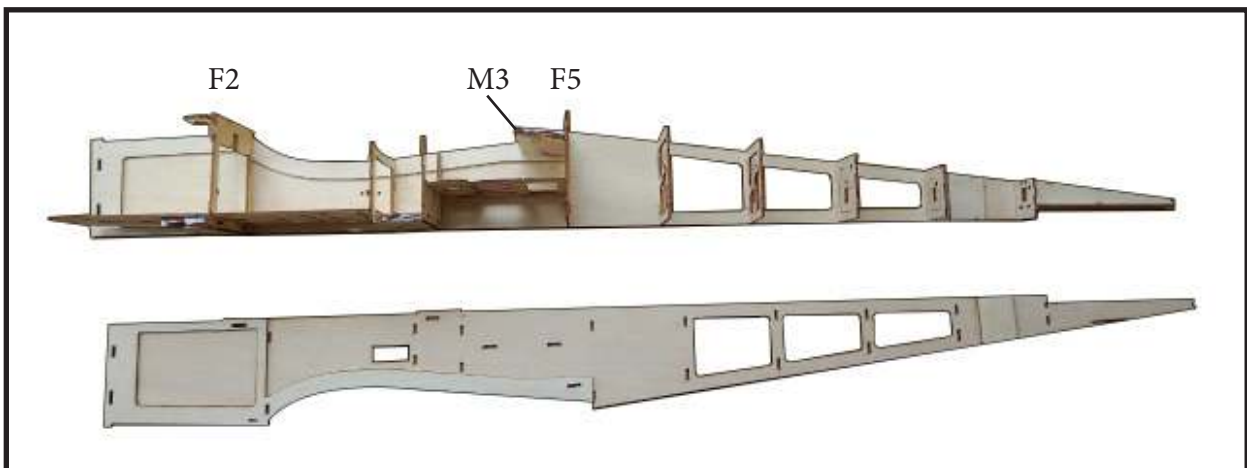
15.

- 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 centre line. (Use the plan, make sure F2, F5 and wing mount M3 are square to the fuselage sides).

- Before glue dries, check the fuselage is square down the center line. Then leave to set fully.

16.

17.
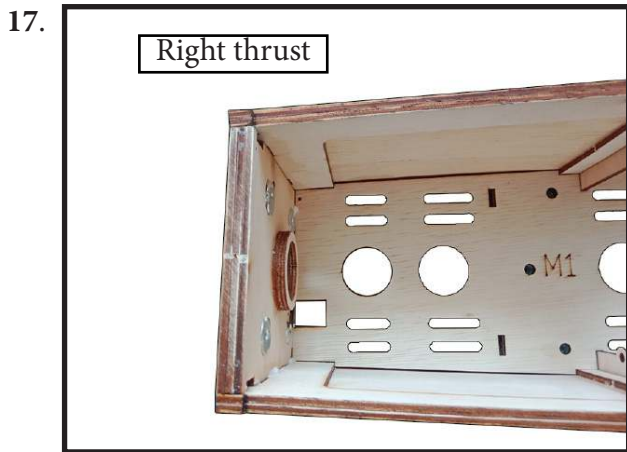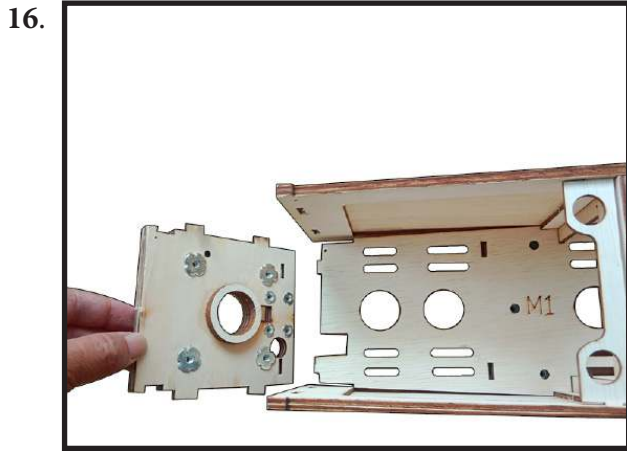
Right thrust

NOTE: F1 is deliberately offset to the right to provide "right thrust" so the plane will fly straight.

18.

Balsa triangle stock

19.

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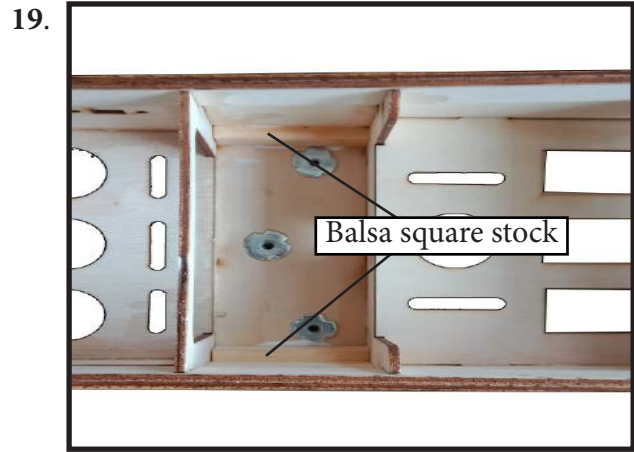
- Two pieces of Balsa Triangle stock are provided to reinforce the firewall-to-fuselage joint. Cut notches in the Balsa Triangles where necessary to clear the blind nuts and pushrod holes, and then glue the Balsa Triangles in place on back of fuselage former using 30min epoxy.

- Two pieces of Balsa Square stock are provided to reinforce the Landing gear mount-to-fuselage joint. Glued the Balsa Square at two insides of fuselage, between F3 and F4 as shown, using 30min epoxy.

20.

Nylon pushrod tubing

21.

Secure pushrod tubing

22.
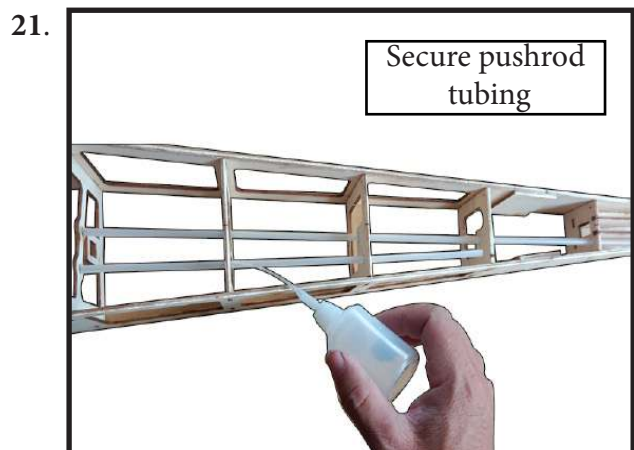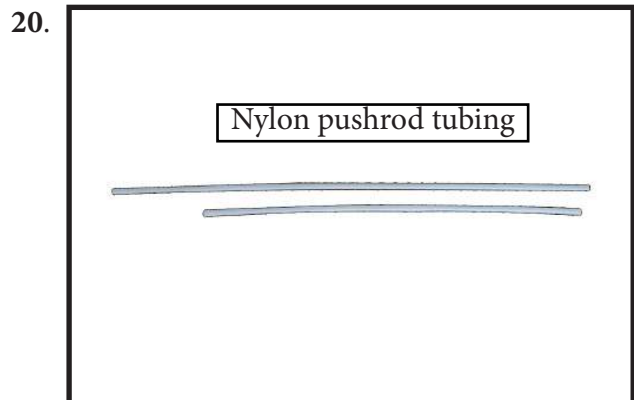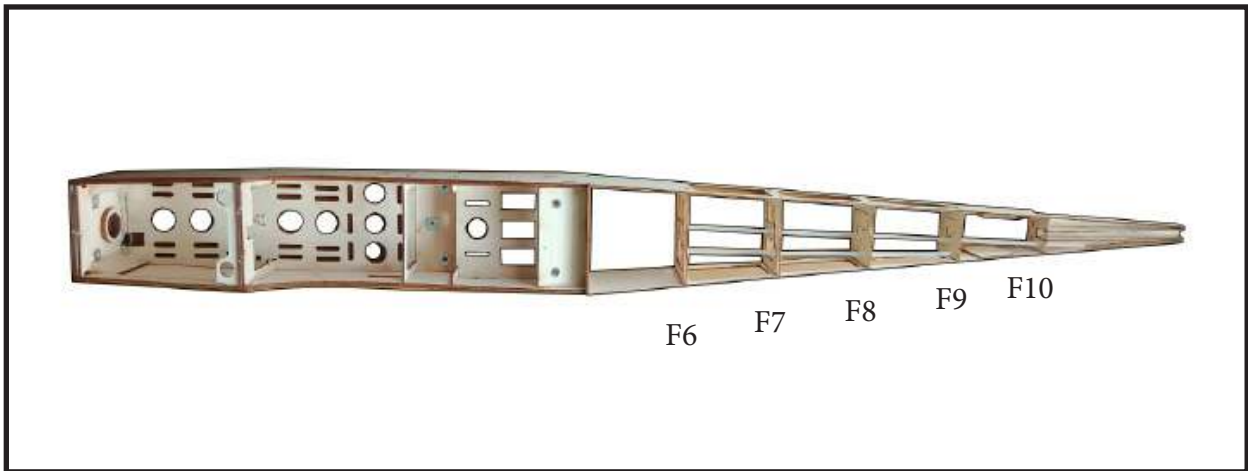
F6   F7   F8   F9   F10

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

- Work quickly apply C/A glue to the elevator and rudder pushrods at F6, F7, F8, F9, F10 as shown.

23.

Sheet top of fuselage

24.

- Carefully block sand at the top area of fuselage as shown.

25.

F5
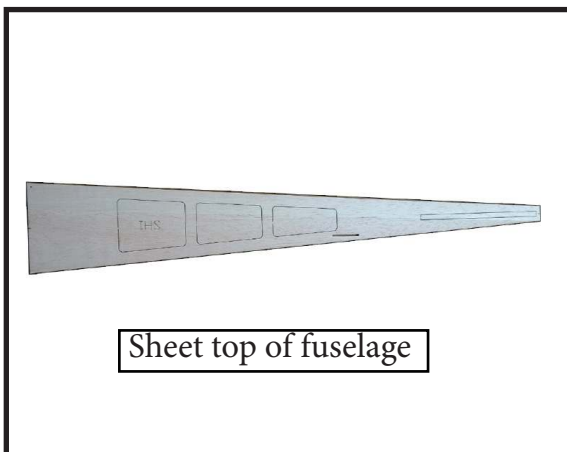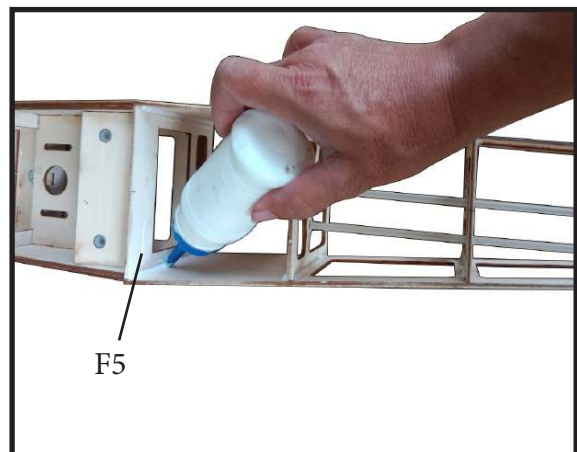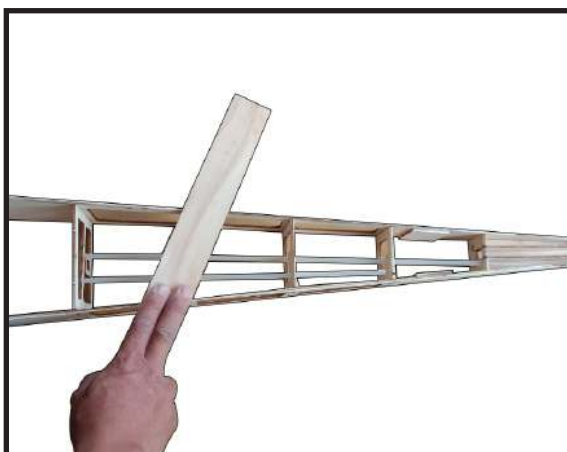
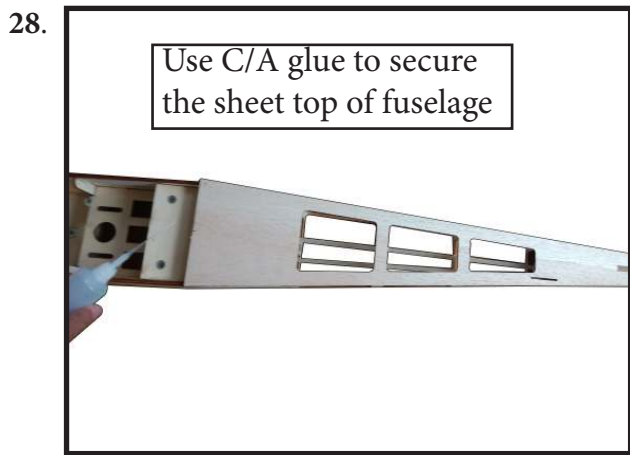- Work quickly apply white glue to the F5 and two inside fuselage as shown.

26.

F6   F7   F8

27.
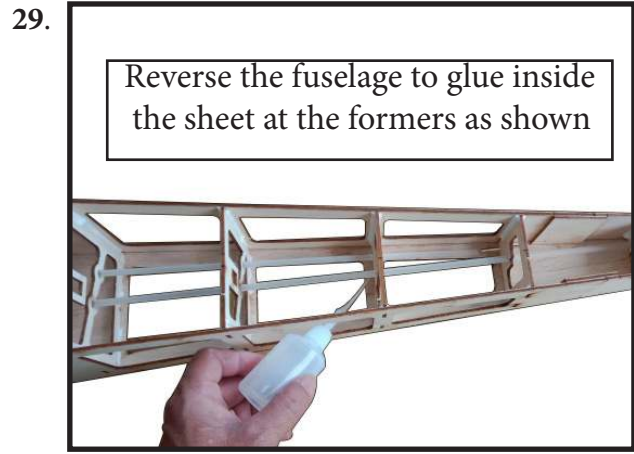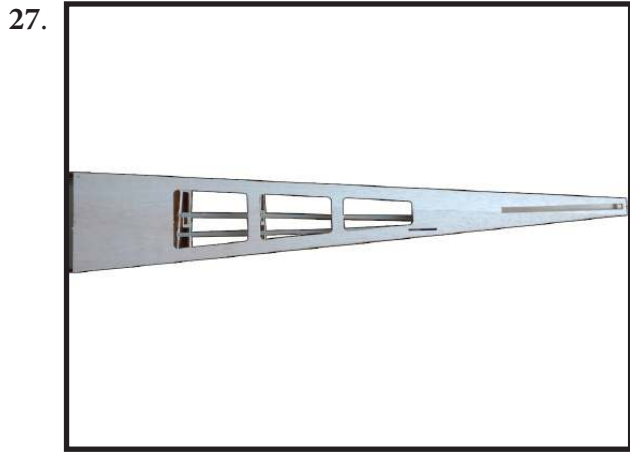
- Work quickly apply white glue to the top of F6, F7, F8, F9, F10 and then in place the sheet top of fuselage as shown.

28.

Use C/A glue to secure the sheet top of fuselage

29.

Reverse the fuselage to glue inside the sheet at the formers as shown

30.

Sheet bottom of fuselage
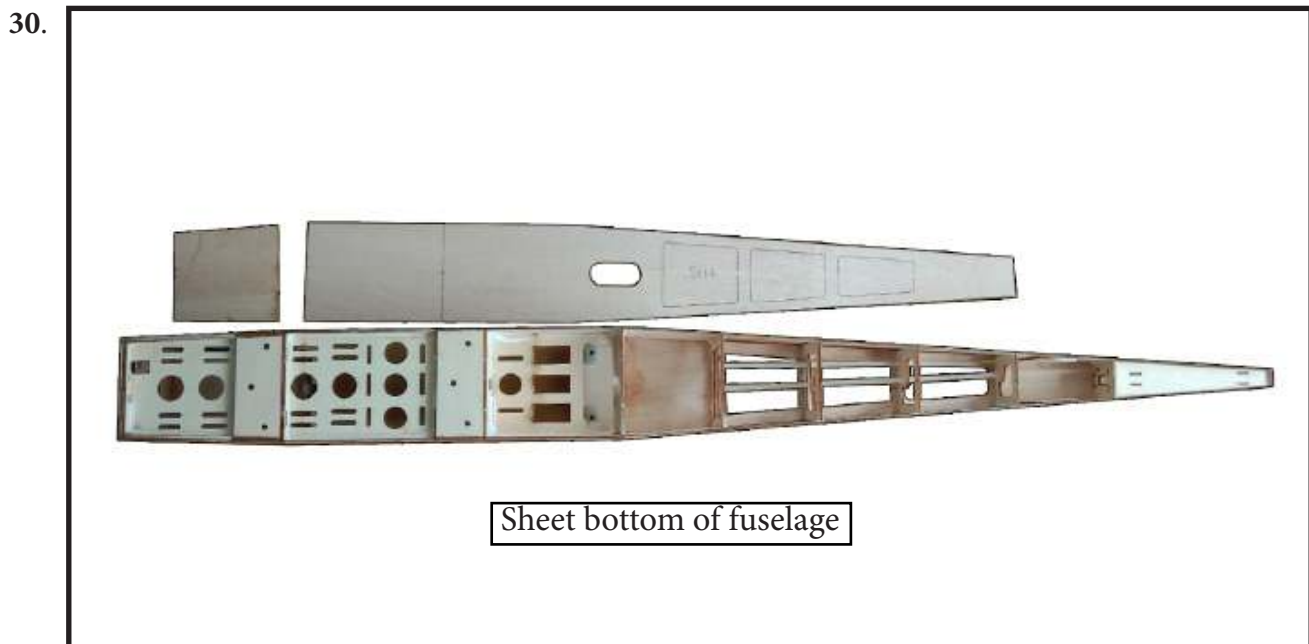
31.
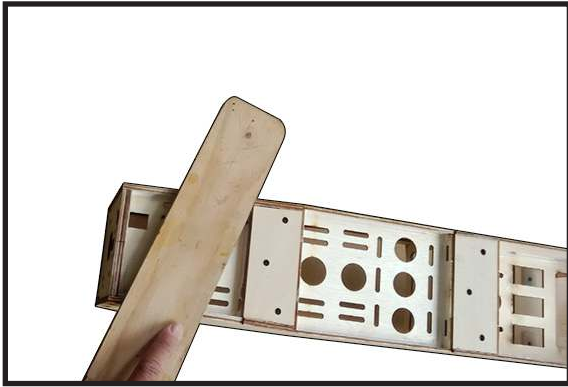
- Carefully block sand at the bottom area of fuselage as shown

32.
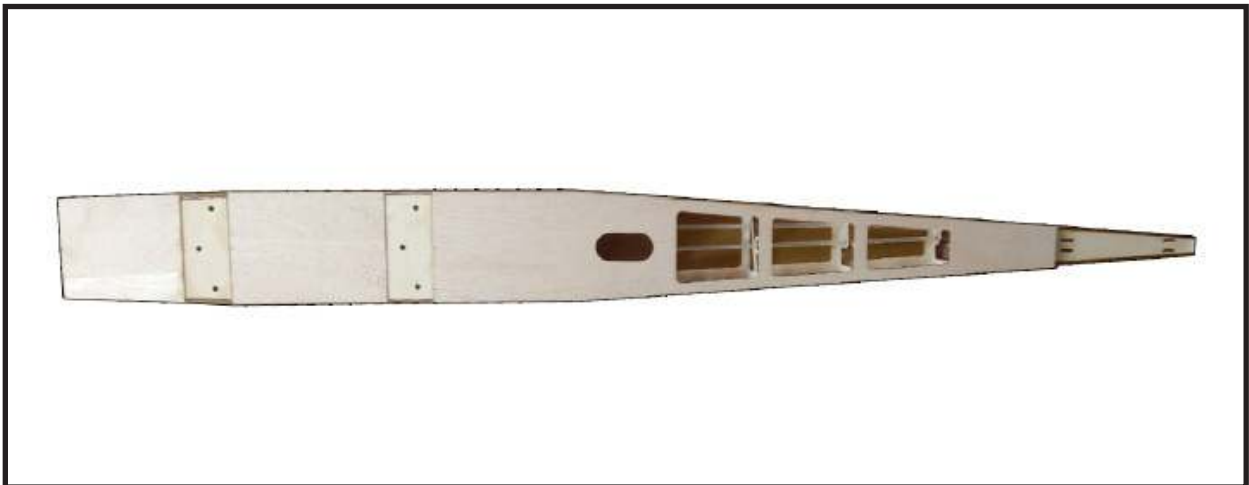
- Work quickly apply white glue and use C/A glue to secure the sheet bottom of fuselage as done for sheeting at top of fuselage. Finish as shown

* **Assembly Magnet for the top hatch to fuselage.**

NOTE: Please make as step by step as construction so that locating for the hatch correctly.

