

H·KING



P 51B MUSTANG BERLIN EXPRESS

INSTRUCTION MANUAL

Please read this manual carefully before operating this plane.



P 51B MUSTANG BERLIN EXPRESS

RADIO CONTROL MODEL

46 Class (2T Engine) **70 Class** (4T Engine) **Or Electric equivalent**

AN ALL Balsa AND PLYWOOD CONSTRUCTED MODEL THAT IS ALMOST READY TO FLY

This H-King version includes a pair of servoless retracts with scale oleo's

SPECIFICATIONS

Wingspan	1580mm
Length	1180mm
Electric Motor	800-900 Watt
Glow Engine	.46 2-T / .70 4-T
Radio	6 channel with 7 servos for the I.C. version and 6 servos and an ESC for the electric version.

WARNING! This radio controlled model is NOT a toy. If modified or flown carelessly it could go out of control and cause serious injury or damage to property. Before flying your airplane make sure the flying area is spacious enough, always fly it outdoors in safe areas and seek professional advice if you are inexperienced.

This plane is guaranteed to be free from defects of materials and workmanship at the date of purchase. It does not cover any damage caused by use or modification. The warranty does not extend beyond the product itself and is limited only to the original cost. With the act of using and controlling this product the user accepts all liability for any damage caused with the final product. If the buyer is not prepared to accept this liability then it can be returned new and unused to the place of purchase for a refund.

Notice: Adult Super Vision Required

This is not a toy. Assembly and flying of this product requires adult super vision. Read through this book completely and become familiar with the assembly and flight of this airplane. Inspect all parts for completeness and damage. Please contact authorized distributors for service if you encounter any problems.

SAFETY INSTRUCTIONS

- 1. Please read this manual carefully and follow the instructions before you use this product.**
- 2. This airplane is not a toy and has been designed for the more experienced pilot. If you have only flown a trainer type model before then we recommend you fly a low wing sports plane before flying this scale model.**
- 3. Not recommended for children under 14 years old.**
- 4. Please set up this plane according to the instructions and make sure you keep your hands and other parts of your body out of the way of the rotating propeller at all times. Failure to do so will result in damage to yourself and to the airplane.**
- 5. Do not fly in thunderstorms, strong winds or wet weather.**
- 6. Never fly R/C planes where there are overhead power lines, automobiles, airports, railway lines or near a highway.**
- 7. Never fly R/C planes where there are crowds of people or over organised games. This airplane requires a very flat landing and take-off area that is clear of trees and other obstacles. Remember safety is the responsibility of the pilot.**
- 8. Do not attempt to catch the plane when you are flying it.**
- 9. The operator will bear the full responsibility of flying and the proper operation and usage of this model. We at HobbyKing will not be responsible for any liability or loss due to improper use of this model.**

REQUIRED FOR OPERATION (Purchase separately)

10.5x6 for .40 - 2 cycle engine
 11x6 for .46 - 2 cycle engine
 12x6 for .60 - 4 cycle engine
 12x7 for .70 - 4 cycle engine
 15x6 if using a 5055-430 brushless motor.

2 x extension leads for the aileron servos. 1 x extension if doing the I.C. version for the battery pack.

60-80 amp Brushless Speed Controller

5055-430 Brushless Motor or equivalent.

Minimum 6 channel radio for airplane with 6-7 servos
 .Motor control x1 or ESC, Elevator x1 .Rudder x1. Aileron x2

Silicone tube Li-Po Battery, 6S 4000mAH

GLUE (Purchase separately)

SILICON
Silicon sealer

CA
Cyanoacrylate Glue

EPOXY A
Epoxy Glue (5 minute type)

EPOXY B
Epoxy Glue (30 minute type)

TOOLS REQUIRED (Purchase separately)

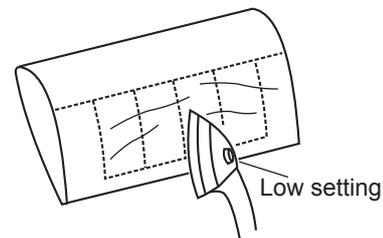
Hobby knife Phillip screw driver Hex wrench

Needle nose pliers Scissors Awl

Sander Wire cutters

Masking tape - Straight Edged Ruler - Pen or pencil - Rubbing alcohol - Drill and Assorted Drill Bits

If exposed to direct sunlight and/or heat, wrinkles can appear. Storing the model in a cool place will help make the wrinkles disappear. Otherwise, remove any wrinkles in the covering film with a hair dryer, starting with low temperature. You can seal the edges by using a hot iron.



Symbols used throughout this instruction manual, comprise:

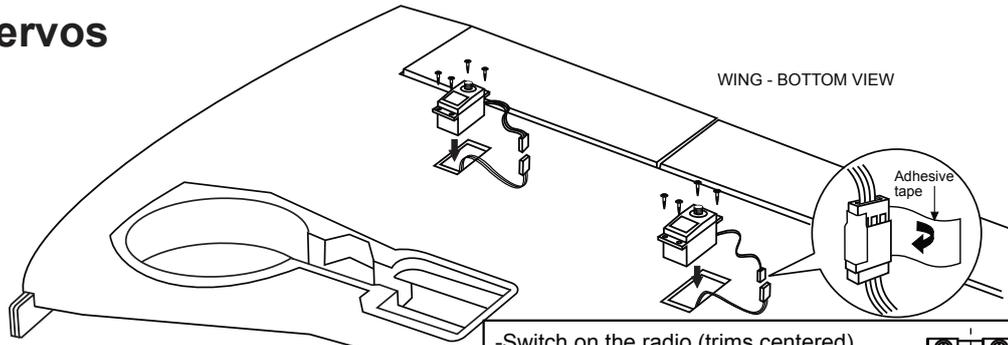
Drill holes using the stated size of drill (in this case 1.5 mm Ø)	Take particular care here	Hatched-in areas: remove covering film carefully	Check during assembly that these parts move freely, without binding
Use epoxy glue	Apply cyano glue	Assemble left and right sides the same way.	Not included. These parts must be purchased separately

Read through the manual before you begin, so you will have an overall idea of what to do.

CONVERSION TABLE

1.0mm = 3/64"	3.0mm = 1/8"	10mm = 13/32"	25mm = 1"
1.5mm = 1/16"	4.0mm = 5/32"	12mm = 15/32"	30mm = 1-3/16"
2.0mm = 5/64"	5.0mm = 13/64"	15mm = 19/32"	45mm = 1-51/64"
2.5mm = 3/32"	6.0mm = 15/64"	20mm = 51/64"	

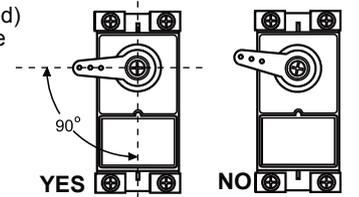
1 - Wing Servos



- 1-Cut away the covering on the bottom of one wing where the aileron and flap servos go.
- 2-Connect the servo leads to the aileron and flap extension leads.
- 3-Install the servos to the servo mounts.

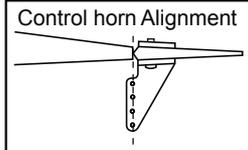
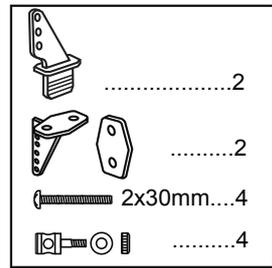
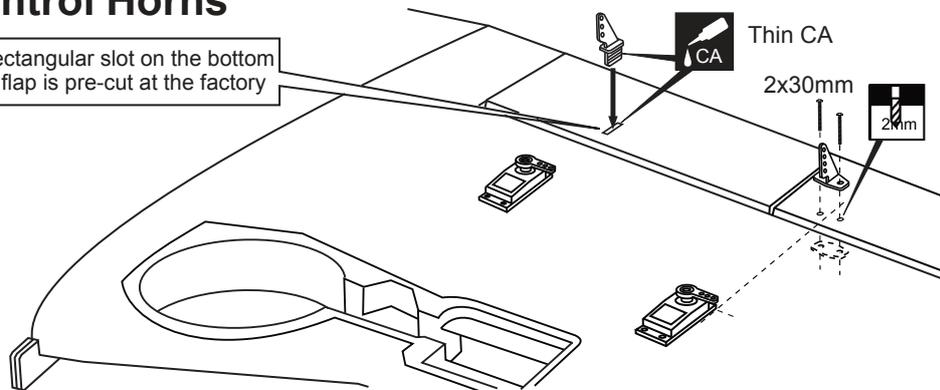
Do the same with the other wing.

-Switch on the radio (trims centered) then mount the servo horns in the neutral position as shown.
-The servo horn should be perpendicular to the servo.