33.

Mount Magnet

H4

H5

H4

H5

34.

Hatch screw retainer

H3
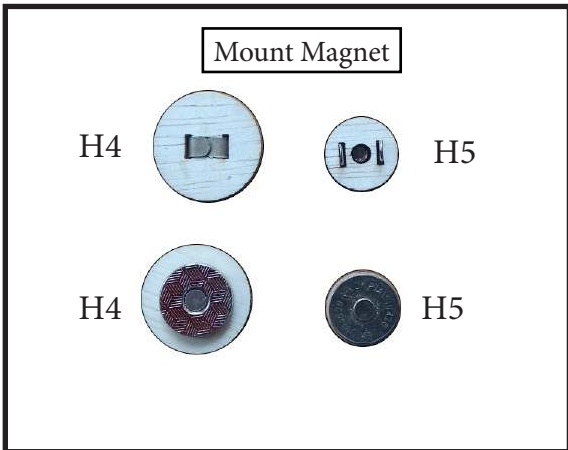
- Magnet H4(2pcs) , H5 (2pcs) for top hatch.

35.

- Use C/A glue to assembly the magnet to H3 as shown.

36.

37.

- 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 !

- Place in the magnet to a set per side as shown.

38.

39.
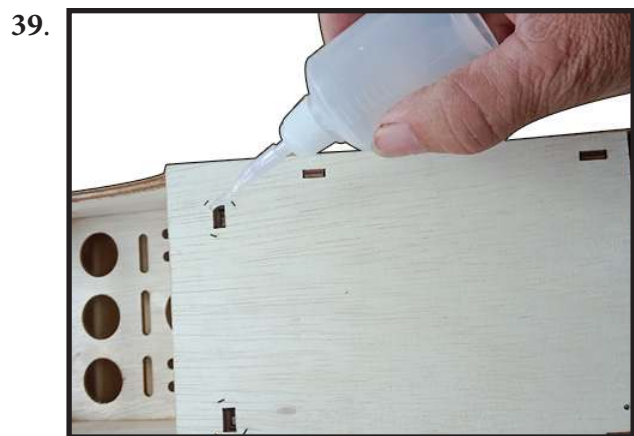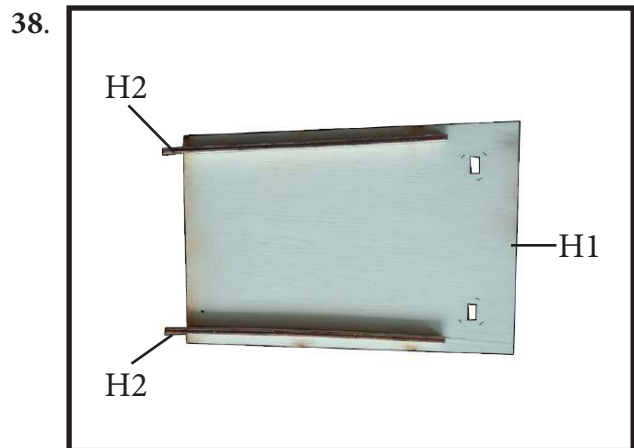
- Locate the die-cut plywood hatch. Inspect both side and choose the best looking side for the top. Also locate the side braces/hatch retainers H2.

- Place in the top hatch to correctly locate of magnet per side and then use C/A glue to secure as shown.

40.

Secure magnet mount

41.
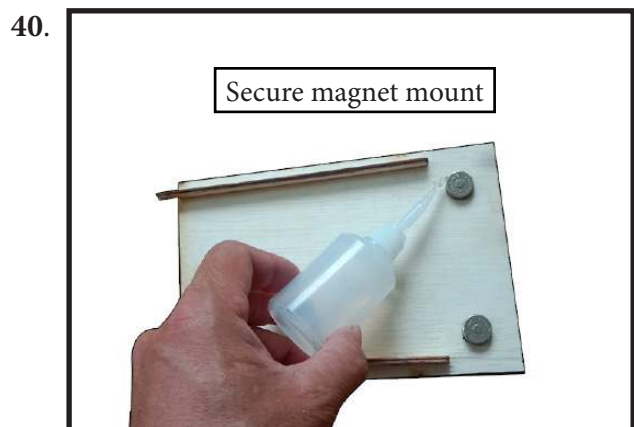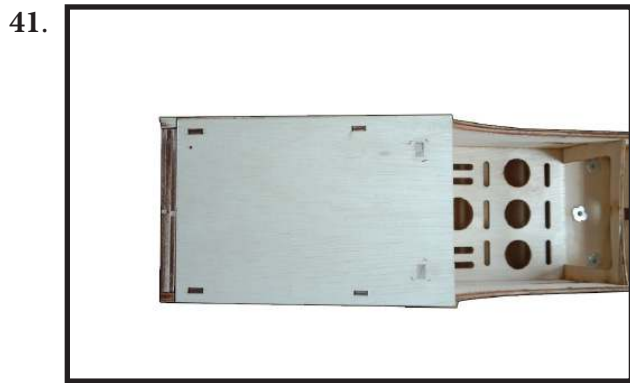
- Use C/A glue to secure the magnet.

- Finish as shown.

42.

43.

44.

45.
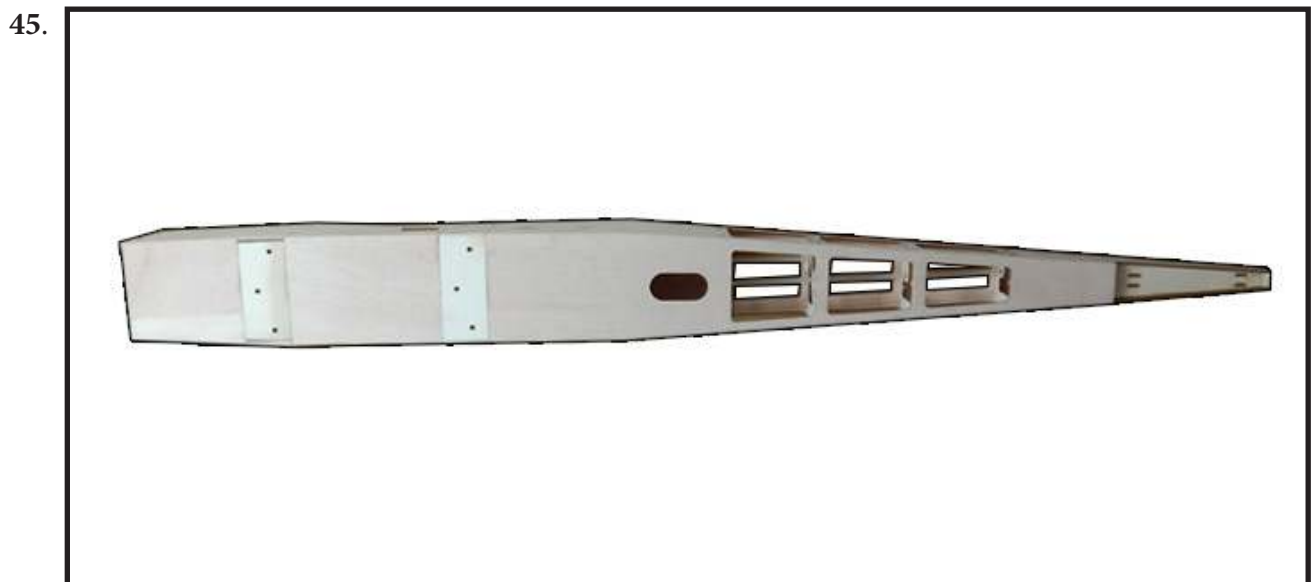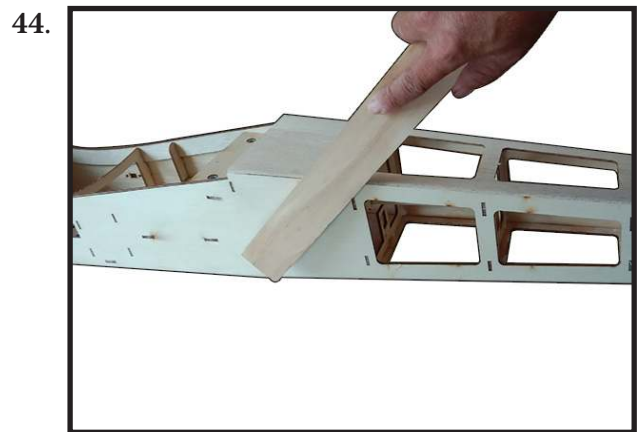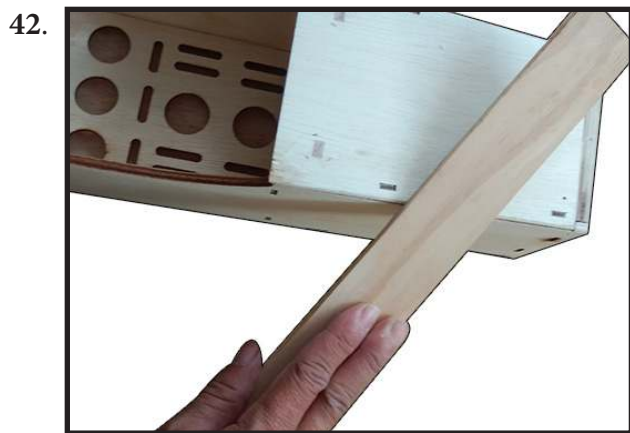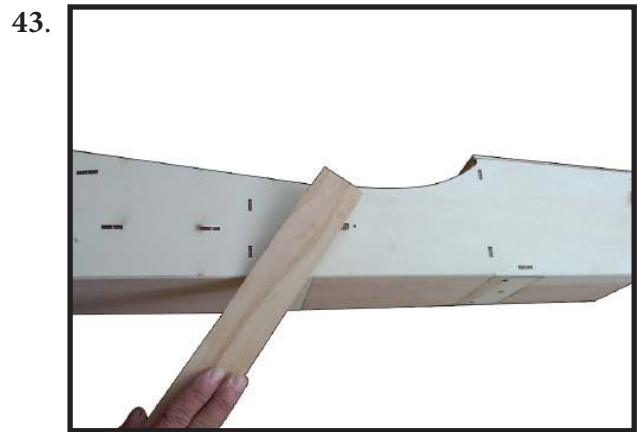
- Carefully block sand the all fuselage.

46.

M6

47.

M6

- Place in stabilizer mount (M6) to fuselage and use C/A glue to secure.

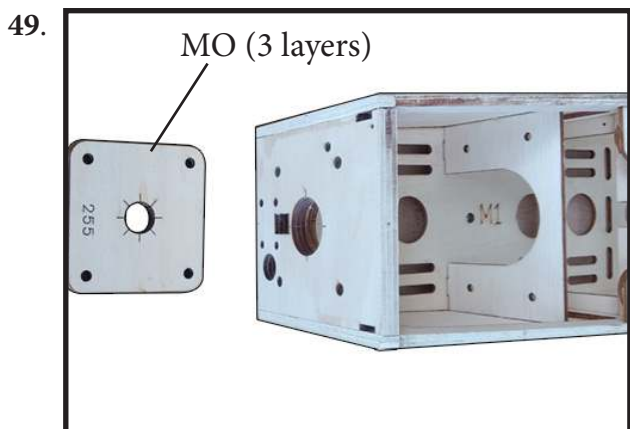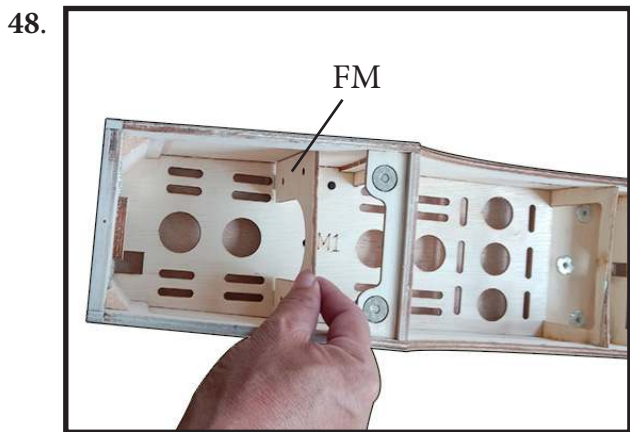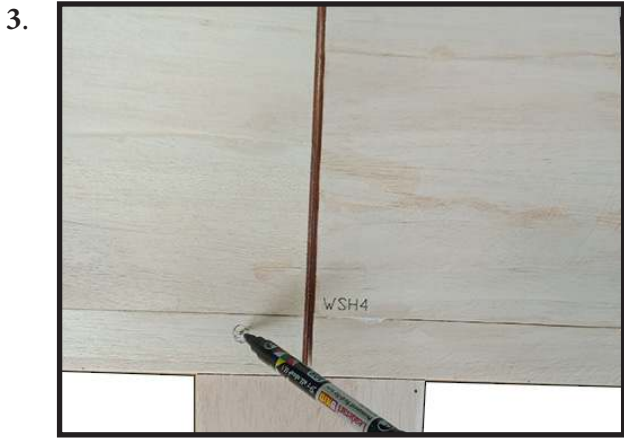**48**.

FM

49.

MO (3 layers)

255

- Prepare for assembly the power engine.
• Place in the fuel tank mount (FM) and use C/A glue to secure as shown.
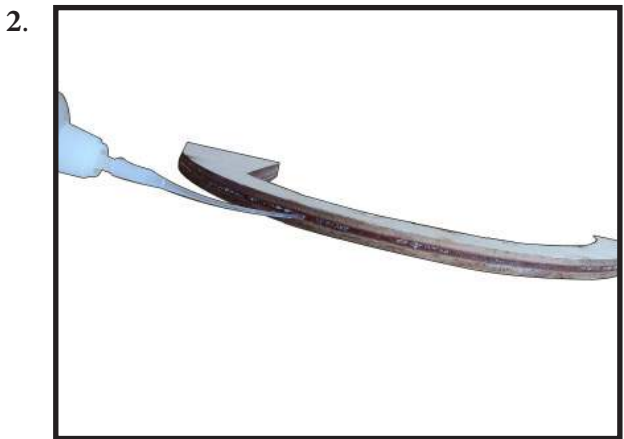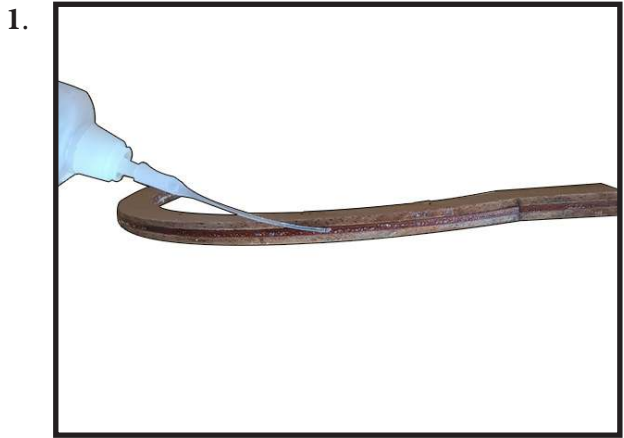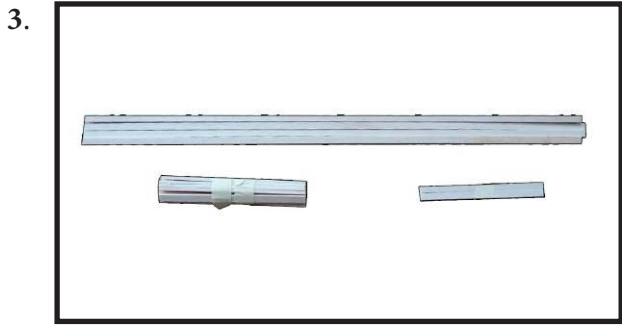• Apply for motor mount to 3 layers.

FIT WINGS TO FUSELAGE.

1.

2.

3.

- Locate the bolt to assemble the wing to the fuselage.

RUDDER SET CONTRUCTION.

1.

2.

- Locate and use C/A glue to assemble the rudder and fin by balsa die-cut (RD, FIN).

3.