2- Control Horns

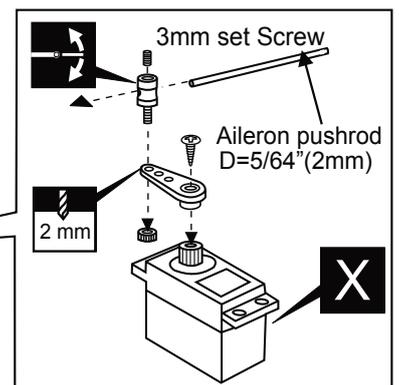
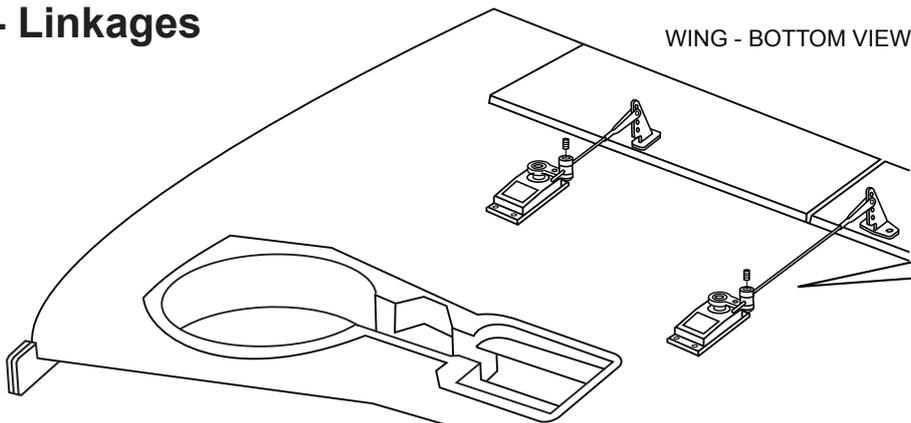
The rectangular slot on the bottom of the flap is pre-cut at the factory



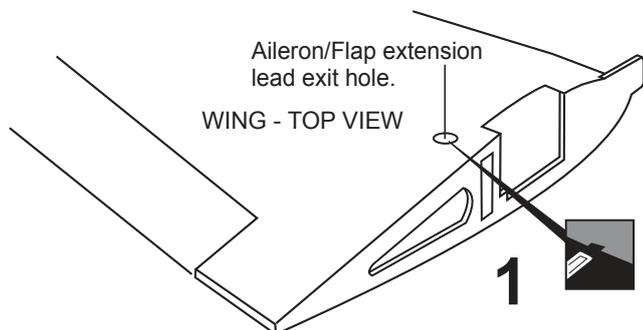
- 1-Depending on the position of the linkage, determine the location of the aileron control horn. The servo horn holes must be perfectly aligned with the control horns.
- 2-Mark the position of the 2 holes in the base of the control horn onto the aileron, drill the 2 2mm holes.
- 3-Install the aileron control horn as shown.

Do the same with the other wing..

3 - Linkages



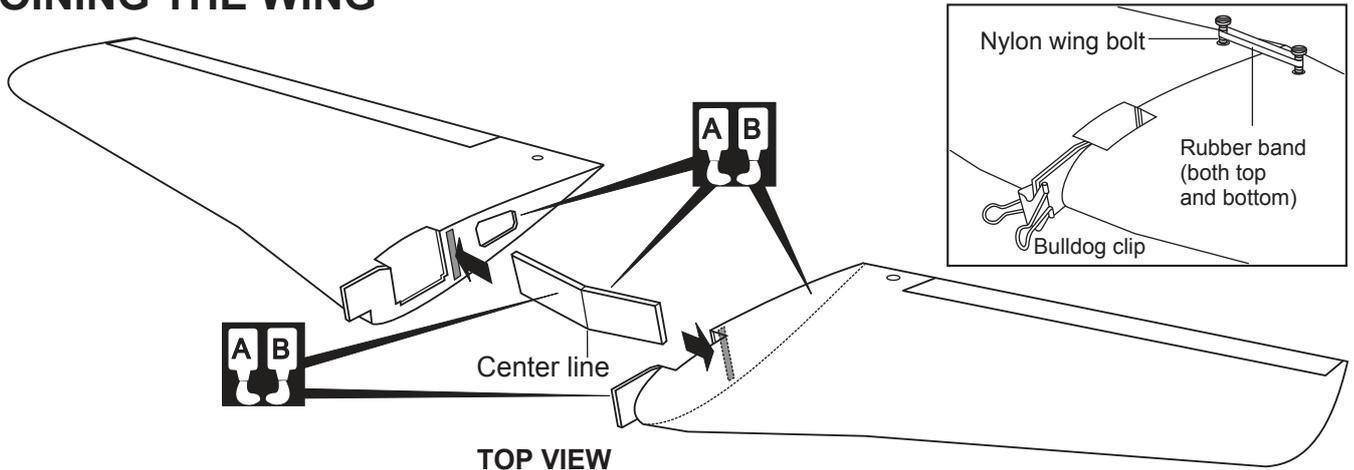
4- AILERONS - FLAPS EXTENSION LEADS



Only cut away the covering



5- JOINING THE WING



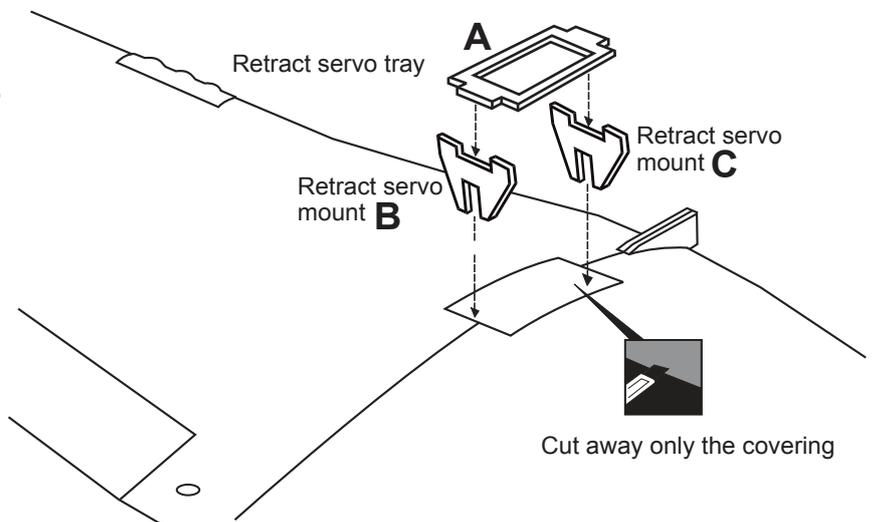
TOP VIEW

- 1- Using a pencil, mark the center of the wing joining brace.
- 2- Trial fit the wing joiner into one of the wing panels. It should insert smoothly up to the center line marked above.
- 3- Slide the other wing half onto the dihedral brace until the wing panels meet. If the fit is over tight, it may be necessary to lightly sand the dihedral brace.
- 4- Check for the correct dihedral angle.
- 5- Mix up some 30 minute epoxy and apply a generous amount of epoxy into the wing joiner cavity of one wing half.
- 6- Coat one half of the dihedral brace with epoxy up to the center line. Install the epoxy-coated side of the dihedral brace into the wing joiner cavity up to the center line, marking sure that the "V" of the dihedral brace is positioned correctly
- 7- Do the same way with the other wing half.
- 8- Carefully slide the wing halves together, ensuring that they are accurately aligned. Firmly press the two halves together, allowing the excess epoxy to run out. Clean off the excess epoxy with a paper towel and kerosene.
- 9- Whilst the glue sets hold the panels in position with a bulldog clip at the front and rubber bands around the wing bolts as shown.

IMPORTANT: Please do not clean off the excess epoxy on the wing with a strong solvent or pure alcohol, only use kerosene otherwise you could take the color out of the covering.

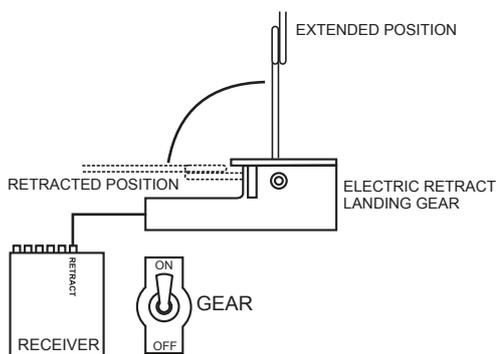
6- RETRACT SERVO TRAY

Note: The H-King version is supplied with servoless retracts so these parts do not require fitting.