4.
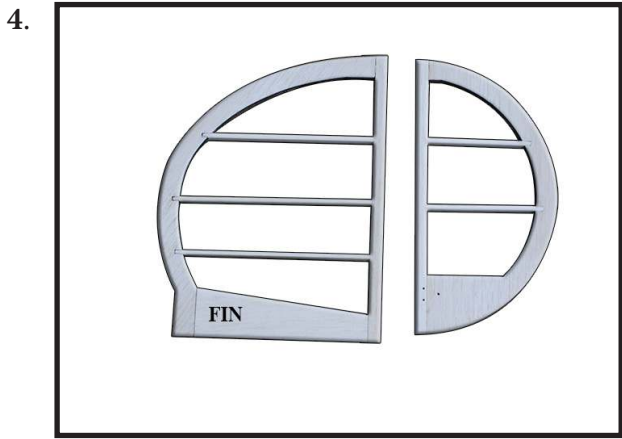
- Locate use CA glue to assemble the balsa stick, special balsa part (FIN), as the paper plan kit for the rudder and fin.

5.

6.

- Make angle 45 degree for each side of edge (about 12 – 15mm for Rudder control throws).

7.

- Using sanding block as a guide, carve and sand the front of the leading edge to a round shape.
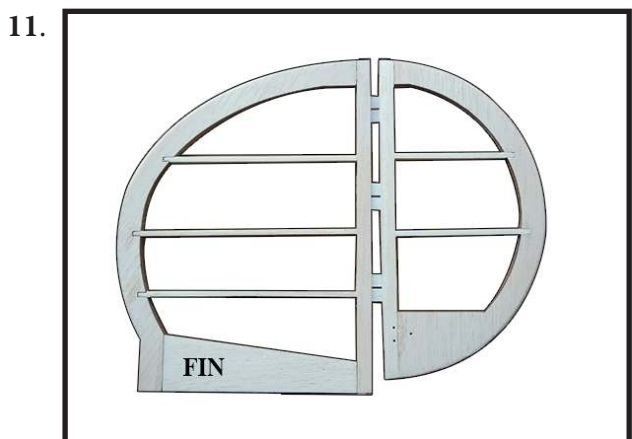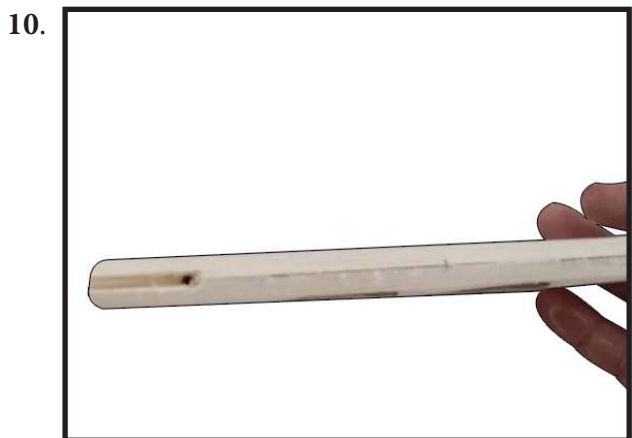
NOTE : Leave the trailing edge, top end, and bottom of the Fin flat and square.

- Lay the fin flat on the building board and lightly block sand the entire structure just enough to smooth out all the glue joints. Do this to both sides of the fin.

- Also using the sanding block, round the leading edges of the Fin and the Rudder.
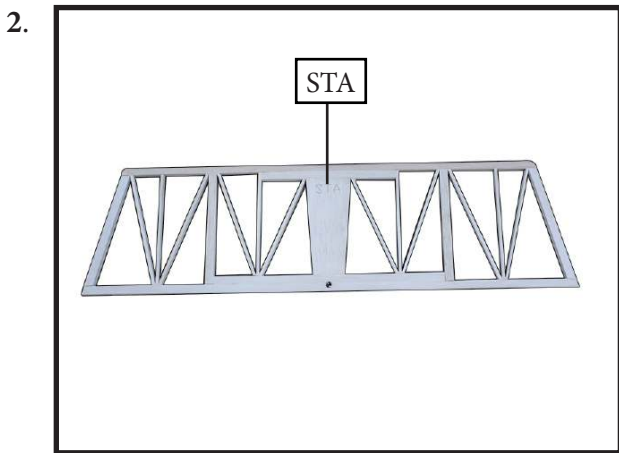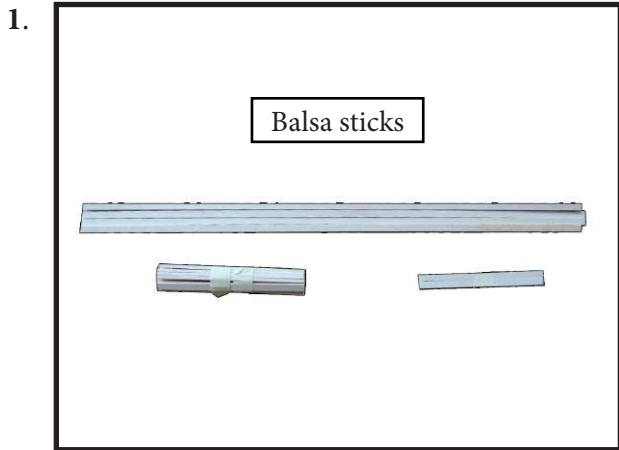
8.

9.

- Drill the holes dia 2mm for Rudder control horn and hole dia 3mm steel tail wheel gear.
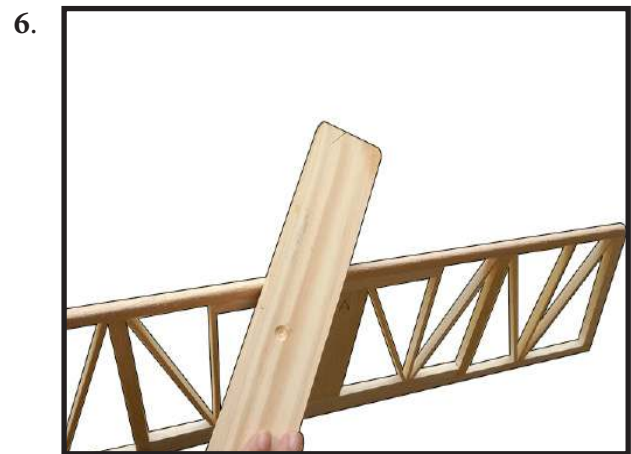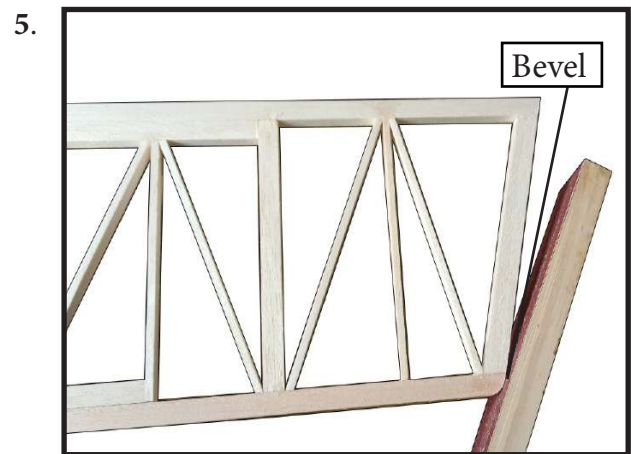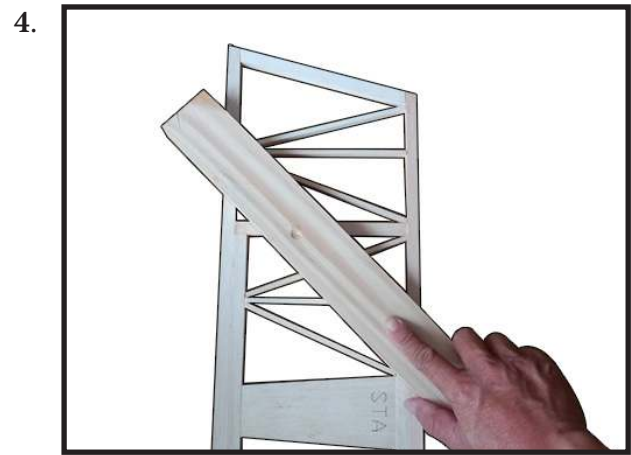
10.

11.

- Cut slots for the hinges in the fin and rudder Fin and Rudder aside for covering.

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

STABILIZER SET CONTRUCTION.

1.

Balsa sticks

2.

STA

- Locate and use balsa sticks and special balsa part (STA) to assembly the stabilizer (as in the paper plan) by CA glue.

3.

4.

5.

Bevel

6.

- Lay the stabilizer flat on the building board and lightly block sand the entire structure just enough to smooth out all the glue joints. Do this to both sides of the stabilizer. Also using the sanding block, round the leading edges of the stabilizer.

7.

8.
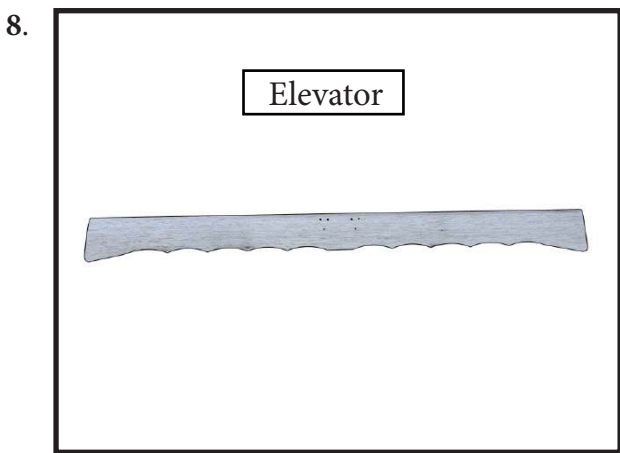
Elevator

- Drill the hole dia 6mm for steel tail wheel gear through up-Make angle 45 degree for each side of edge (about 12 – 15mm for Elevator control throws).

- Drill the holes to Elevator, special balsa part (ELE), for Elevator control horn.

9.

10.
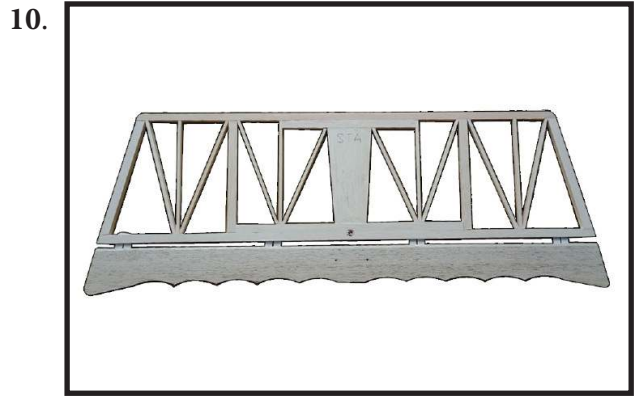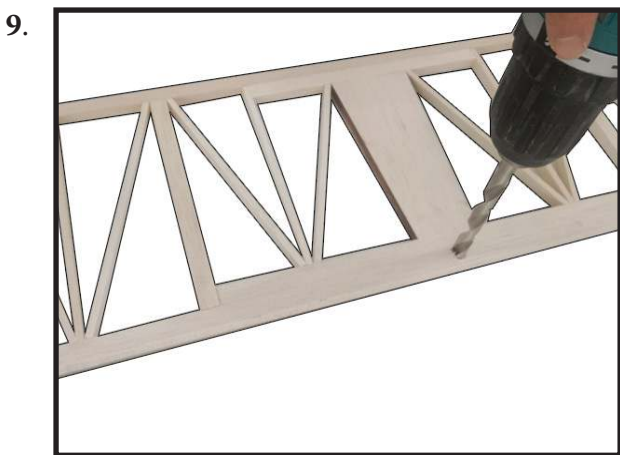
- Use a hobby knife to cut slots in the trailing edge of the horizontal stabilizer and leading edge of the elevator.

- Make sure the slots are cut on the center lines of the trailing edge of the horizontal stabilizer 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.
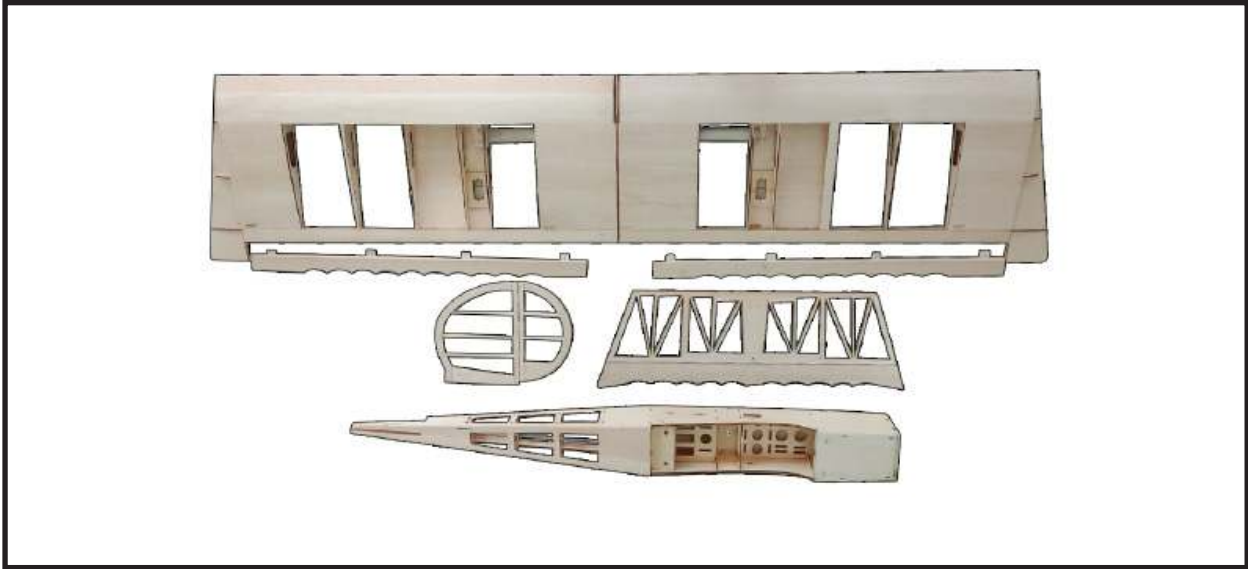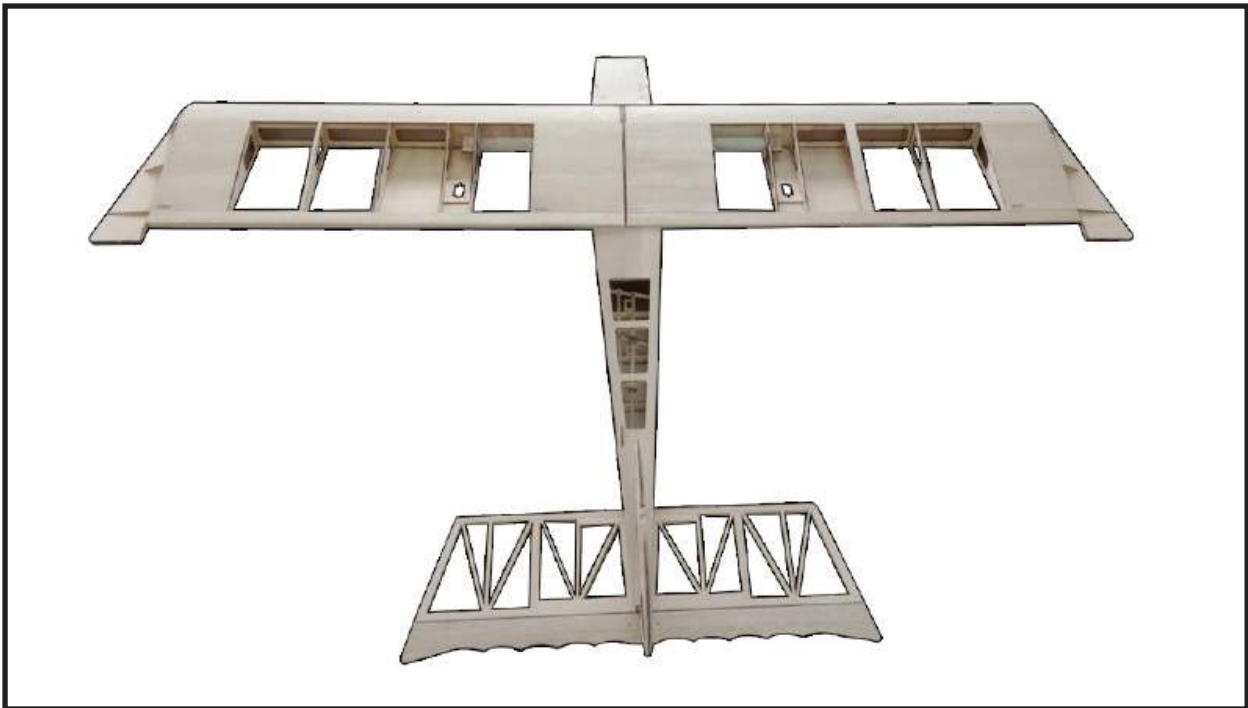
NOTE: DO NOT GLUE THE HINGES IN AT THIS TIME!

11.
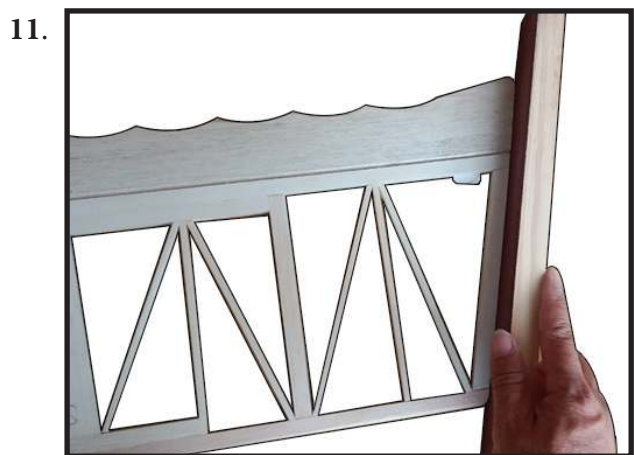
- Gently sand the entire side edge straight using sanding bock.

FIT ALL TO SETUP.

1.

2.

COVERING THE CLASSIC
UGLY STICK.

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 Master Scale Kit Edition Classic Ugly Stick 70.9" 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 Master Scale Kit Edition Classic Ugly Stick 70.9" 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.
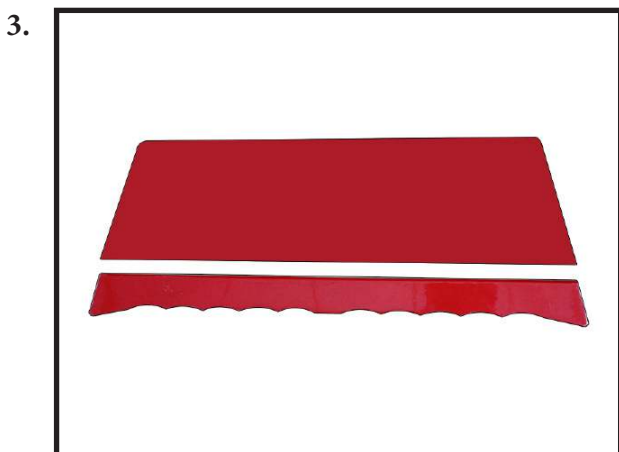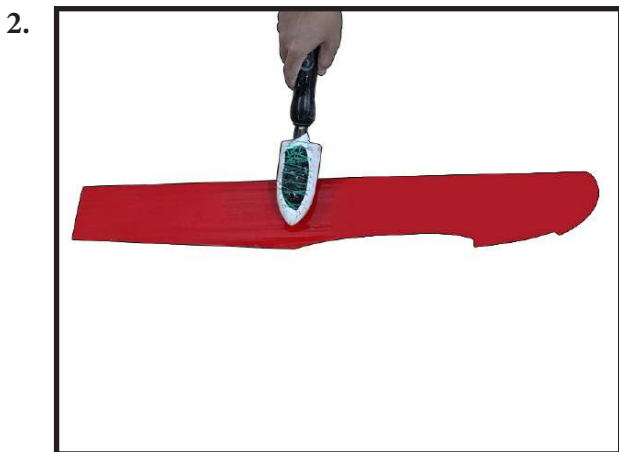
1. COVER THE VERTICAL STABILIZER.

1.

FIN

2.

Wrap up

3.

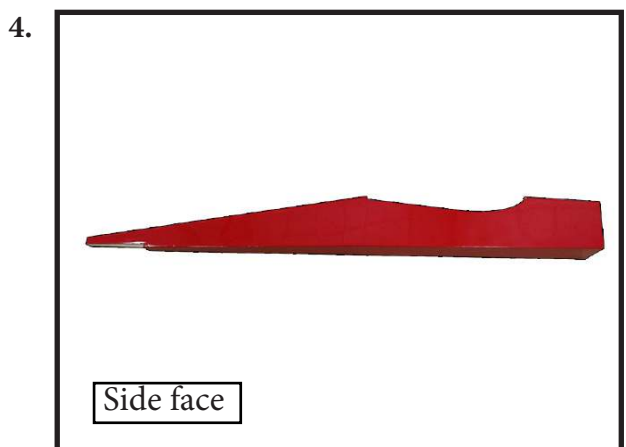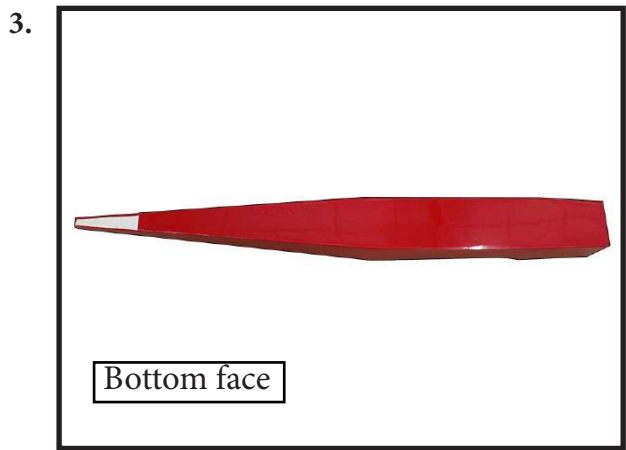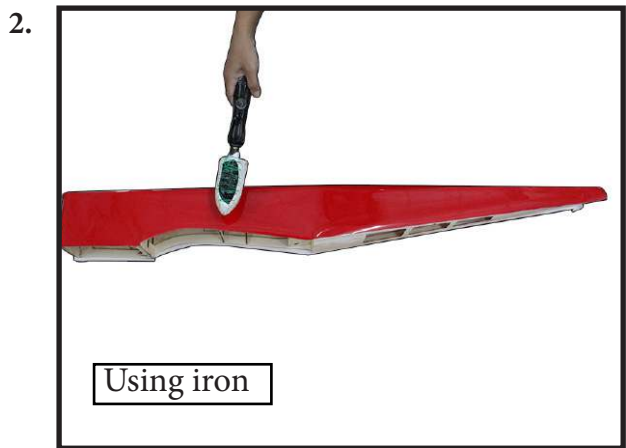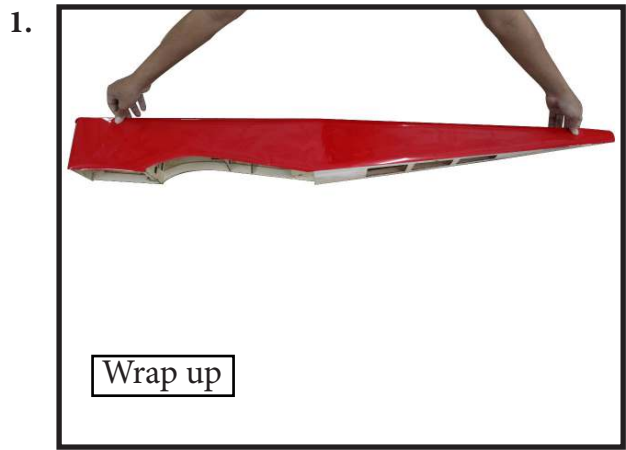
Using iron

4.

5.

6.
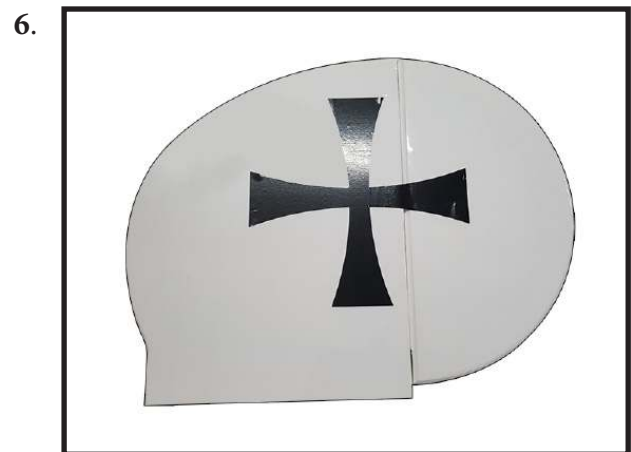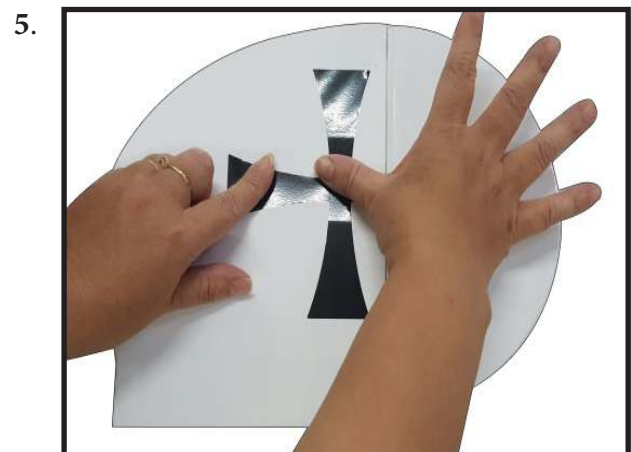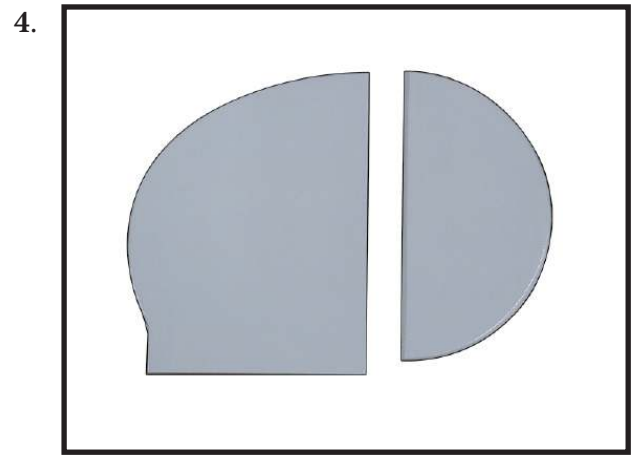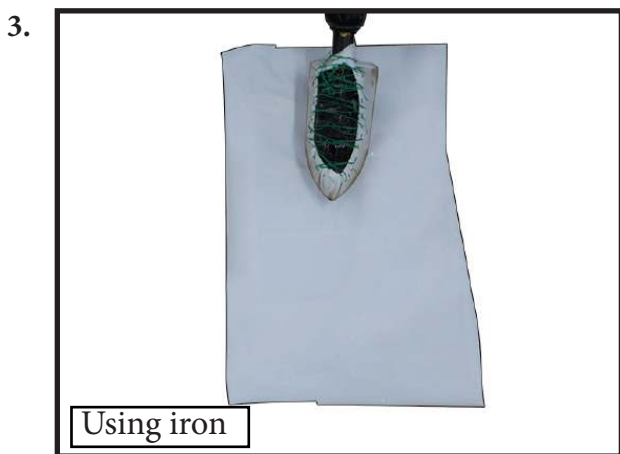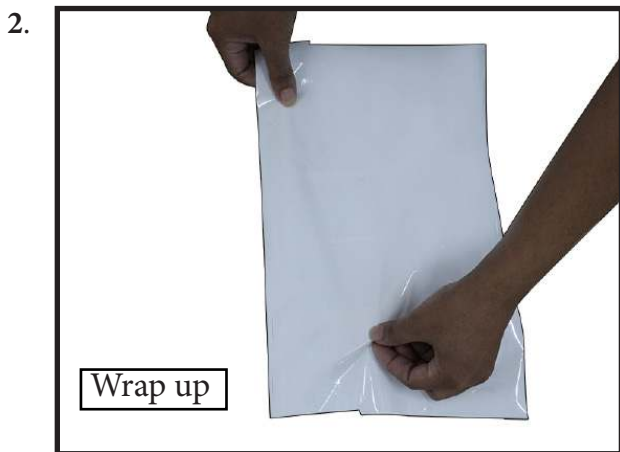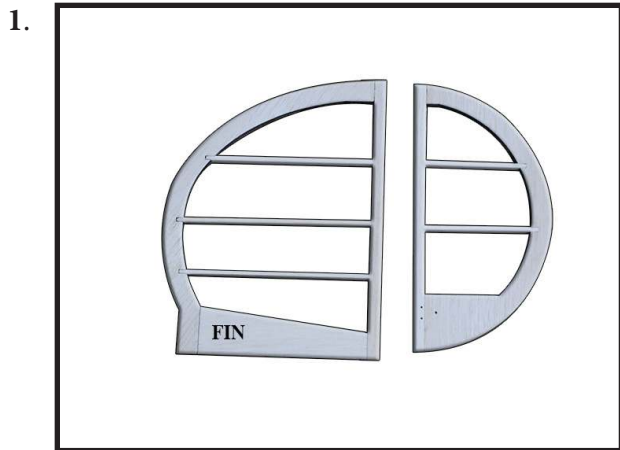
NOTE: When applying covering to an open structure, like this Fin and Rudder, you should completely adhere the covering to all the outside edges of the structure first. Then go back and shrink the middle of the covering tight.

2. COVER THE HORIZONTAL STABILIZER
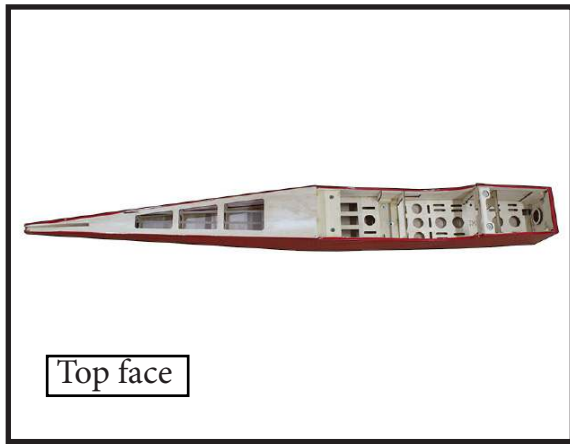
- Covering the horizontal stabilizer is virtually the same as covering the vertical stabilizer.

1.

2.

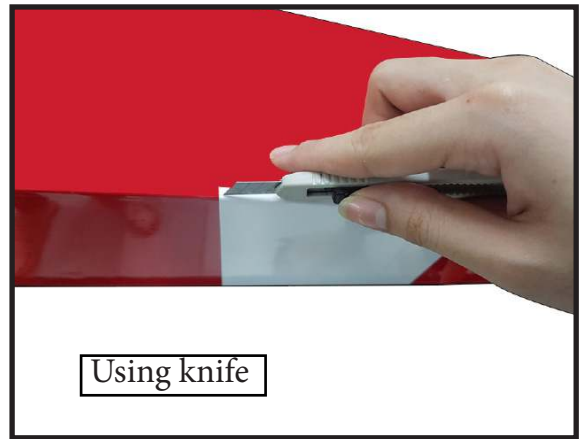
3.

3. COVER THE FUSELAGE.

1.

Wrap up

2.

Using iron

3.

Bottom face

4.

Side face

5.

Top face

9.

Using knife

6.

Top face

10.

7.

11.

8.

Using iron

12.

4. COVER THE HATCH.

1.

2.

Wrap up

3.

Using iron

4.

5. COVER THE WING.

1.

Wrap up

2.

Using iron

3.

Using iron

4.

Cover for Aileron

5.

6.

7.

8.
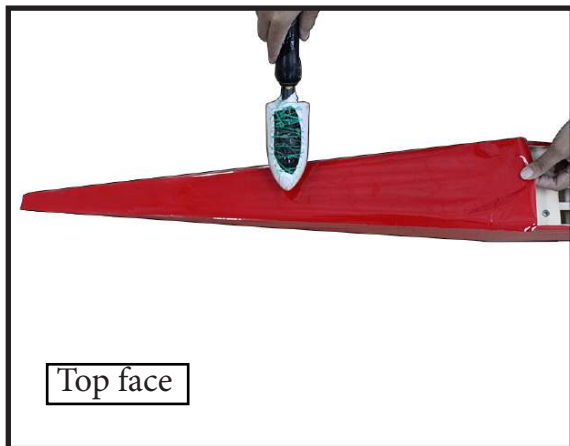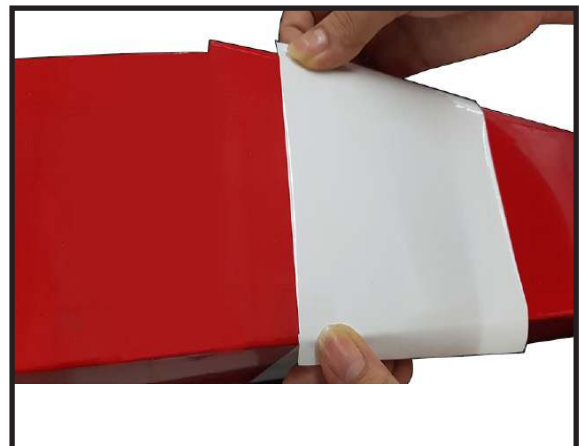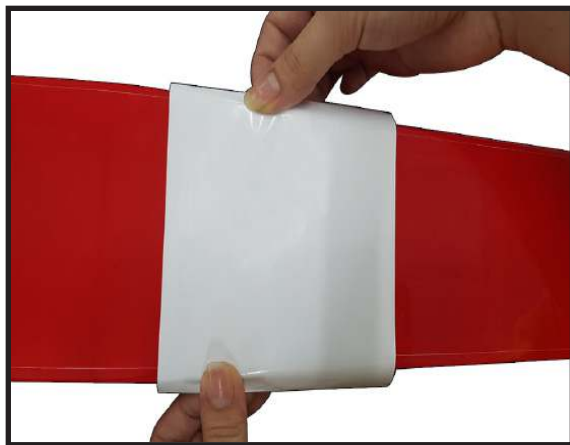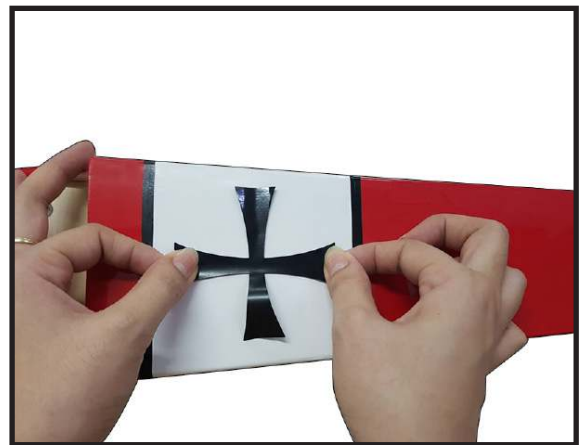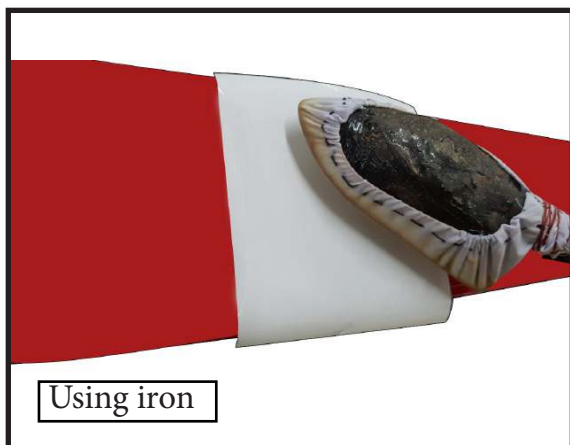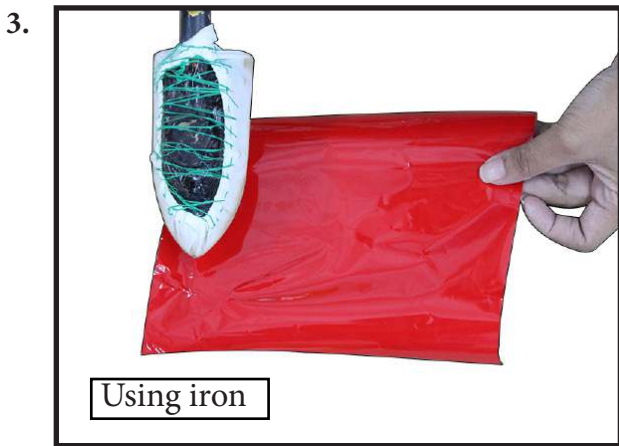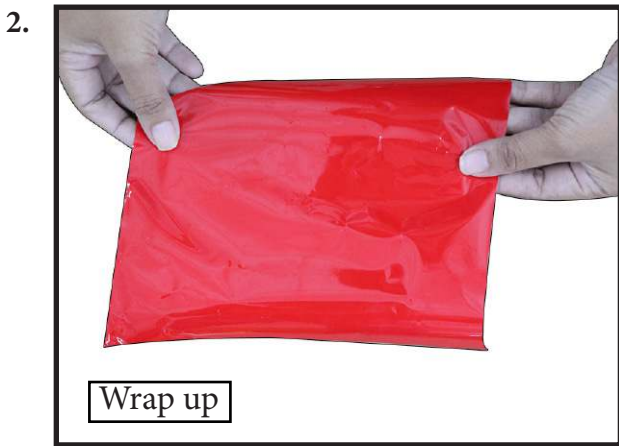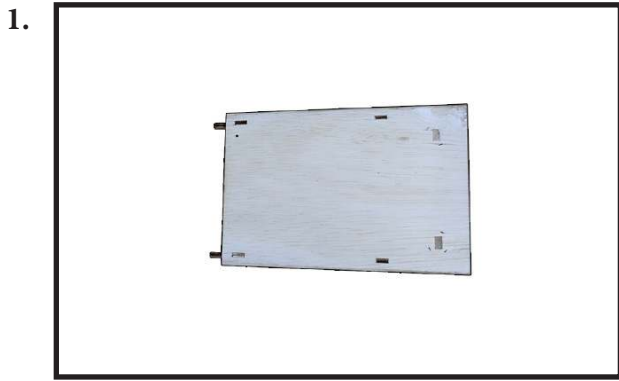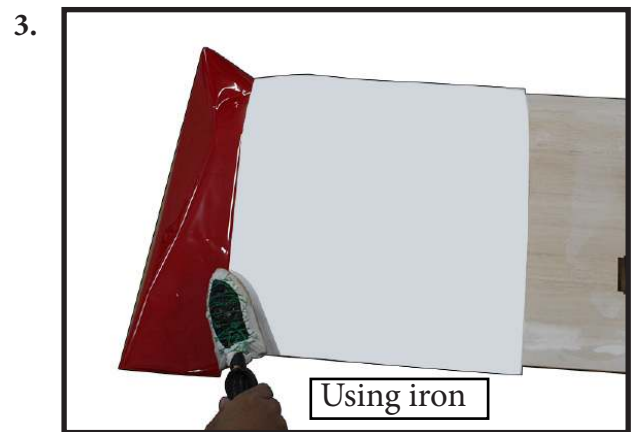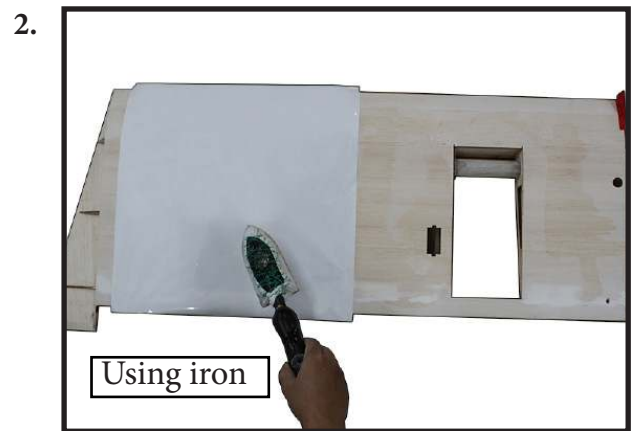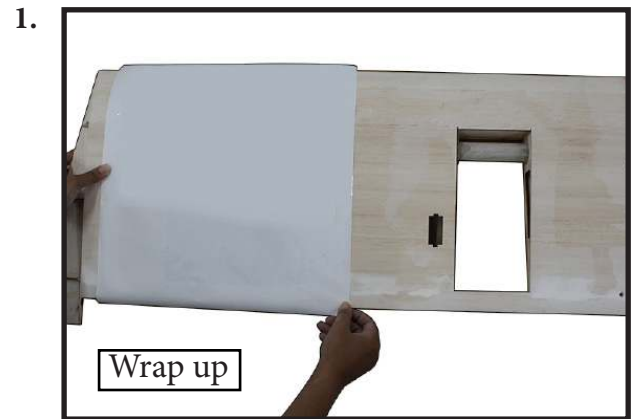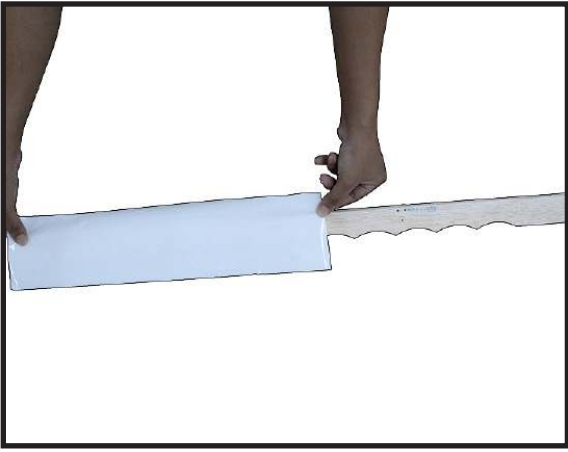
Top wing panel