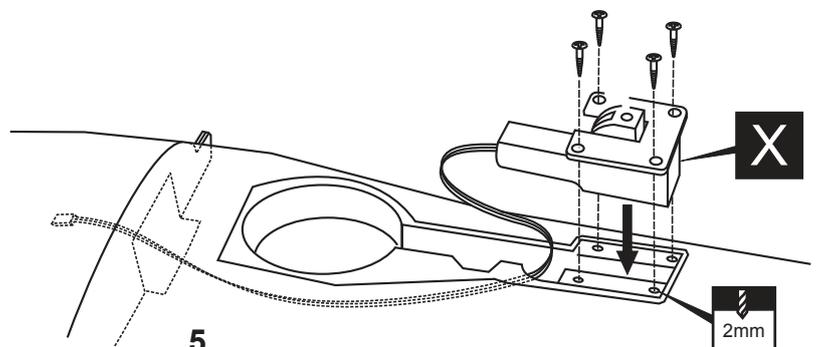
TOP VIEW

7- SERVOLESS ELECTRIC RETRACTS

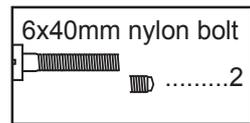


ELECTRIC RETRACT LANDING GEAR

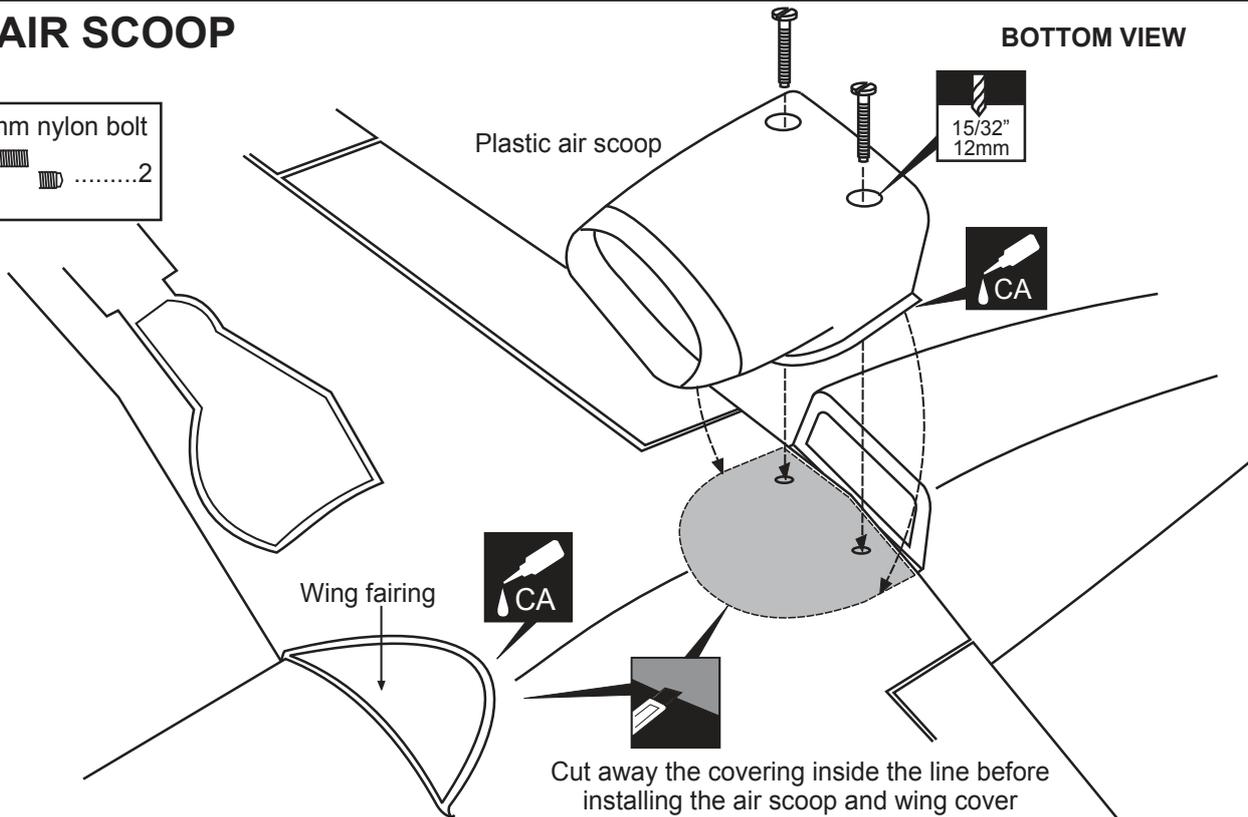
Note: The H-King version is supplied with scale oleo's (not shown)



13- AIR SCOOP

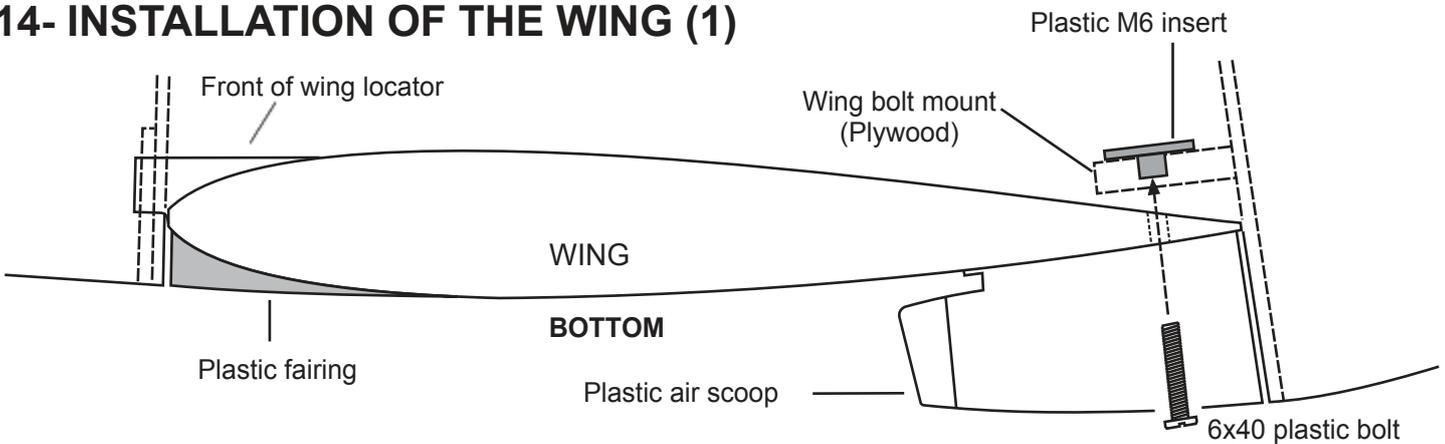


BOTTOM VIEW

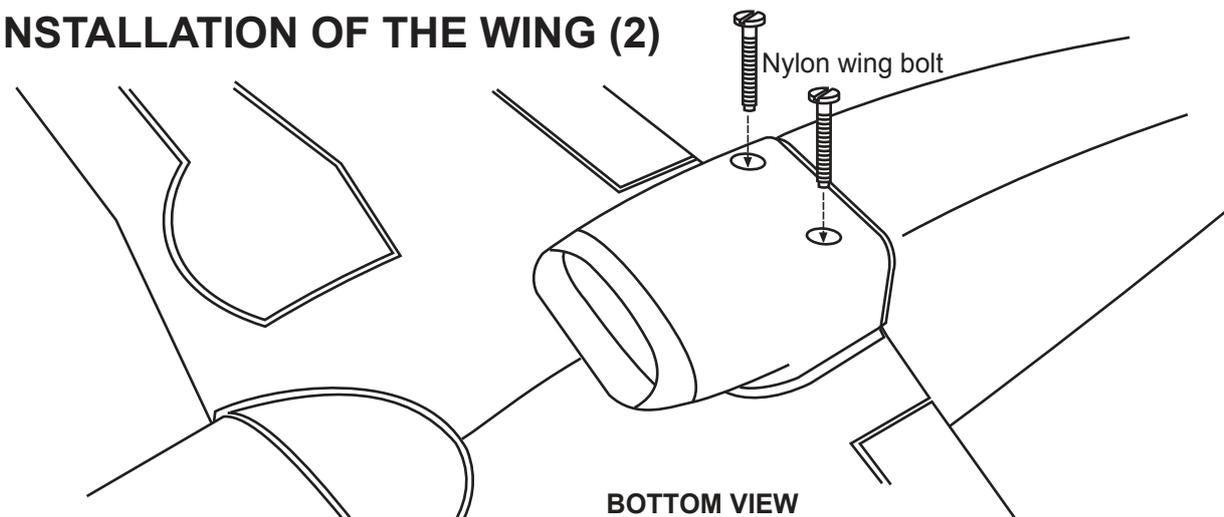


- 1- Using the ABS air scoop as a template, draw around the outside edge with a pencil and then remove it.
- 2- Using a sharp hobby knife cut away the covering just inside the line, please do not cut into the wood.
- 3- Glue the ABS air scoop into position using CA adhesive.
- 4- Repeat the above steps for the ABS wing fairing.

14- INSTALLATION OF THE WING (1)

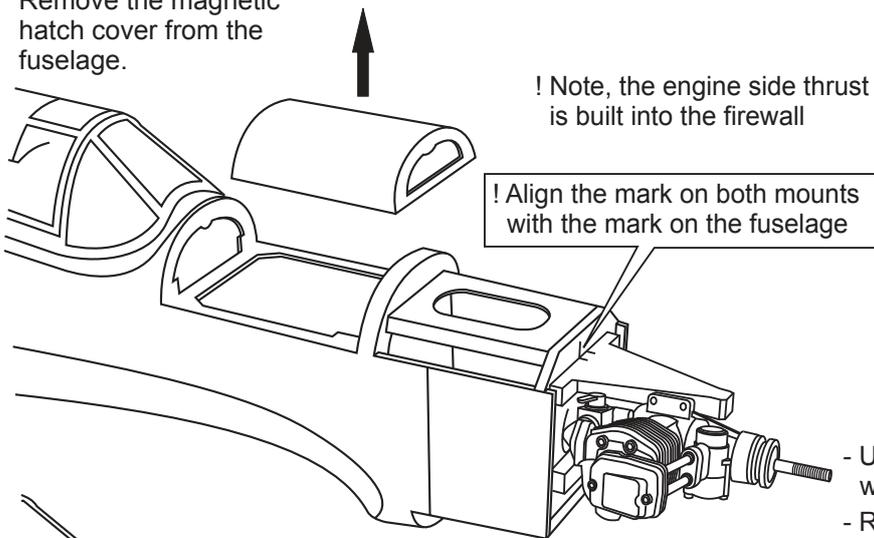


15- INSTALLATION OF THE WING (2)