9.

Bottom wing panel

10.

11.
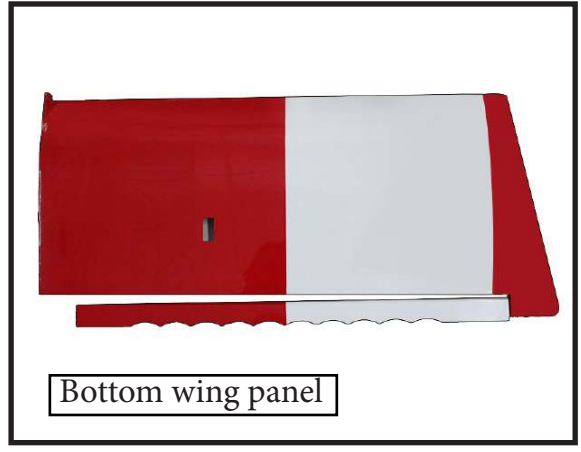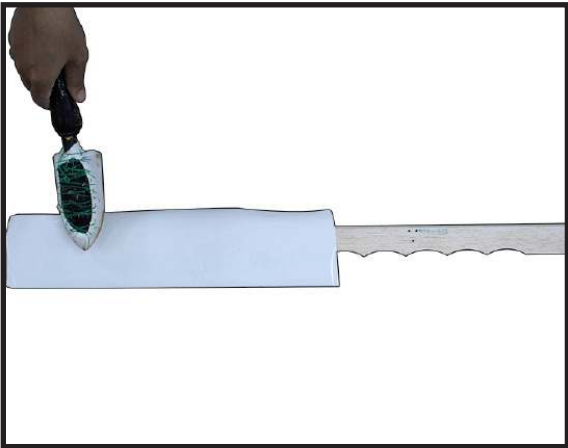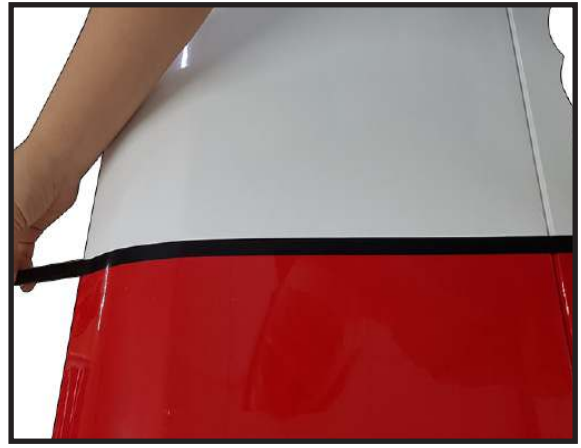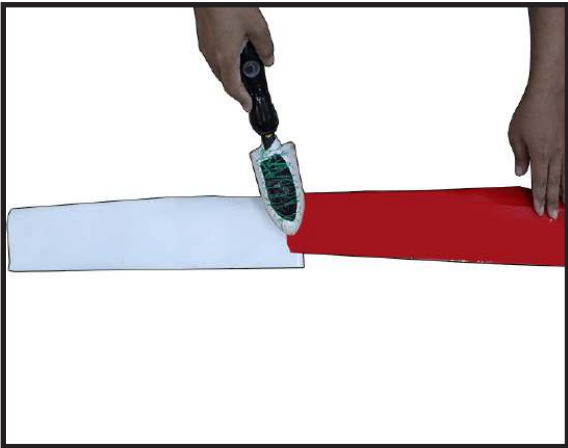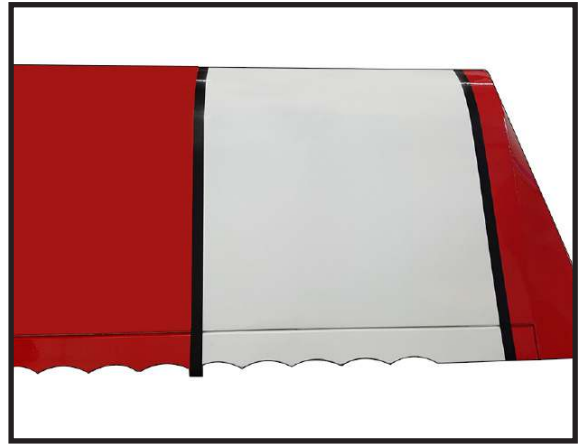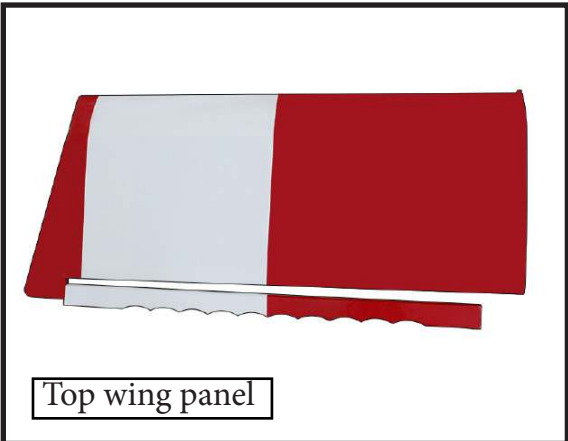
12.

13.

FINAL ASSEMBLY.

NOTE: To avoid scratching your new aero plane 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 Master Scale Kit Edition Classic Ugly Stick 70.9" 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, cyanoacrylate 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 AILERON.

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

1) Carefully remove the aileron from one of the wing panels. Note the position of the hinges.
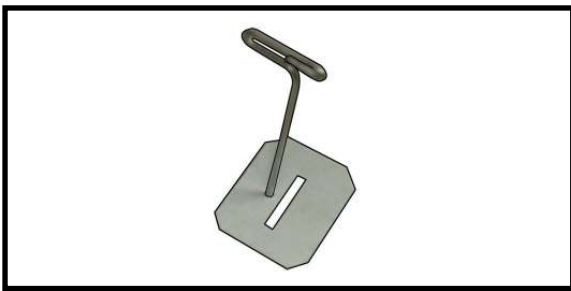
2) Remove each hinge from the wing panel and aileron and place a T-pin in the center of each hinge. Slide each hinge into the wing panel until the T-pin is snug against the wing panel. This will help ensure an equal amount of hinge is on either side of the hinge line when the aileron is mounted to the aileron.

Hinge.

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

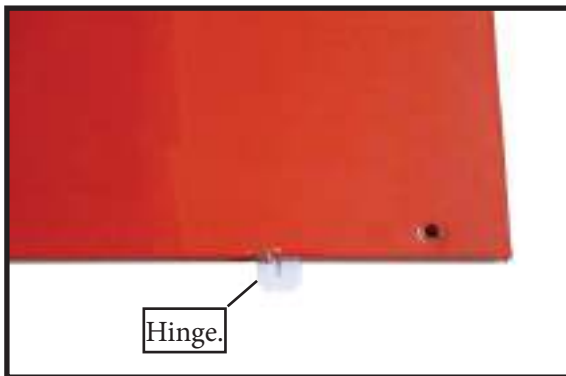4) Deflect the aileron and completely saturate each hinge with thin C/A glue. The ailerons front surface should lightly contact the wing during this procedure. Ideally, when the hinges are glued in place, a 1/64" gap or less will be maintained throughout the lengh of the aileron to the wing panel hinge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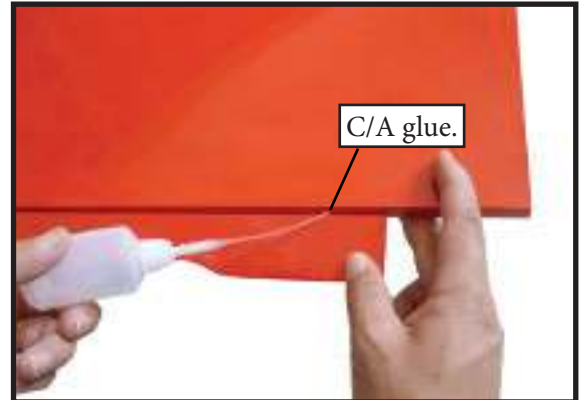
C/A glue.

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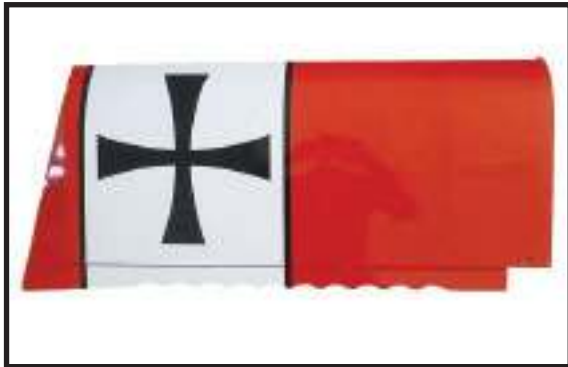
Note : Work the aileron up and down several times to "work in" the hinges and check for proper movement.

INSTALL THE AILERONS CONTROL HORN.

Aileron control horn.

WING ASSEMBLY.

Please see below pictures.

Epoxy.

Attach the aluminum tube into wing.
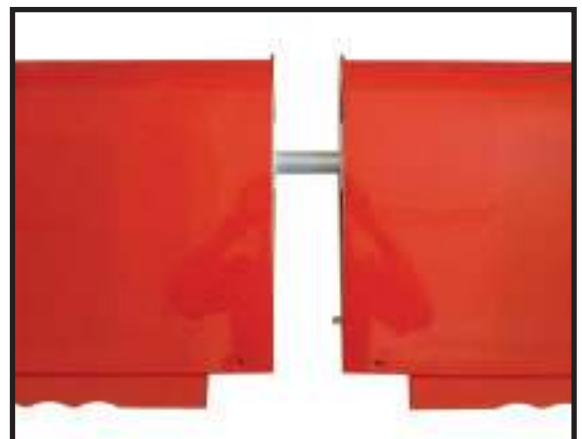
INSTALLING THE AILERON SERVOS.

Servos   Small weight

Thread

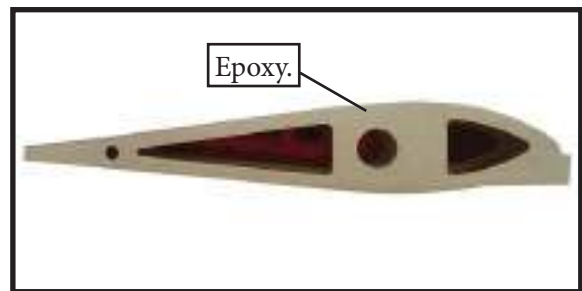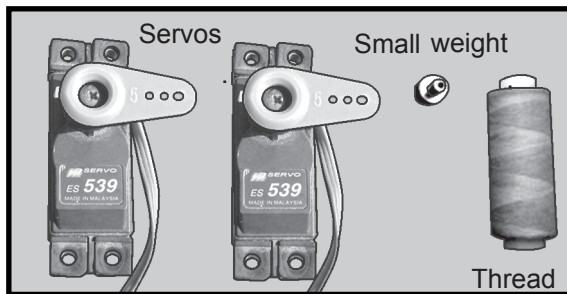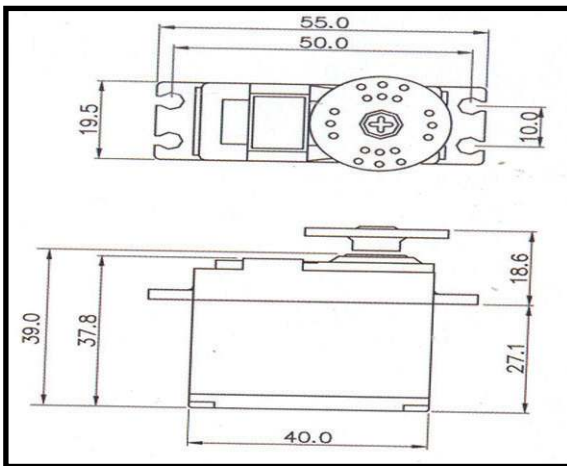1) Install the rubber grommets and brass collets onto the aileron servo. Test fit the servo into the aileron servo mount.

⚠ *Because the size of servos differ, you may need to adjust the size of the precut openingin 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.

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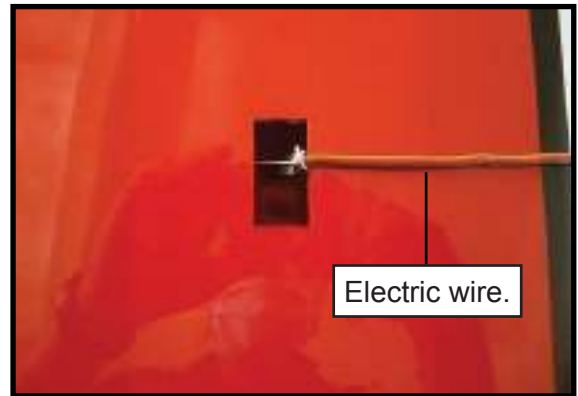
3) Attach servo lead to the aileron servo. Attach the string to the servo lead and carefully thread it though the wing. Once you have thread the lead throught the wing, remove the string so it can use for the other servo lead.

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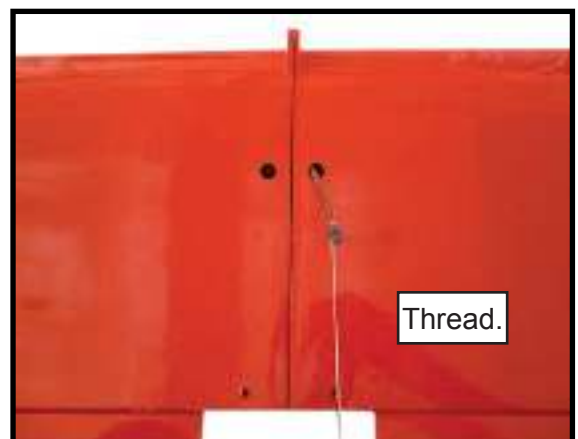
4) Tape the servo lead to the wing to prevent it from falling back into the wing.