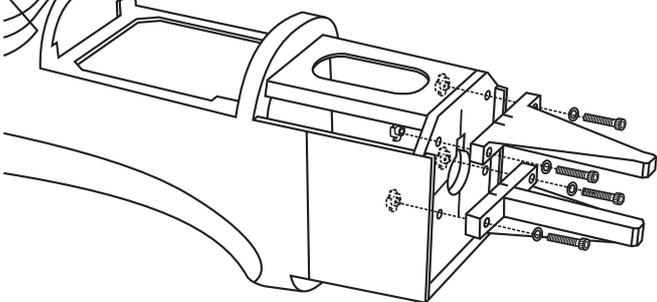
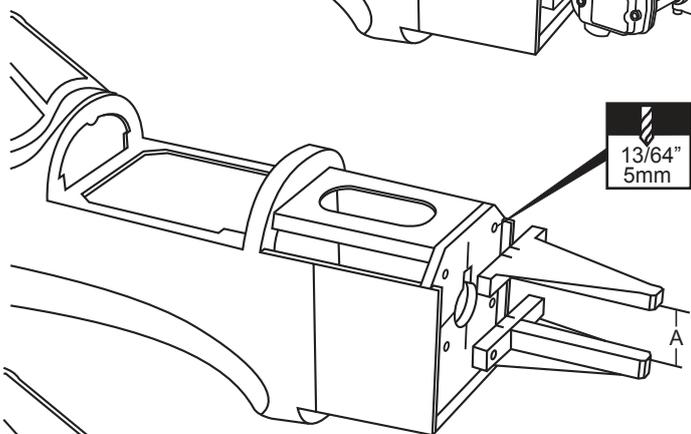


17- ENGINE MOUNT

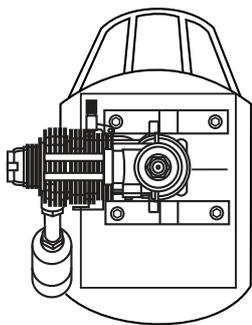
Remove the magnetic hatch cover from the fuselage.



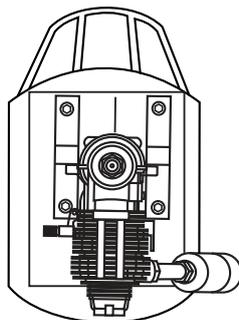
! Align the mark on both mounts with the mark on the fuselage



THERE ARE 2 WAYS TO MOUNT A 4T ENGINE



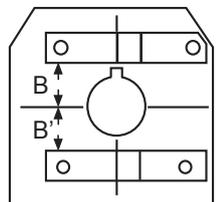
FRONT-VIEW



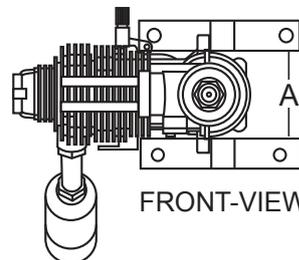
You can mount the engine horizontal, it is better protected if you land the plane nose down, this does make the fitting of the cowl more difficult.

You can mount the engine vertical which is nice and easy for the cowl installation but the rocker arm cover of the engine may get damaged if the plane is landed nose down.

5/32x1" 4x25mm screw	1/8x5-1/64" 3x20mm screw
...4	...4
Blind-nut	1/8"(3mm) nut
.....
.....44

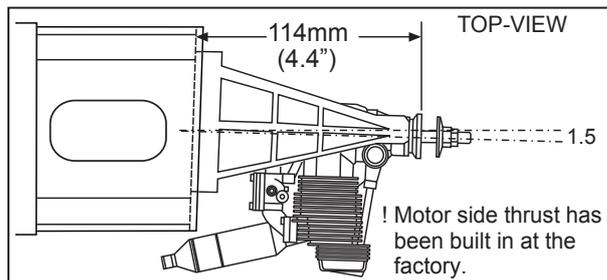


B=B'



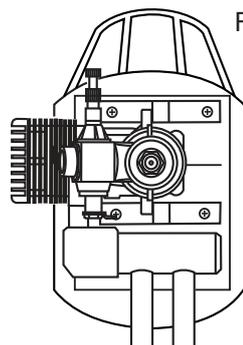
FRONT-VIEW

- Using a pencil or felt tipped pen, mark the firewall where the 4 mounting holes are to be drilled.
- Remove the engine mount and drill a 13/64" (5mm) hole through the firewall at each of the 4 marks.
- Attach the 4 blind nuts to the firewall as shown.
- Secure the engine mounts to the firewall with 4 4x25mm screws.
- Position the engine on to the engine mounts so the distance from the prop hub to the firewall is 4.4"(114mm)
- Mark the engine mounts where the 4 holes are to be drilled.
Note: Mark the mounts through the engine mounting flanges.
- Remove the engine and drill 1/8"(3mm) holes through the beams at each of the 4 marks made above.
- Reposition the engine on the engine mounting beams, aligning it with the holes. Secure the engine to the engine mount using 4 1/8x51/64"(3x25mm) screws.

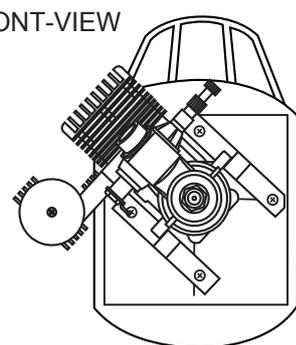


TOP-VIEW

IF MOUNTING A 2T ENGINE



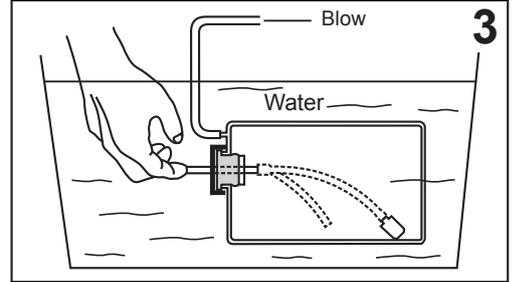
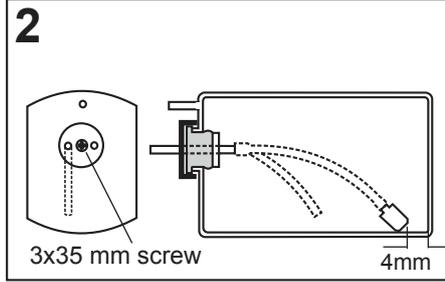
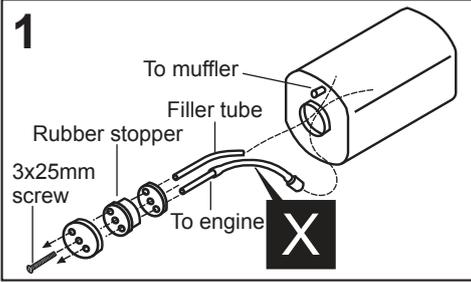
With In Cowl silencer



With STD silencer

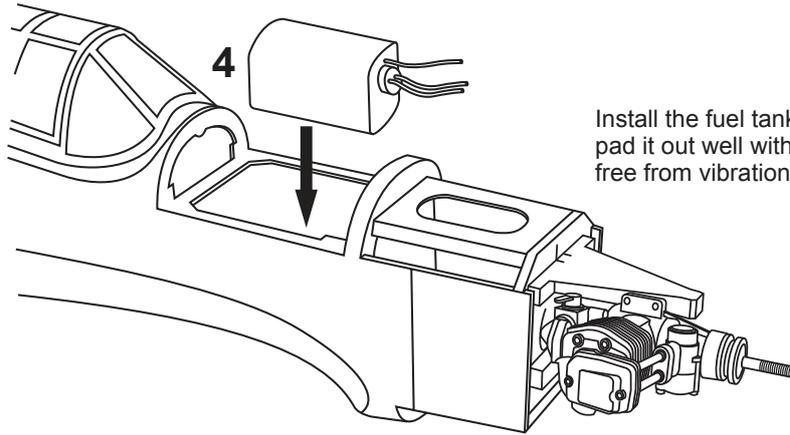
FRONT-VIEW

18- FUEL TANK



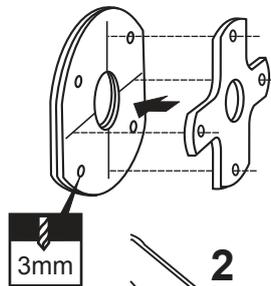
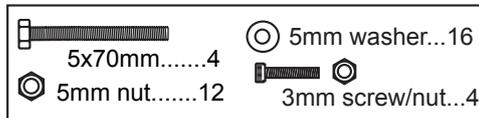
Assemble the stopper and tubes as shown above. Insert the assembly clunk end first into the fuel tank and firmly press the stopper into the neck of the tank. Align the pipes as shown and tighten the stopper screw. Ensure that the fuel tank clunk does not touch the rear of the tank.

Check the tank for leaks - block the vents and blow into the feed, if in doubt submerge the tank in a bowl of water, this will show up any problems.



Install the fuel tank in the tank bay, please ensure you pad it out well with foam to keep the tank secure and free from vibration.

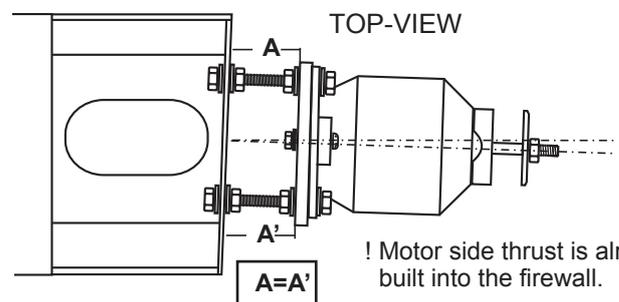
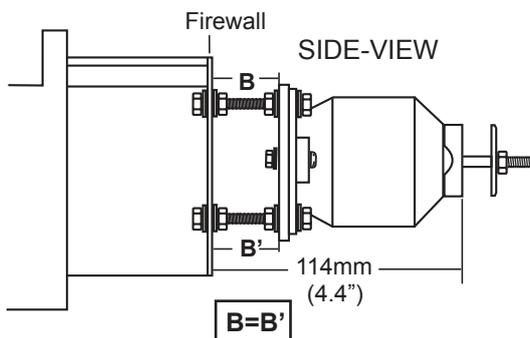
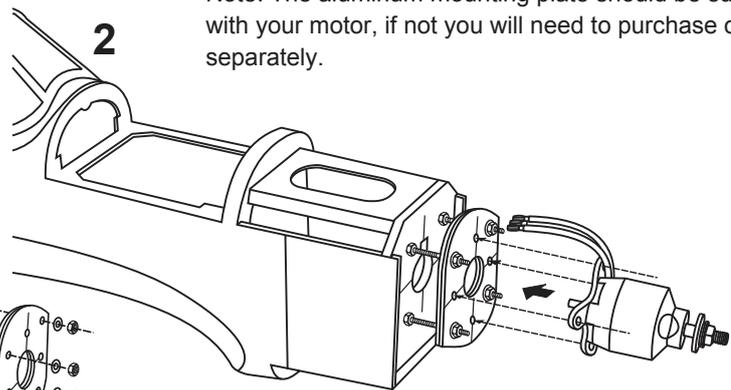
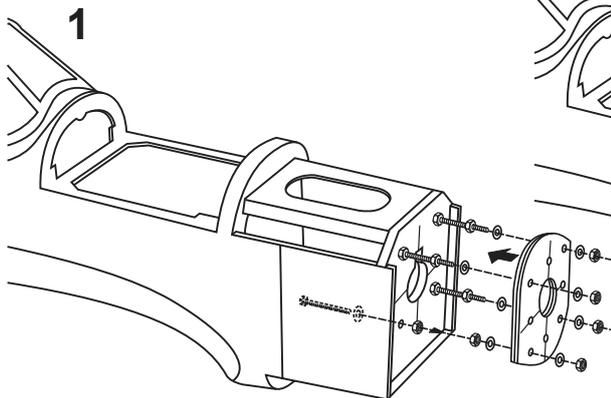
19- ELECTRIC MOTOR



-Use your motors aluminum motor mounting plate as a template and mark the plywood motor mount where the 4 holes are to be drilled.

-Remove the aluminum motor mounting plate and drill a 1/8"(3mm) hole through the plywood at each of the marks.

Note: The aluminum mounting plate should be supplied with your motor, if not you will need to purchase one separately.

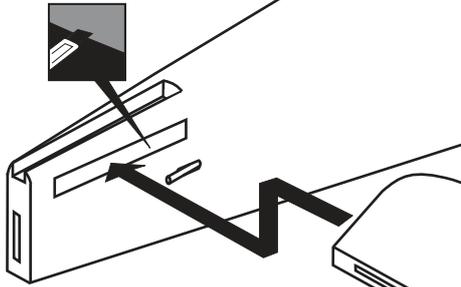


! Motor side thrust is already built into the firewall.

20- HORIZONTAL STABILIZER

Ensure the horizontal stabilizer is securely glued into place as a failure of this assembly will result in a crash.

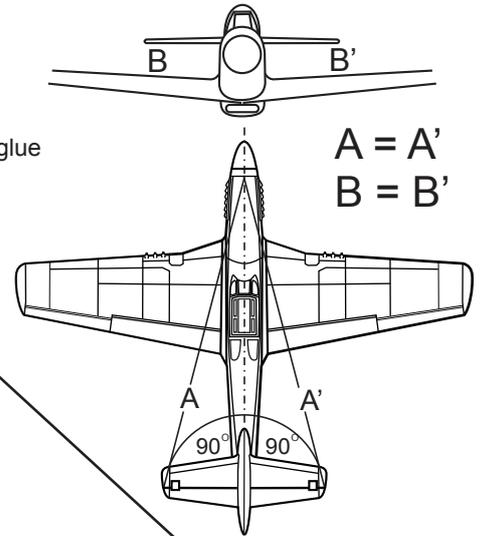
Cut away only the covering on both the right and lefthand side



Cut away the covering on both the top and bottom of the stabilizer



Apply epoxy glue to both sides



1-Trial fit the horizontal stabilizer into the slot in the fuselage.

Check the alignment, when you are satisfied with the alignment use a pencil to draw around the top and bottom of the stabilizer where it meets the fuselage.

2-Remove the horizontal stabilizer from the fuselage. Use a sharp hobby knife to carefully cut away the covering inside the marked pencil lines.

3-Spread epoxy (30 minute) onto the top and bottom of the horizontal stabilizer along the area where the covering has been removed.

4-Install the horizontal stabilizer into the fuselage and adjust the alignment as described in step 1

5-Wipe off any excess epoxy using a paper towel and kerosene.

Allow the epoxy to cure before proceeding to next step.

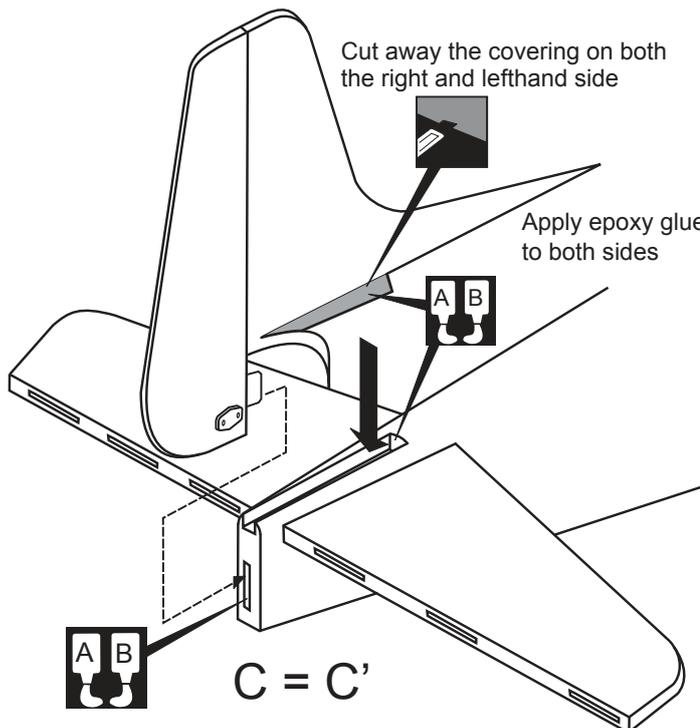
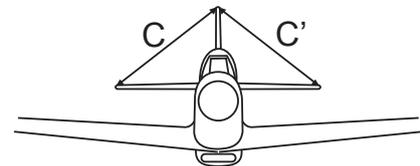
*** WARNING:** When removing any covering from the airframe, please ensure that you secure the cut edge with CA or a similar glue, this will ensure the covering remains tight.

21- VERTICAL STABILIZER

Cut away the covering on both the right and lefthand side



Apply epoxy glue to both sides



1-Trial fit the vertical stabilizer into place in the rear of the fuselage, check the alignment. When you are satisfied with the alignment use a pencil to draw around the right and left of the stabilizer where it meets the fuselage.

2-Remove the vertical stabilizer from the fuselage. Use a sharp hobby knife to carefully cut away the covering inside the pencil lines.

3-Apply 30 minute epoxy to the right, left and bottom of the vertical stabilizer along the area where the covering has been removed and to the fuselage where the vertical stabilizer mounts.

4-Install the vertical stabilizer into the fuselage and adjust the alignment as described in step 1.

5-Wipe off any excess epoxy using a paper towel and kerosene.