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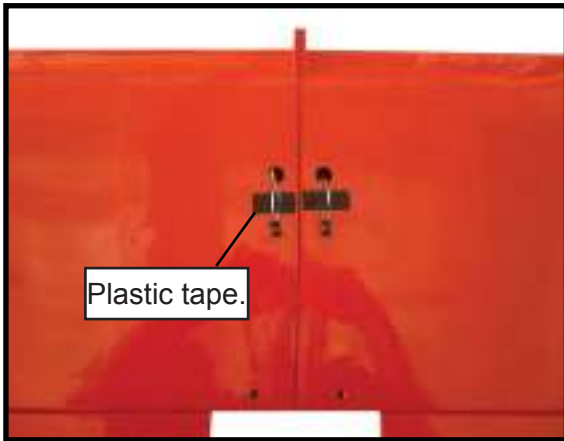
5) Reinstall the servo into the servo mount and secure the servo inplace using the wood screws provided with you radio system.

Repeat the procedure for the other wing half.

AILERON PUSHROD HORN INSTALLATION.

Please see below pictures.

Metal R/C Clevis

Pushrod Wire

Fuel Tubing

Hex Nut
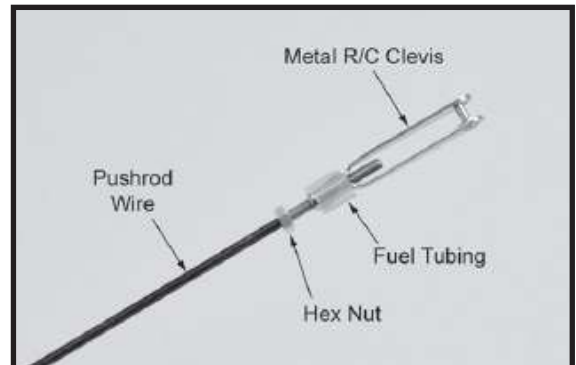
Use a felt tip pen to mark the wire where it crosses the hole. Use a pair of pliers to put a shrp 90-degree bend in the wire at the mark.

Mark.

Bend at the mark

M2 lock nut.

8mm

Snap keeper.

Metal clevis.

Servo arm.
Snap keeper.

Nylon Snap keeper.
Hex Nut.
Fuel tubing.
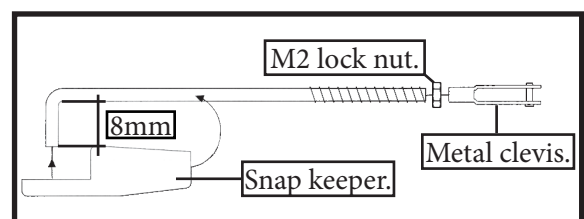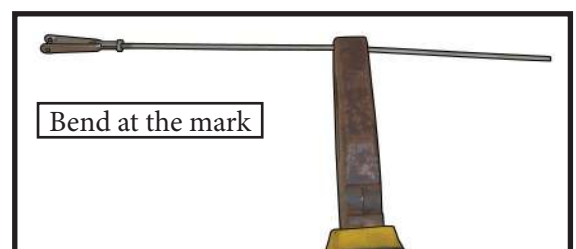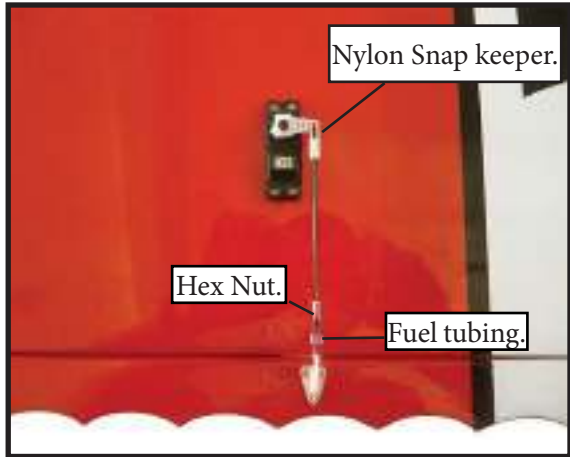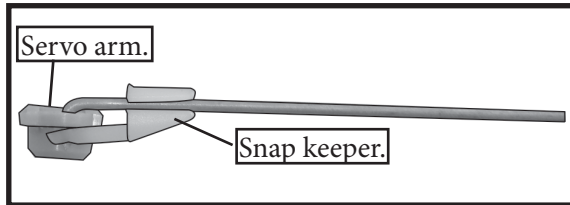
ATTACHMENT WING- FUSELAGE.

Please see below pictures.

Wing bolt.
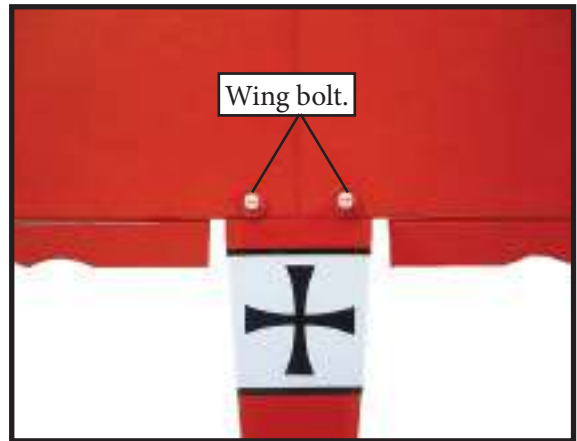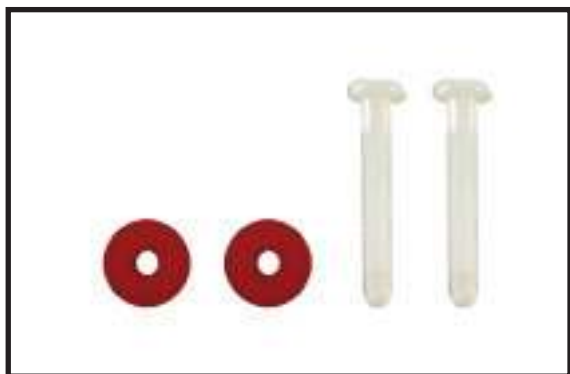
INSTALLING THE FUSELAGE SERVOS.

⚠ 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.

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

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

Throttle servo.
Rudder servo.
Elevator servo.
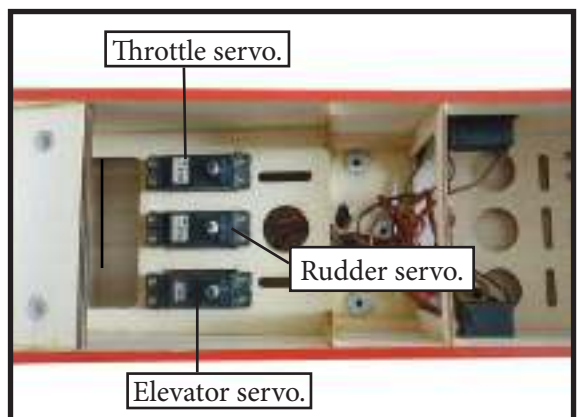
THROTTLE SERVO ARM INSTALLATION.

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

Adjustable servo connector.

Loctite secure.

Servo arm.

Throttle servo arm.
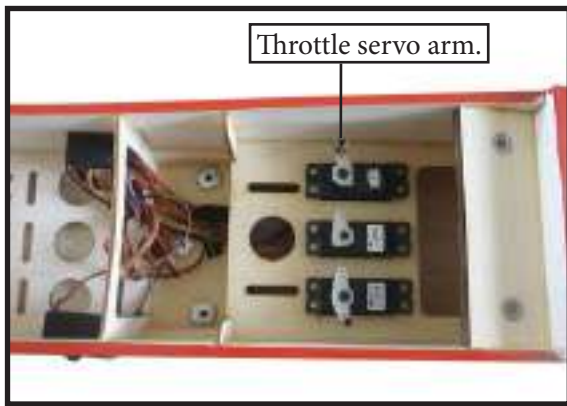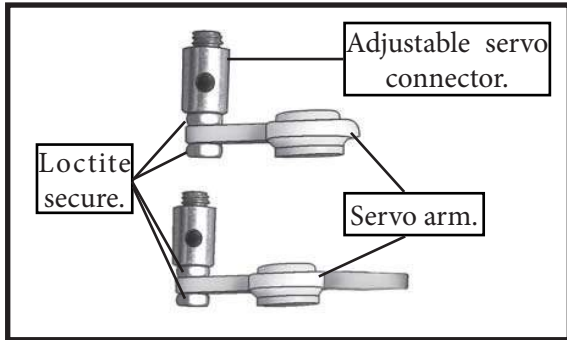
INSTALLING THE RECEIVER SWITCH.

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

3/32" Hole.

Trim and cut.
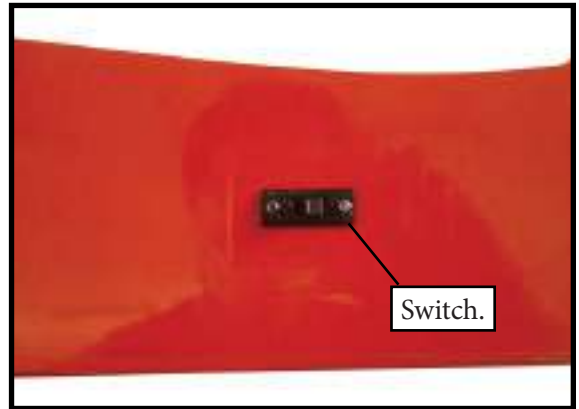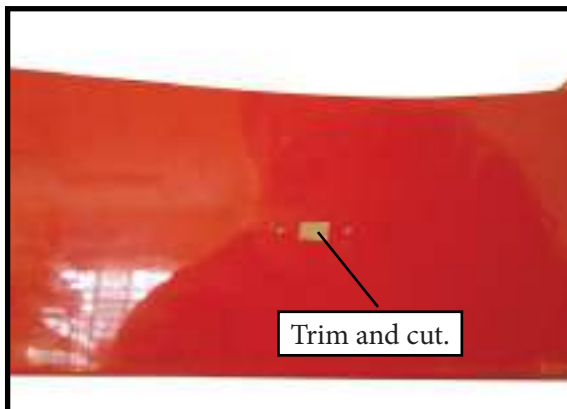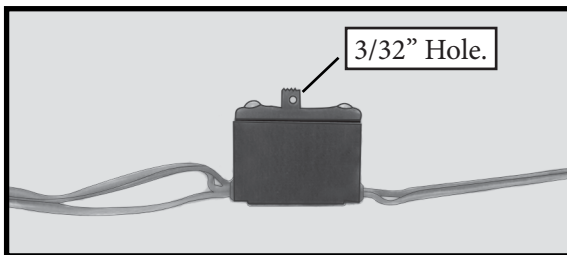
Switch.

INSTALLING THE ENGINE SWITCH.

Trim and cut.

Switch.
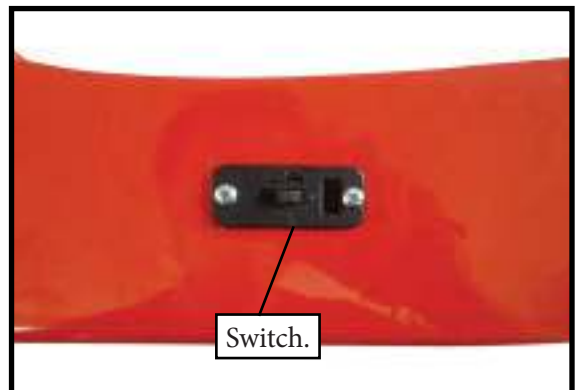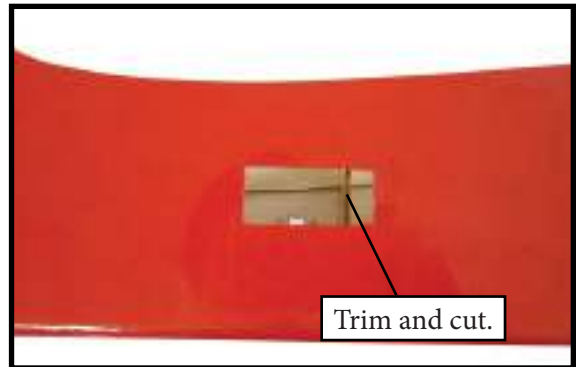
INSTALLING THE STOPPER ASSEMBLY.

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

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

A

B

Vent tube. Fuel pick up

Fuel fill tube.

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

4) 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.
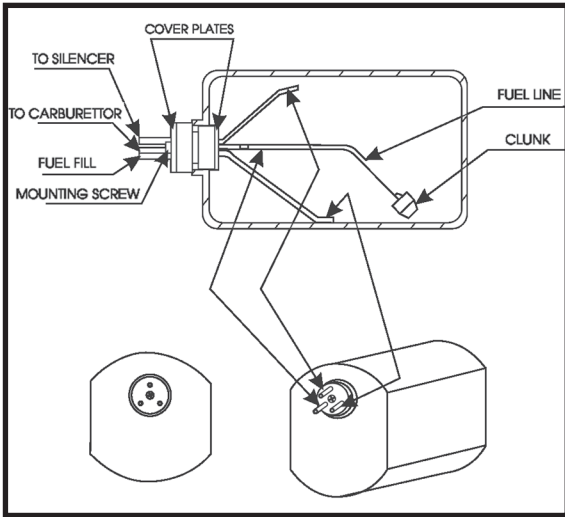
5) With the stopper assembly in place, the weighted pick-up should rest away from the rear of the tank and move freely inside the tank. The top of the vent tube should rest just below the top of the tank. It should not touch the top of the tank.

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

FUEL TANK INSTALLATION.
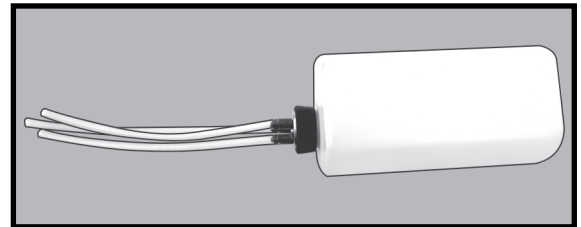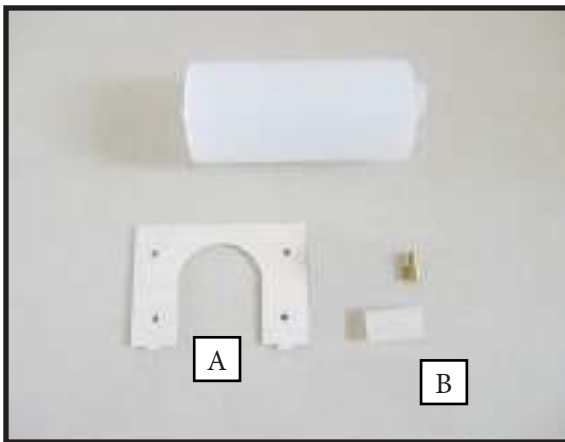
- ⚠️ *You should mark which tube is the vent and which is the fuel pickup when you attach fuel tubing to the tubes in the stopper. Once the tank is installed inside the fuselage, it may be difficult to determine which is which.*
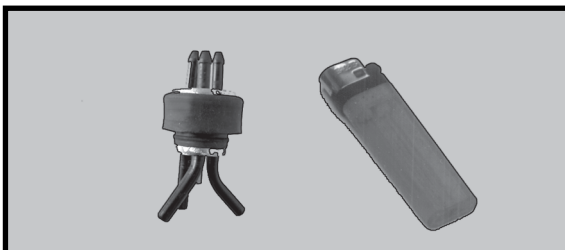
7) Slide the fuel tank into the fuselage. Guide the lines from the tank through the hole in the firewall.
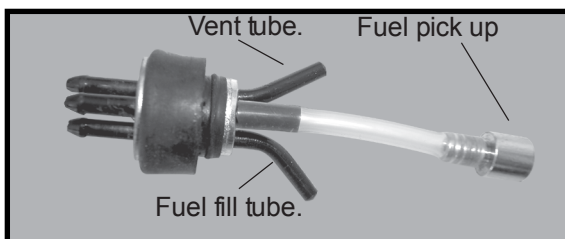
8) Use plywood template to hold in place the fuel tank with C/A glue to secure the fuel tank inside the fuselage.

A C/A glue.

Ignition Module.

C/A glue.

B

Balsa wood.

Vent tube.

Fuel fill tube.

Fuel pick up tube.

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

⚠ 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) Locate the items necessary to install the engine mount included with your model.
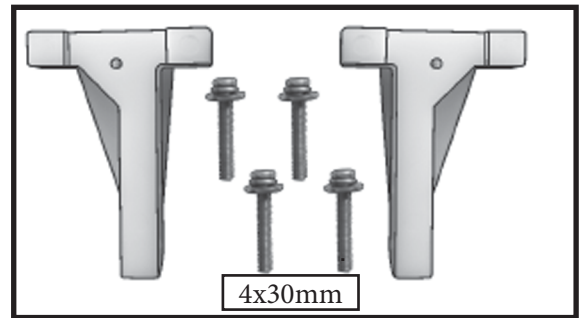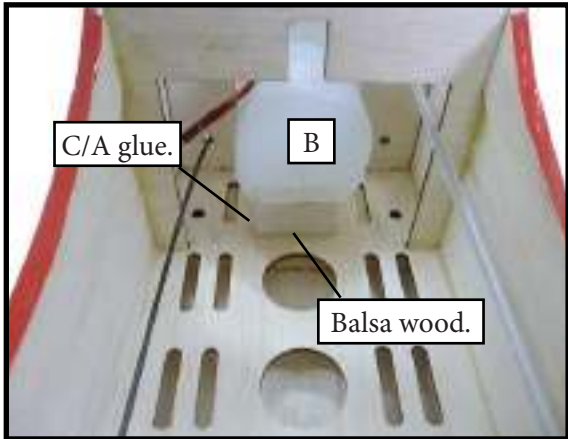
4x30mm

2) Use four 4x30mm head bolts and four 4mm washers to attach the engine mount rails to the firewall. Tighten the screws . Make sure to use threadlock on the screws to help prevent them from vibrating loose.

Thread locker glue.

MOUNTING THE ENGINE.

1) Position the engine with the drive washer (140mm) forward of the firewall as shown.