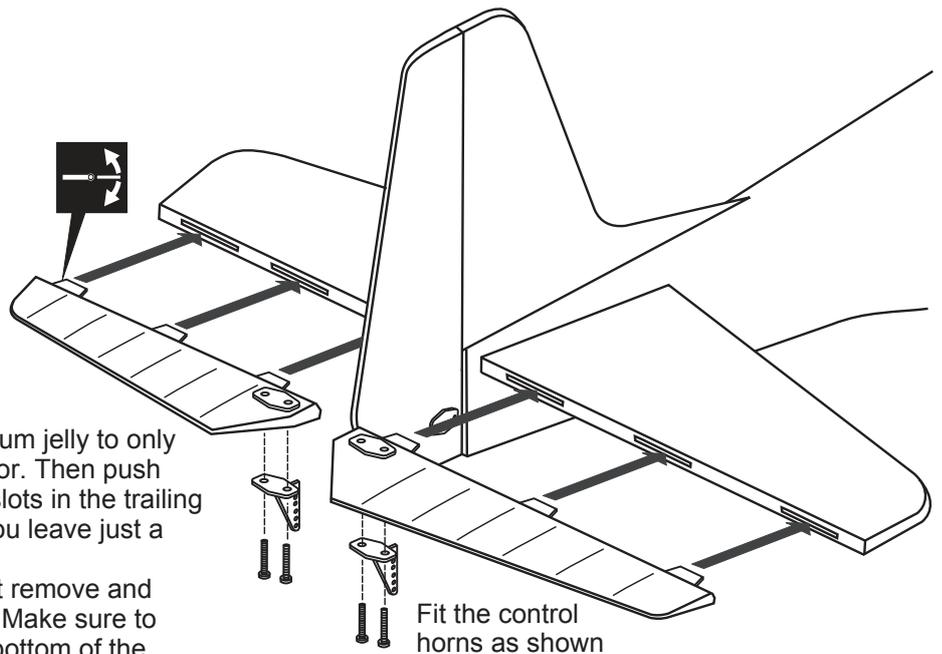
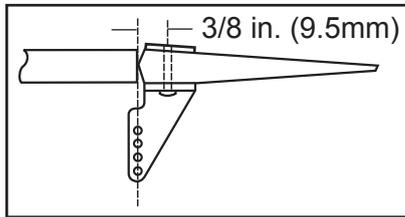
Allow the epoxy to cure before proceeding to the next step.

Ensure this joint is strong, if it fails in flight the plane will crash.

*** WARNING:** When removing any covering from the airframe please ensure that you secure the cut edge with CA or a similar glue, this will ensure the covering remains tight.

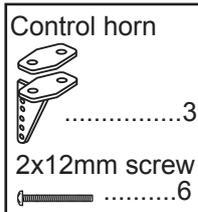
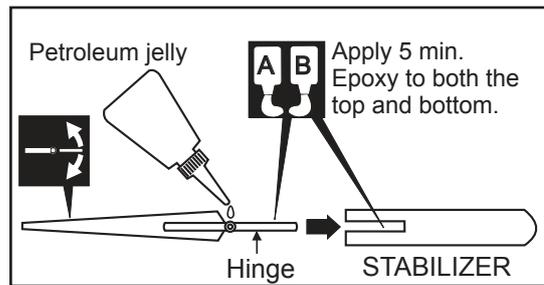
22- ELEVATOR

Please ensure the hinges are securely glued into place, any failure will cause a crash.

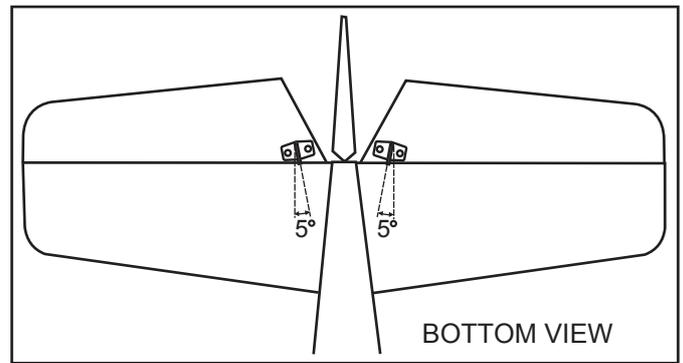


Fit the control horns as shown

Apply a thin layer of machine oil or petroleum jelly to only the pivot point of the hinges on one elevator. Then push the elevator and its hinges into the hinge slots in the trailing edge of the horizontal stabilizer. Ensure you leave just a minimal gap to avoid binding of the hinge. When satisfied with the gap and alignment remove and apply 5 minute epoxy the elevator hinges. Make sure to apply a thin layer of epoxy to the top and bottom of the hinges and to inside the hinge slots. Slide the elevator hinges back into the slots in the stabilizer leaving the small gap as above. Repeat this process for the other elevator.

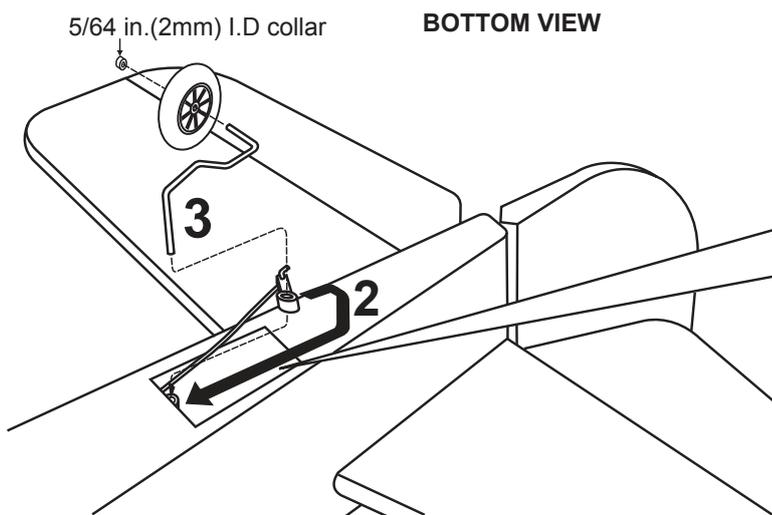


Control horn3
2x12mm screw6



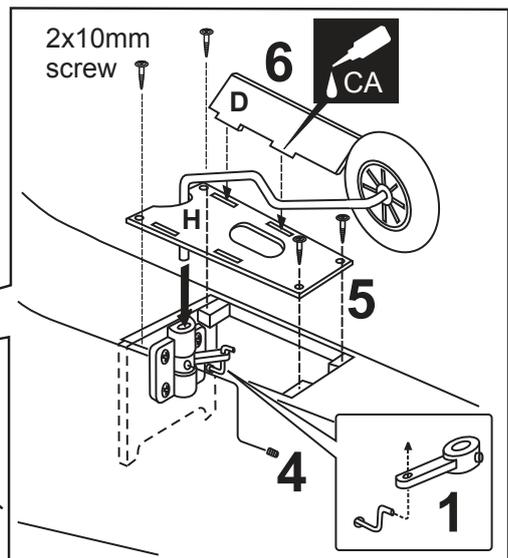
BOTTOM VIEW

23- TAILWHEEL

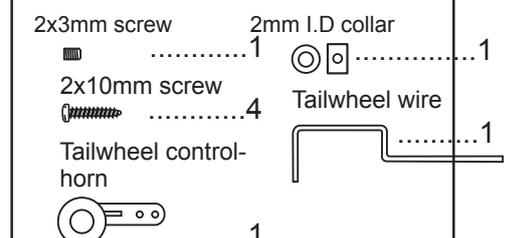


BOTTOM VIEW

5/64 in. (2mm) I.D collar



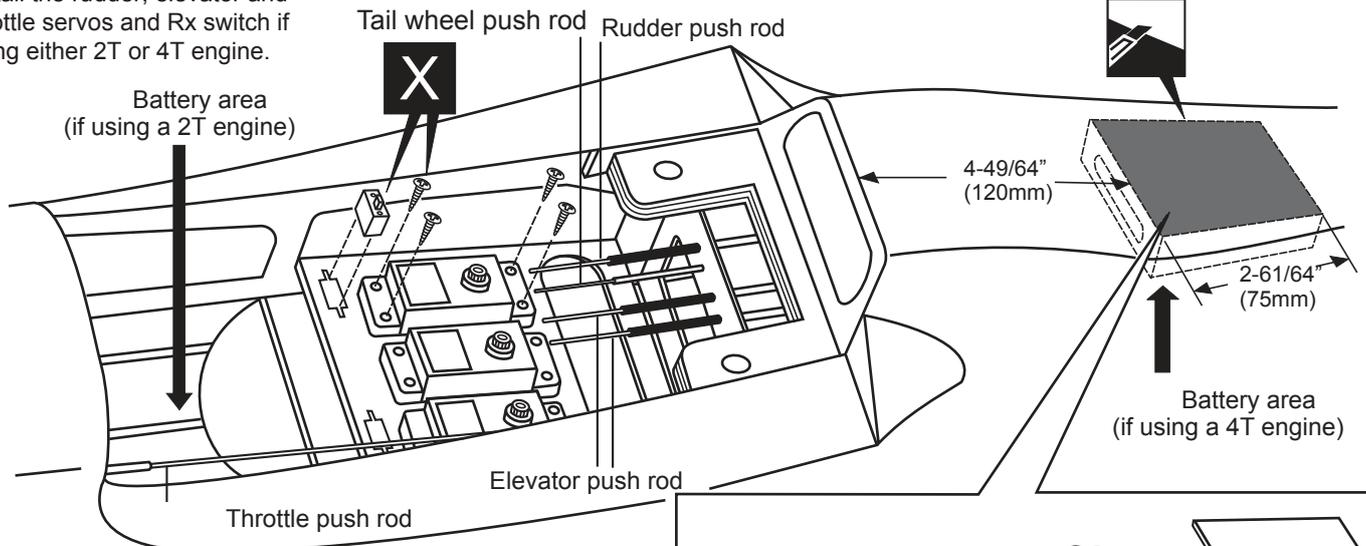
- 1- Insert the tailwheel pushrod into the hole in the tailwheel control horn as shown.
- 2- Install the tailwheel control horn to the tailwheel wire.
- 3- Install the tailwheel assembly as shown.
- 4- Secure the tailwheel control horn to the wire using a 5/64" (2mm) screw, ensure a smooth non-binding movement.
- 5- Install the tail wheel hatch (H) using 4 off 5/64x25/64" (2x10mm) self tapping screws.
- 6- Attach the tail wheel doors (D) in using CA glue.



2x3mm screw1
2mm I.D collar1
2x10mm screw4
Tailwheel control-horn1
Tailwheel wire1

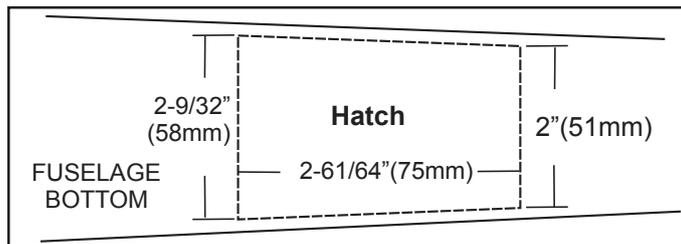
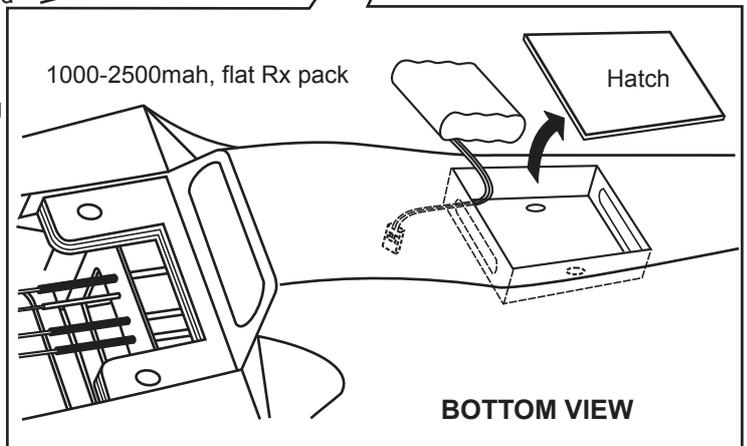
24- SERVOS AND RX BATTERY

Install the rudder, elevator and throttle servos and Rx switch if using either 2T or 4T engine.



If using a 4T engine.

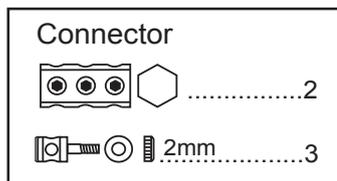
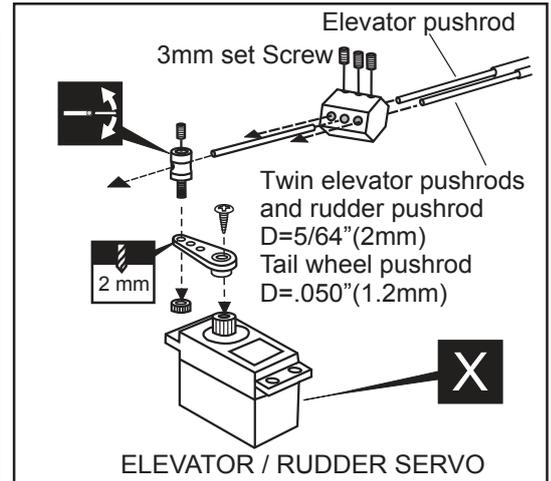
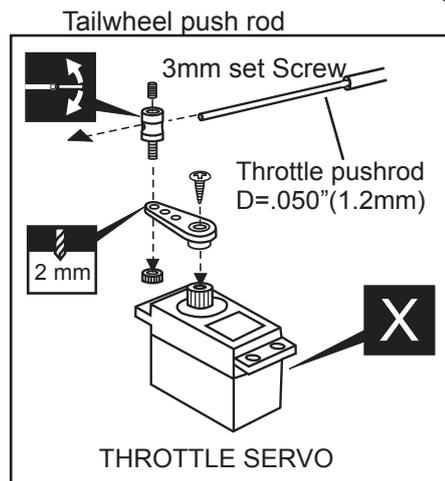
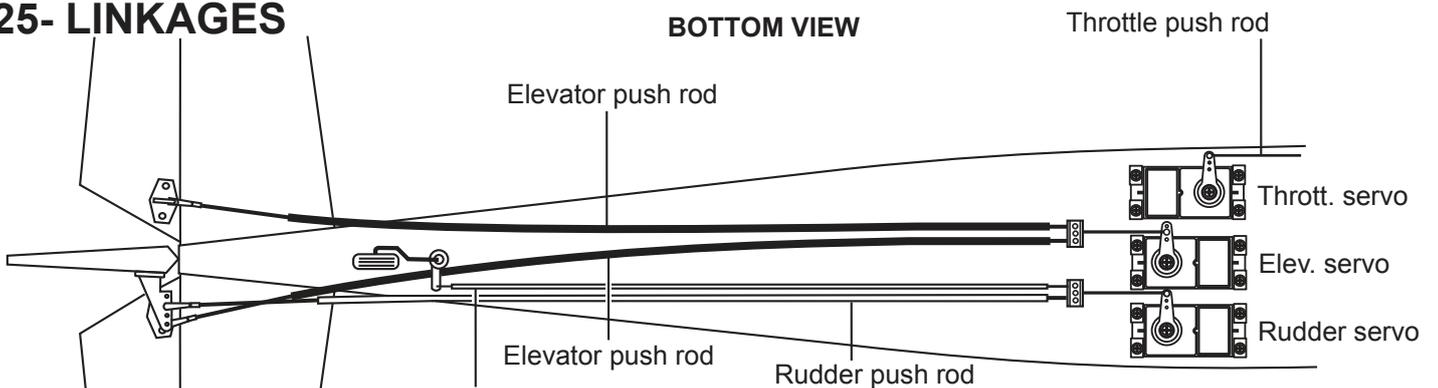
Carefully cut a panel 2-9/32" (58mm) wide x 2-61/64" (75mm) long through both the covering and the balsa wood 4-49/64" (120mm) back from the servo compartment as shown. Remove this section and this will reveal a built in battery box. Install your Rx battery and ensure it is secure with rubber bands or similar.



Link the battery cable to an extension lead then reposition the hatch and secure with CA glue.

25- LINKAGES

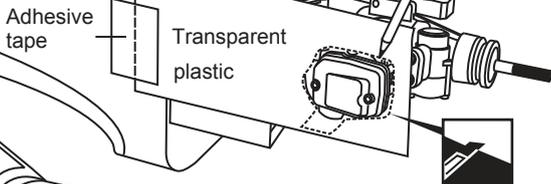
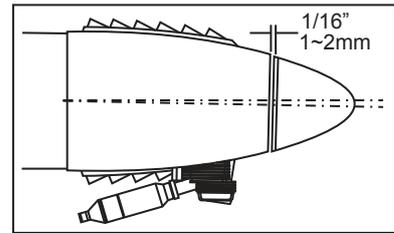
BOTTOM VIEW



26- COWLING

3/32x25/64" self tapping screw
2.5x10mm



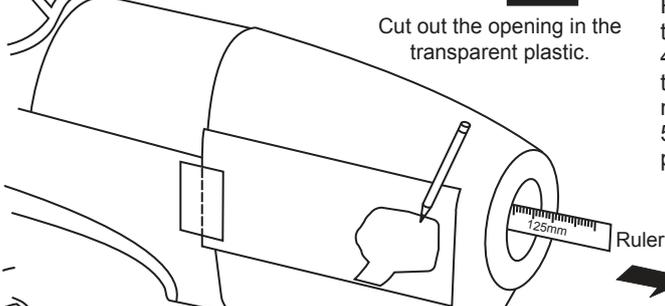


Adhesive tape

Transparent plastic

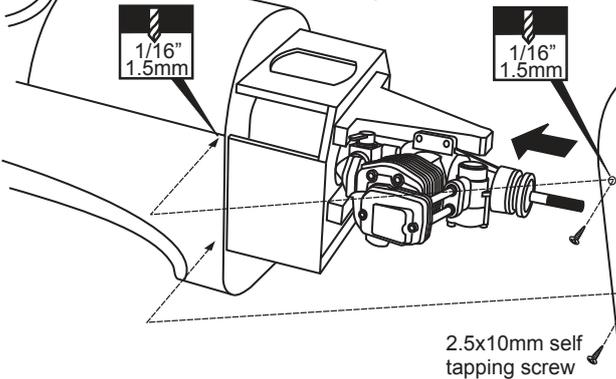
Cut out the opening in the transparent plastic.

- 1- Attach a piece of transparent plastic to the side of the fuselage with adhesive tape as shown.
- 2- Use a pencil or felt tipped pen to draw around the engine head where it will exit the cowl. Cut around the lines drawn on the transparent plastic to form a template.
- 3- Remove the engine and attach the cowl to the fuselage with a distance from the firewall to the front of the cowl of 4-59/64" (125mm). Re-attach the transparent plastic and then draw around the inside of the cut-out with a pencil onto the cowl.
- 4- Remove the cowl from the fuselage and carefully cut the opening for the engine head as marked above. Do the same for the hole for needle-valve.
- 5- Refit the engine then install the cowl to the fuselage and secure in place with 5 off 2.5x10mm self tapping screws.



Ruler

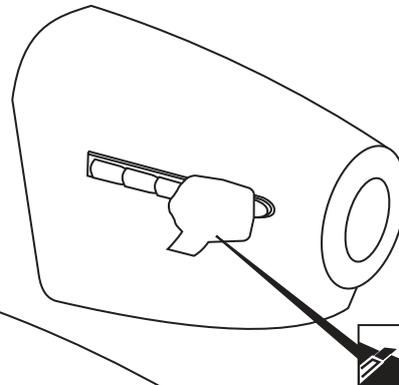
Mark the cut out with a pencil.