140mm
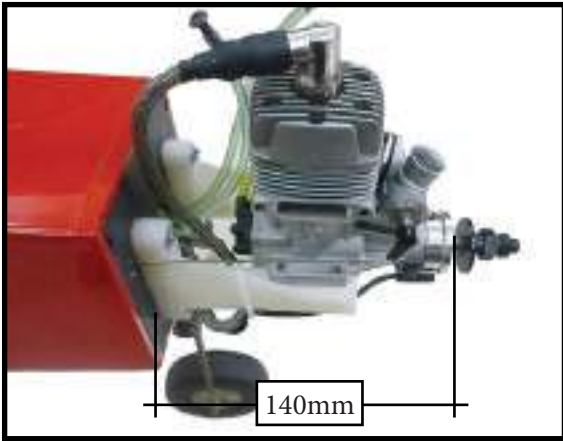
2) Use a pin drill and 4mm drill bit to drill a small indentation in the mount for the engine mounting screw.

4mm
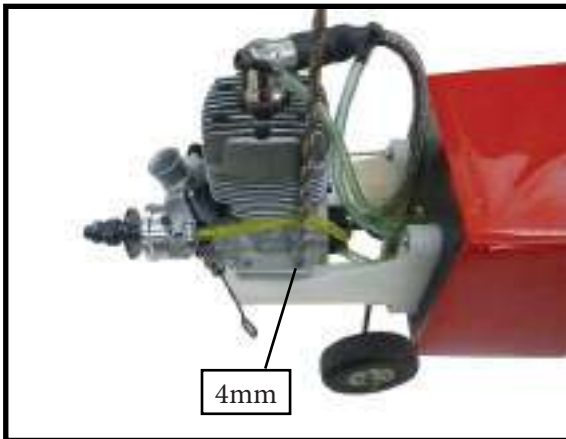
3) Use a drill to drill the four holes in the engine mount rails.

4mm
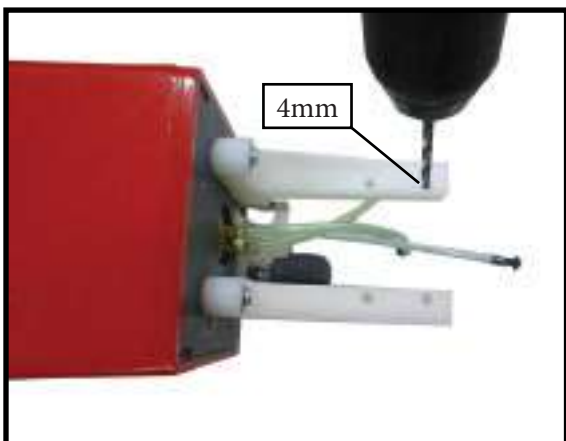
4) On the fire wall has the location for the throttle pusshrod tube (pre-drill).

5) 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.

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

7) Slide the throttle pushrod wire into the tube. Position the engine between the mounts. Use four M4x30mm machine screws to secure the engine to the mount as shown.

M4x30mm
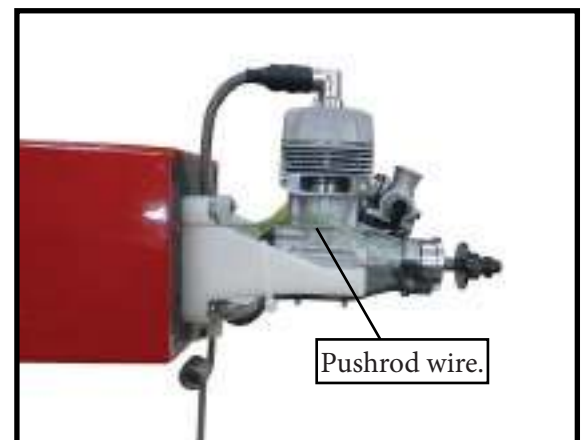
Pushrod wire.

8) Reinstall the servo horn by sliding the connector over the pushrod wire. Center the throttle stick and trim and install the servo horn perpendicular to the servo center line.

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

ELECTRIC POWER CONVERSION.

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

- **Motor : .60**

- **Propeller: 14x 8 ~ 16x10**

- **ESC: 60A**

- **5S-7S Lipo**

2) 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 below pictures.

3mm.

4mm.

4mm.

Blind nut.

M4x60mm

3x15mm.

Speed control.

Tie wraps.

Battery.
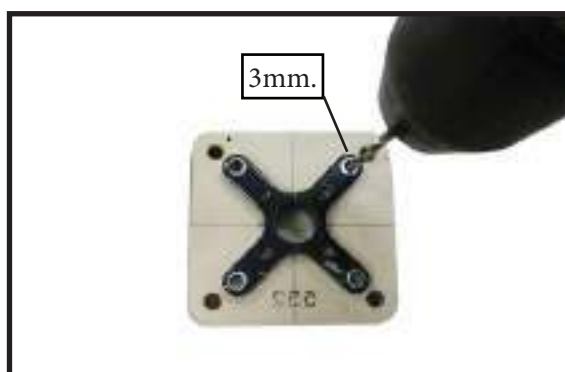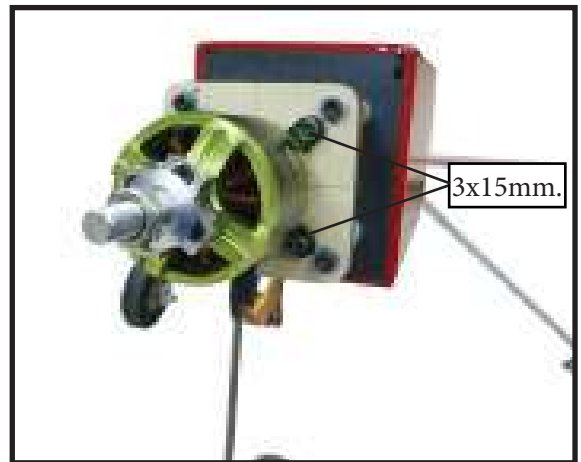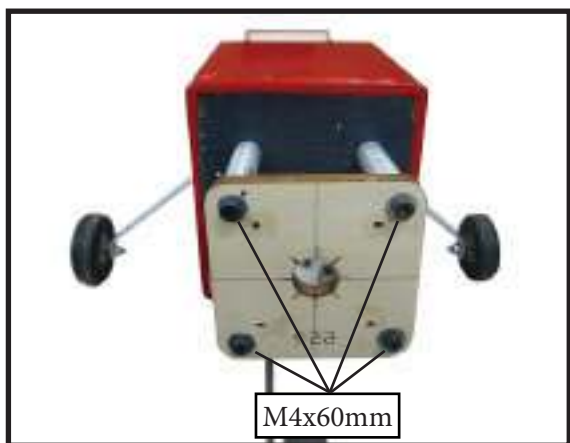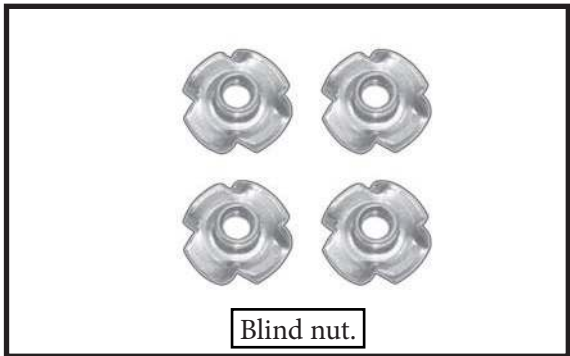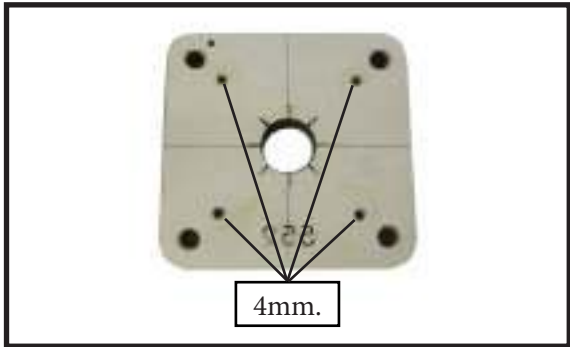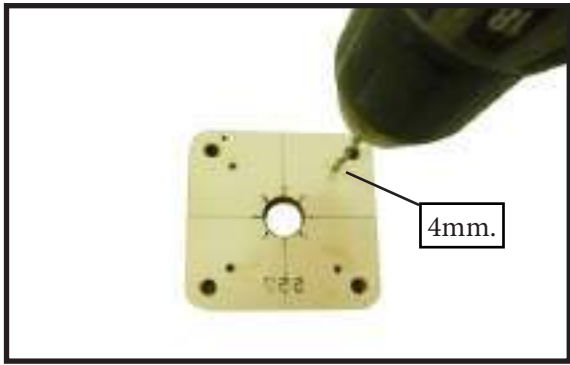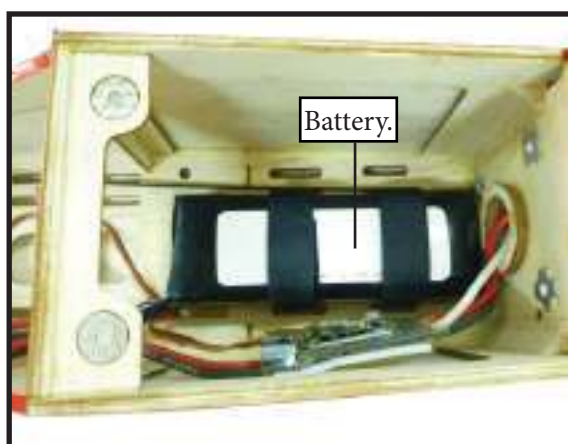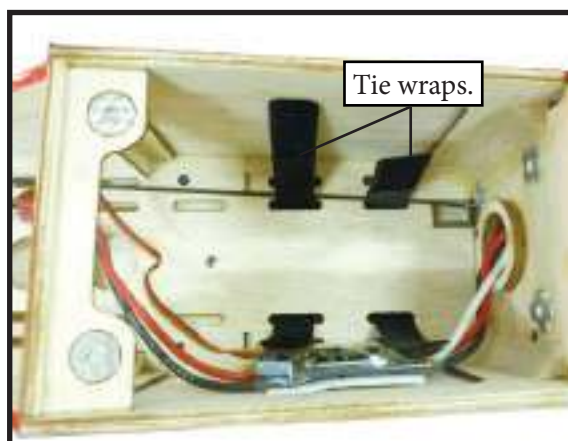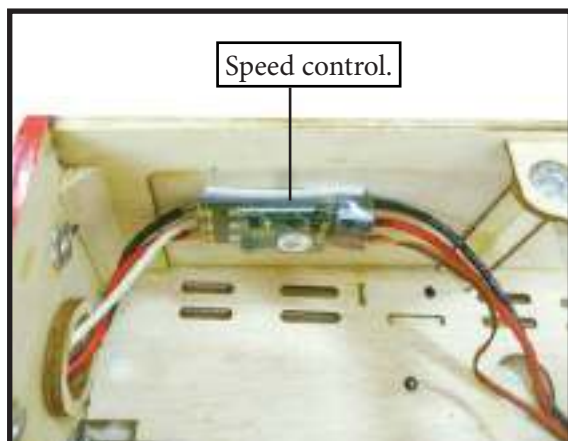
INSTALLING THE SPINNER.

⚠ 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 MAIN LANDING GEAR.

NOTE : *You must now decide if you will assemble the Classic Ugly Stick with tricycle landing gear or as a tail dragger. If you are assembling as a tail dragger, please skip the nose gear installation steps and mount the main gear to the FORWARD mounting location. If you are assembling using the tricycle landing gear, please skip the tail wheel installation steps, Install the nose gear, and mount the main gear to the REAR mounting location.*

1) The blind nuts for securing the landing gear are already mounted inside the fuselage.

2) Using the hardware provided, mount the main landing gear to the fuselage.

3) Place the fuselage inverted on the work bench in a suitable stand. Set the landing gear in place and use a screwdrive to secure the landing gear to the fuselage using bolts M4x20mm and washers. Make sure to use the threadlock on the bolts so they don't vibrate loose.

Collar.

Collar.

M4x20mm.

M4x20mm.

NOSE GEAR INSTALLATION.

Please see below pictures

Collar.

Collar.

Steering arm.
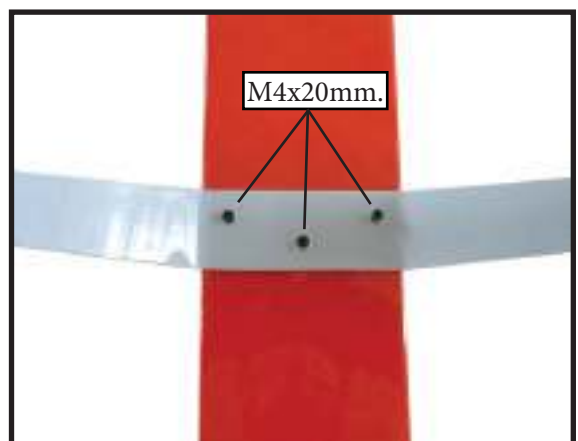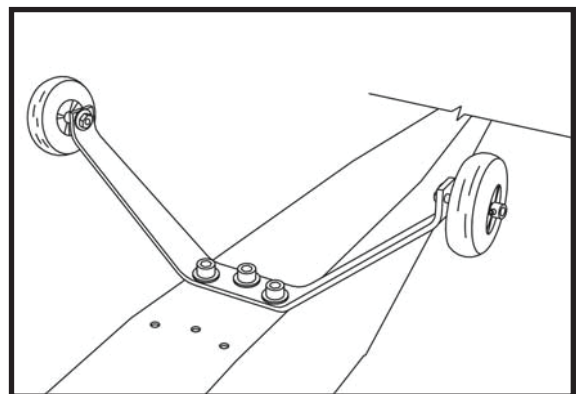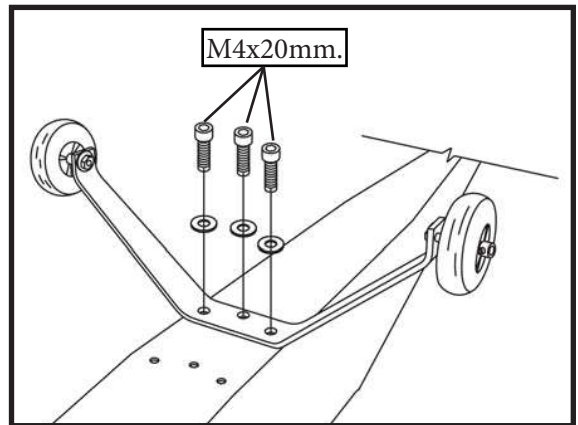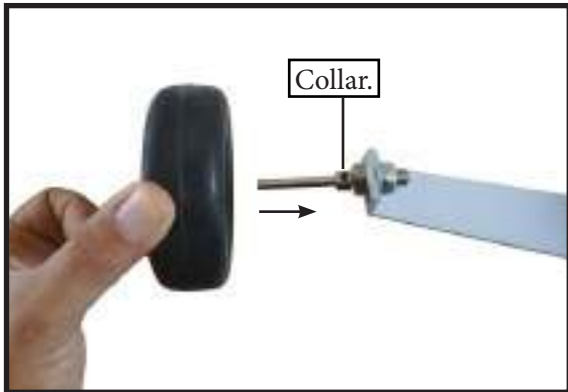
Metal clevis.
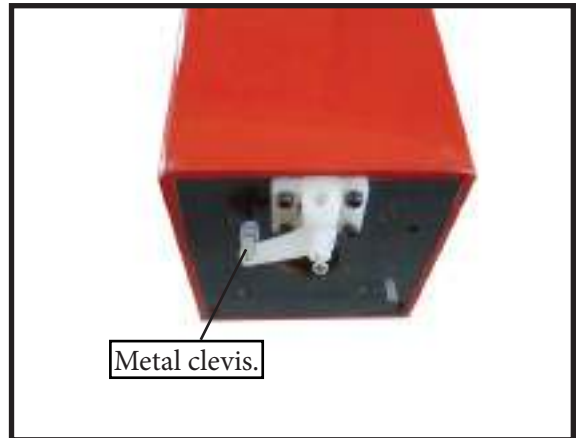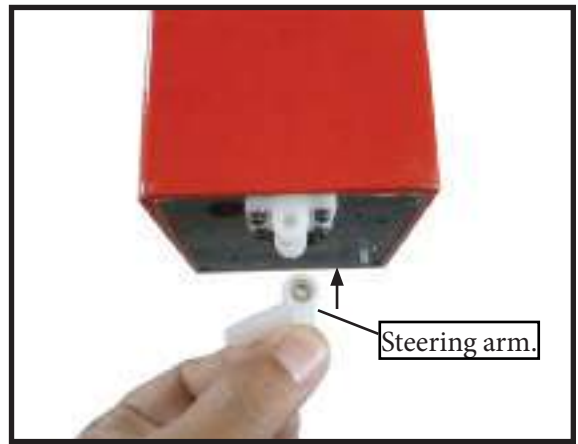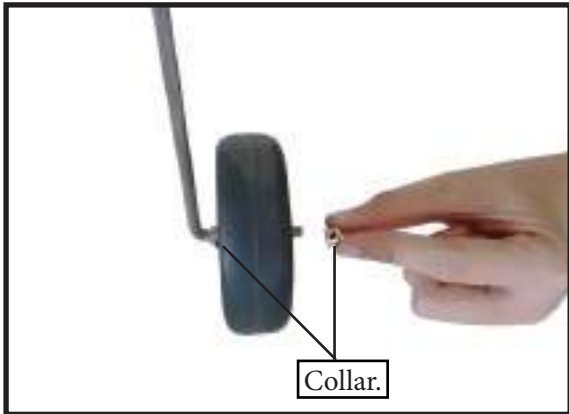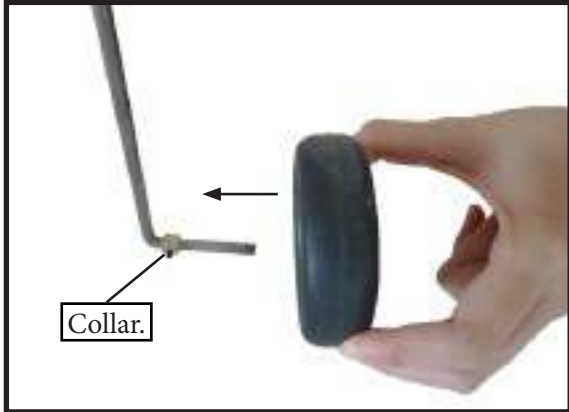
HINGING THE ELEVATORS.

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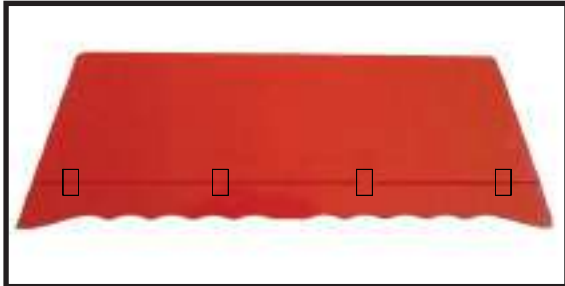
HORIZONTAL STABILIZER.