1/16" 1.5mm

1/16" 1.5mm

2.5x10mm self tapping screw

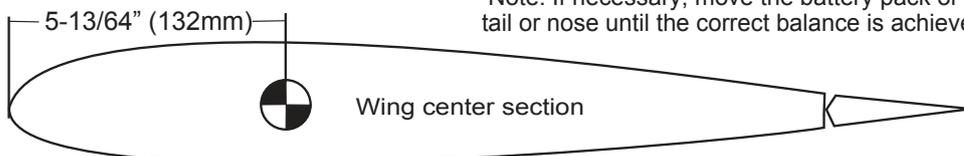


Cut out the opening in the cowl for the cylinder head.

27- CENTER OF GRAVITY

DO NOT try to fly an out-of-balance model !

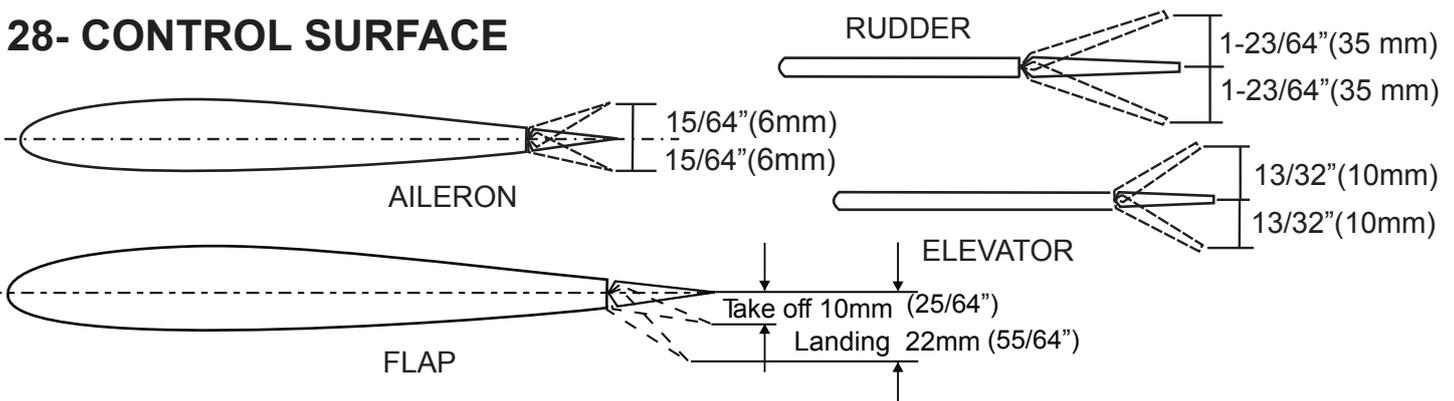
Note: If necessary, move the battery pack or add weight to either the tail or nose until the correct balance is achieved.



5-13/64" (132mm)

Wing center section

28- CONTROL SURFACE



RUDDER

1-23/64" (35 mm)

1-23/64" (35 mm)

15/64" (6mm)

15/64" (6mm)

AILERON

13/32" (10mm)

13/32" (10mm)

ELEVATOR

FLAP

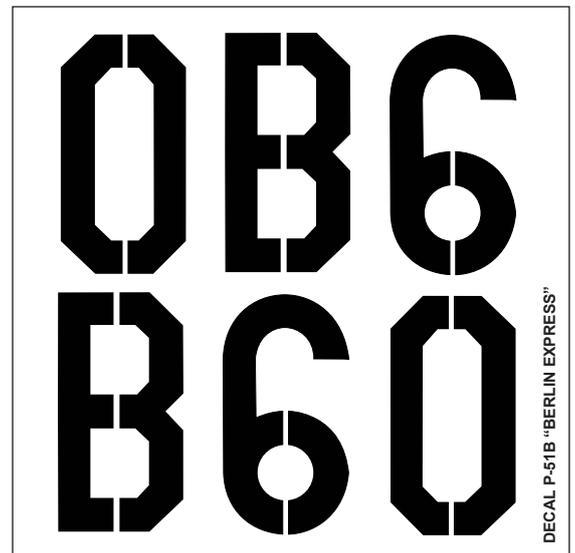
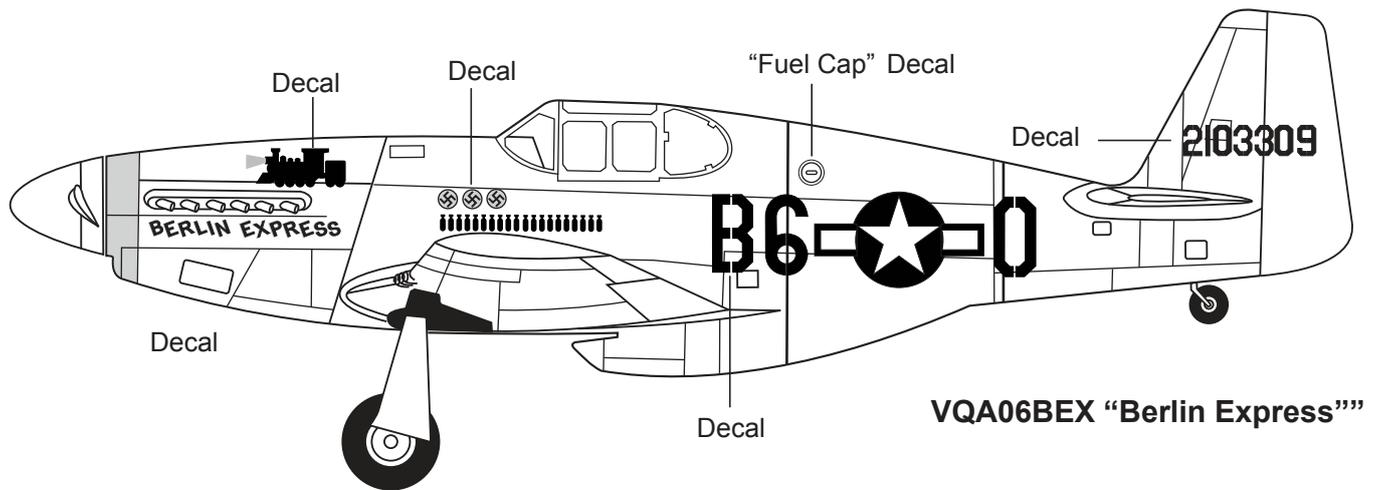
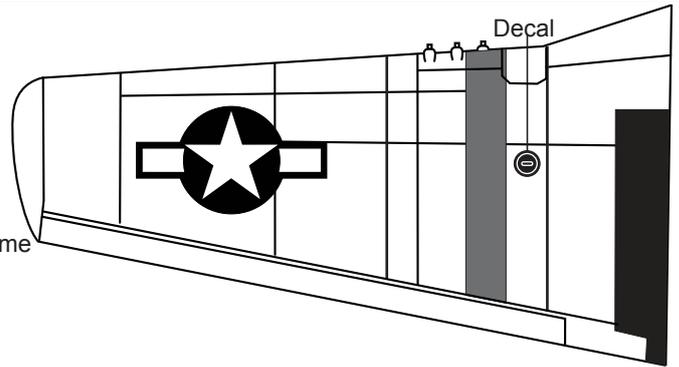
Take off 10mm (25/64")

Landing 22mm (55/64")

IMPORTANT: These control throws are recommended for your first flights. Once you have become accustomed to the handling of the P51 you can then if need be make some adjustments to suit your particular flying style. Remember though that too much control throw can make it very difficult to fly so please remember, "more is not always better".

29- DECALS

- 1- Cut out the decals and apply them to the positions shown.
- 2- Do not peel the backing paper off all at once. Peel off one corner of the backing and remove with scissors.
- 3- Place the decal in the correct position on the model and when with this position firmly press the corner without backing into place.
- 4- Then carefully peel back the rest of the backing while at the same time pressing the rest of the decal into place with your finger.
- 5- If you are unfortunate enough to get an air bubble then prick the center of the bubble only with a pin or point of a craft knife and carefully push the air out.
- 6- With any curves carefully stretch the decal and apply a little heat so that no creases occur, cut off any excess that may occur.



All details are subject to change without notice !

IMPORTANT: Please do not clean your model with pure alcohol, only use liquid soap with water or use glass cleaner to clean the surface of your model.

Safety Precautions:

- 1. If you have the simulator, we suggest that you can practice your skill using the simulator before you fly this model, this will help when you come to fly the P51 for the first time.**
- 2. Climb the plane out straight from the take-off area without turning to about 50 meters in height then throttle back to about 50-60% power whilst you get used to the flying characteristics.**
- 3. Initial turns should be gentle and be careful not to stall the plane with too much elevator.**
- 4. When taking off or landing the plane ensure this is always done into wind.**
- 5. The first few landings should be flown without the use of flaps. Once you are used to landing flapless then have a go at landing with full flap. The flaps will create quite a bit of drag so watch your airspeed on the approach. You will need to approach steeper when the flaps are down to maintain the airspeed and some throttle/power will be required for the round out and flare.**
- 6. Finally, do not fly the model over your head or behind you, always try to fly the model in front of you.**