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

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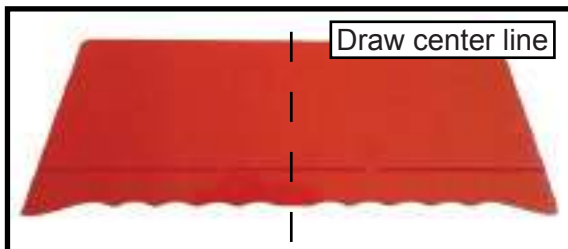
2) Using a modeling knife, carefully remove the covering from over the vertical stabilizer mounting slot in the top of the fuselage.

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.

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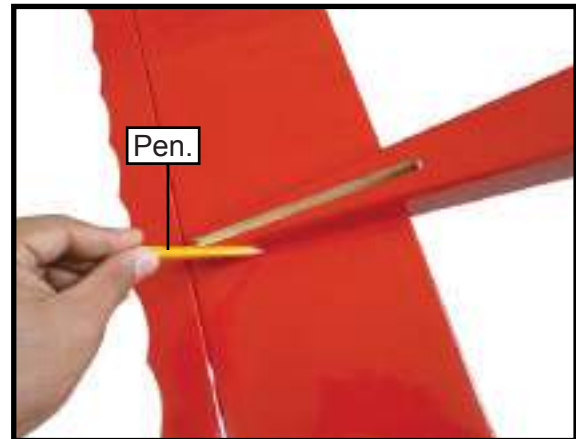
5) Remove the stabilizer. Using the lines you just drew as a guide, carefully remove the covering from between them using a modeling knife.
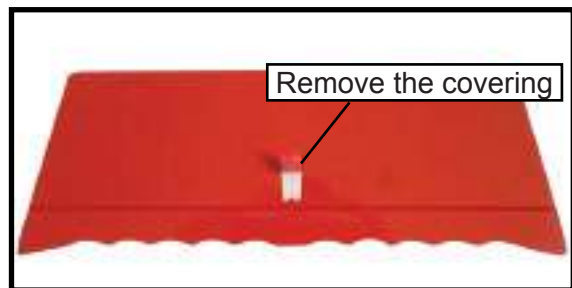
Remove the covering

⚠ **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.

Knife.

Knife.
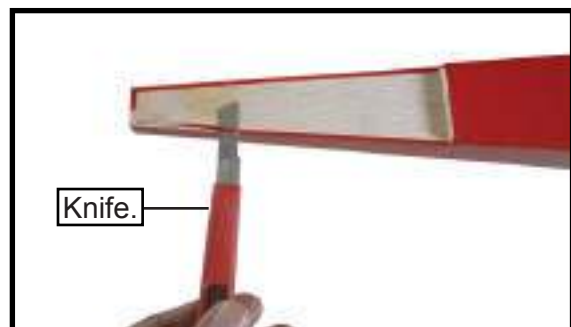
7) When you are sure that everything is aligned correctly, mix up a generous amount of 30 Minute Epoxy. Apply a thin layer to the top of the stabilizer mounting area and to the stabilizer mounting platform on the bottom of the fuselage. Put the stabilizer in place and realign. Double check all of your meas¬urements 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.

Epoxy

Epoxy
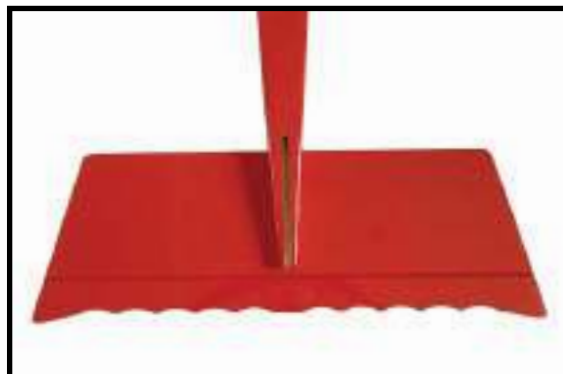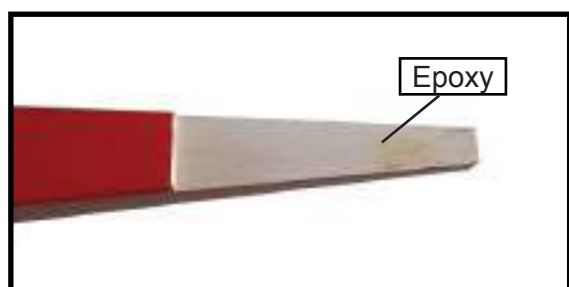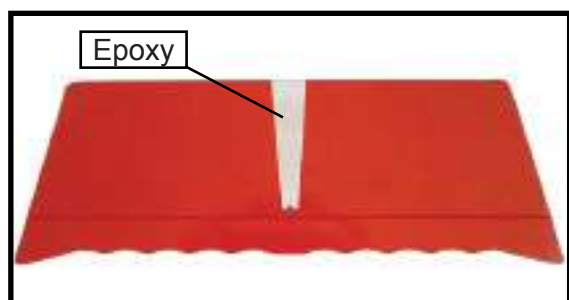
VERTICAL STABILIZER INSTALLATION.

1) 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.

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.

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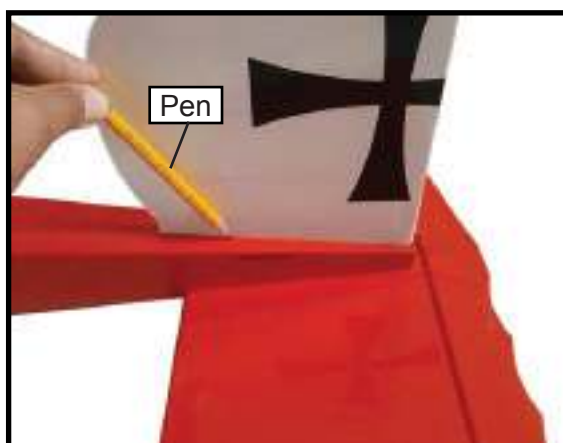
3) Remove the stabilizer. Using a modeling knife, remove the covering from below the lines you drew.
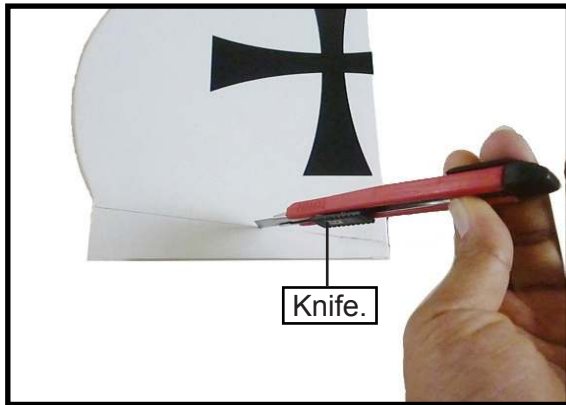
Knife.

Remove the covering

⚠ *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.*

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

Horizontal Stabilizer.

90º

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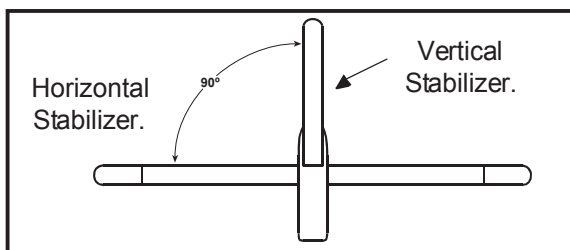
5) When you are sure that everything is aligned correctly, mix up a generous amount of 30 Minute Epoxy. Apply a thin layer to the mounting slot in the top of the fuselage and to the sides and bottom of the vertical stabilizer mounting area. Set the stabilizer in place and realign. Double check alignment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

TAIL - DRAGGER CONVERSION.

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

M3x20mm.

1) Test fit the tail gear to make sure that it fits properly. When you are happy with the fit, attach the tail gear using the two M3x20mm wood screws.

2) See below pictures how to assembly the tail- dragger conversion.
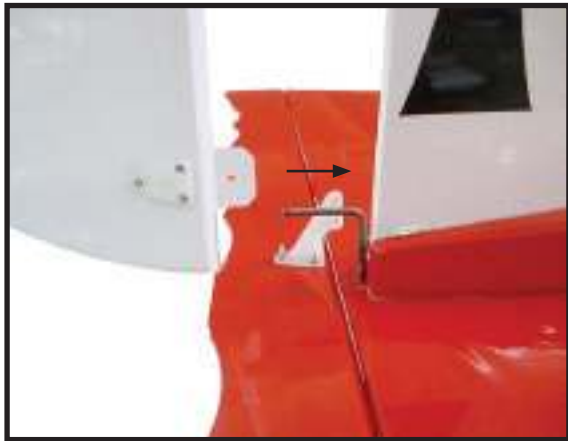
3) Hold the rudder in place and mark it where the music wire will enter. When you are happy with the fit, fill the hole with epoxy and use CA to glue in the rudder hinges.

INSTALL ELEVATOR - RUDDER CONTROL HORN.

Rudder control horn.

Elevator control horn.
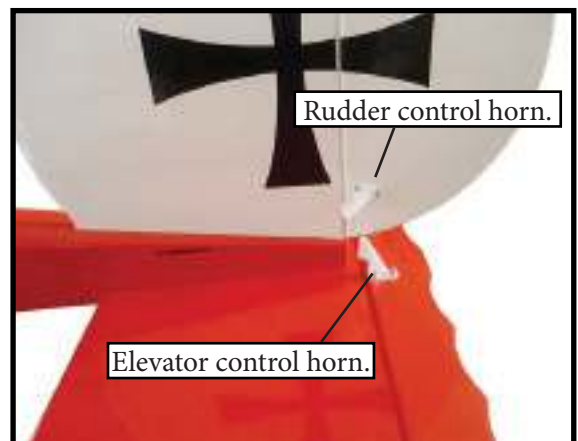
ELEVATOR - RUDDER PUSHROD HORN INSTALLATION.

1) Locate items necessary to install elevator and rudder pushrod.

Rudder control horn.

Elevator control horn.
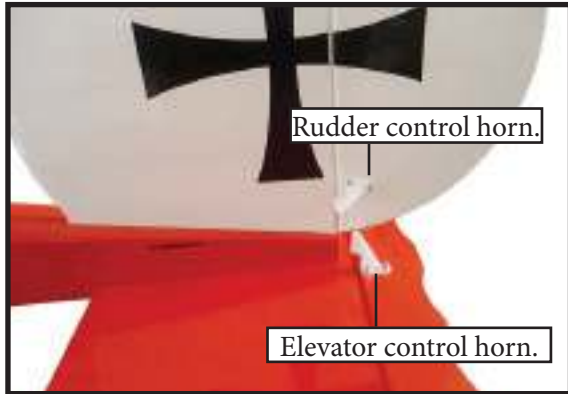
2) Elevator and rudder pushrods assembly as pictures below.

M2 devis. | M2 lock nut. | Cut.

8mm

8mm

Rudder pushrod.

M2 clevis.

Hex nut.

Elevator pushrod.

Fuel tubing.

INSTALLING BATTERY - RECEIVER.

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.

Receiver.

Battery.

Battery.
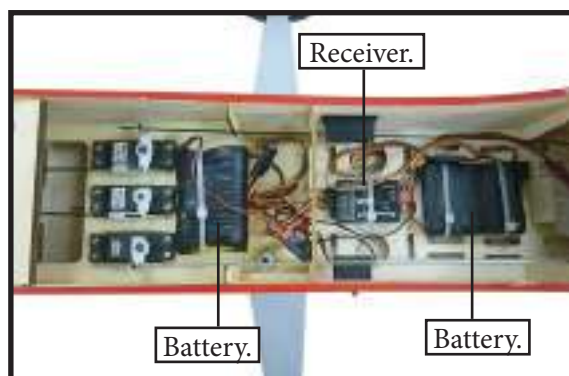
BALANCING.

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 **100 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 bottom of the wing **100mm** back from the leading edge of the wing at the wing root.

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

The balance point is located 100 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 i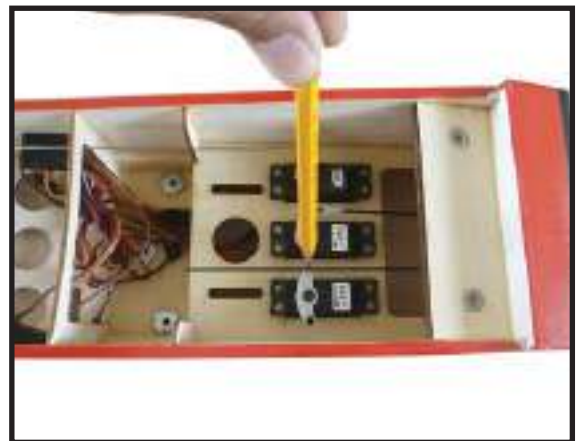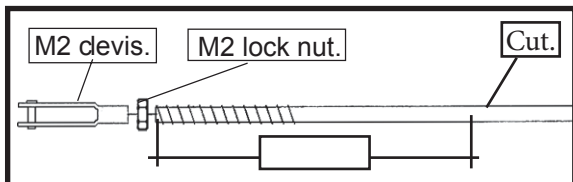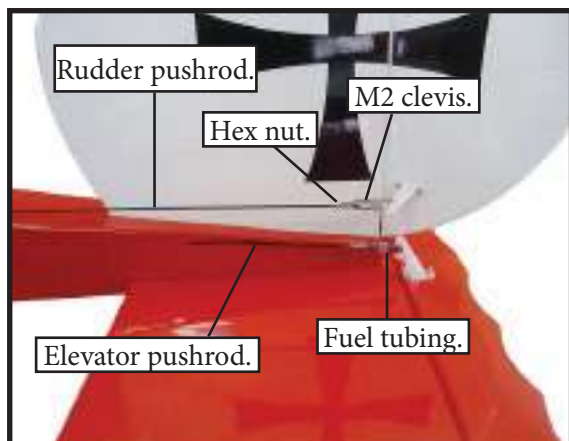t may then require more speed for take off and make it more difficult to slow down for landing. Moving the balance aft makes the model more agile with a lighter and snappier "feel". In any case,please start at the location we recommend

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.

100 mm
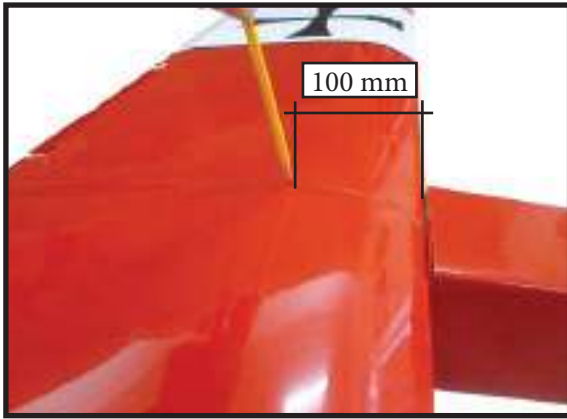
CONTROL THROWS.

Ailerons:
    12mm - 15mm up.
    12mm - 15mm down.
Elevator:
    12mm - 15mm up.
    12mm - 15mm down.
Rudder:
    20mm - 30mm left.
    20mm - 30mm right.

Horizontal — Elevator — 12-15mm / 12-15mm

Fuselage — Rudder — 20-30mm / 20-30mm

Wing — Aileron — 12-15mm / 12-15mm
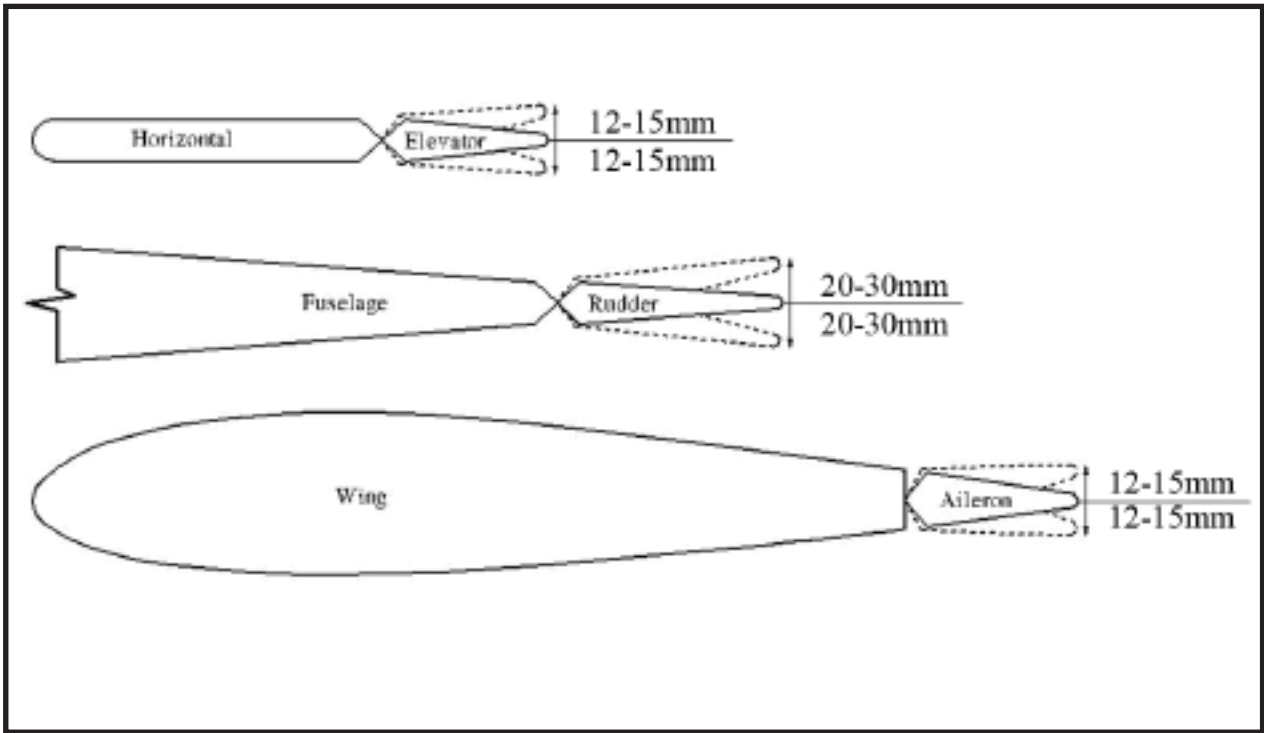
FLIGHT PREPARATION.

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 **CLASSIC UGLY STICK** 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 **CLASSIC UGLY STICK.**

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

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