

MAX-THRUST

# RIOT



Balsa *Pro-Built*  
Series



**Instruction Manual**

# MAX-THRUST

## Statement

### Warning:

This radio controlled model is not a toy. It requires skill to fly and is not recommended for use by beginners without assistance from an experienced model pilot. It should not be operated by children without the supervision of a suitably experienced adult.

Max-Thrust reserves the right to modify the specification of this model at any time.

### Safety Precautions

1. Do not attempt to repair or modify this aircraft with non-factory parts.
2. Never fly this model over roads, railway lines, near to power lines, airports, do not fly this model in excessively strong winds, in the rain, or thunderstorms.
3. Do not fly or launch the model towards people.
4. Keep hands and face away from rotating propeller at all times.
5. We strongly recommend that all fixings and fasteners used in the construction of this model are checked regularly for integrity. Failure to do so could cause a crash, injury to yourself or others around you.
6. We only recommend the use of 2.4GHz radio equipment with this model.

### Disclaimer

1. This radio controlled model is not a toy. Used incorrectly it is capable of inflicting serious injury to persons or damage to property. The owner/pilot assumes all responsibility for any damage to persons or property resulting from the use of this product.
2. The manufacturer and distributor decline all responsibility for any liability arising from use of this product.
3. It is very important that you follow all instructions for assembling and setting up of this model. Failure to do so could result in a loss of control and possibly a crash



Decals are shown fitted for illustration purposes only, they do not come fitted.

# Items Required

Some pictures throughout this manual may be of the prototype model and some details may now have changed. If you have any questions please contact us at [sale@jperkins.com](mailto:sale@jperkins.com)

## Tools:

- Philips Screwdriver Medium
- Philips Screwdriver Small
- Modelling Knife and Spare Blades
- 3mm Allen Key
- 2mm Allen Key

- Zap 15 Minute Epoxy Glue (5525782-1)
- Zap Slow Cyano Glue (5525660-1)
- Foam Padding



## Equipment:

- 1 x Transmitter and Receiver (Futaba T6K)
- 4 x Servo Hitec (HS-485HB ) Futaba (S-U400) (5 servo for IC)
- 2 x Radiant 200mm Servo Extension Leads
- 1 x Radiant 200mm Y-Lead



## IC Version:

- 1 x SC 40-52 Size Model Engine
- 1 x Suitable Propeller
- 1 x Radiant Receiver Battery (RDNA0200)
- 1m Fuel Tube
- 1 x Fuel Filter

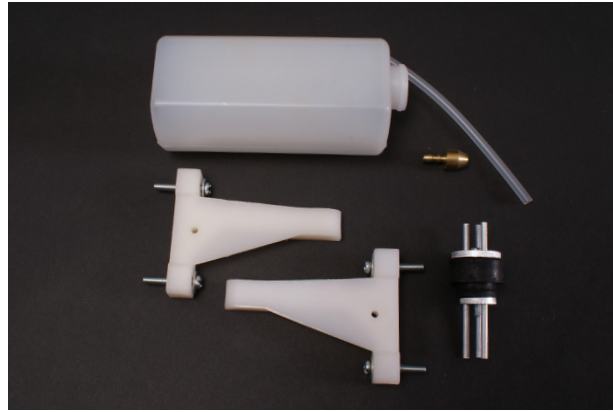


## Electric Version

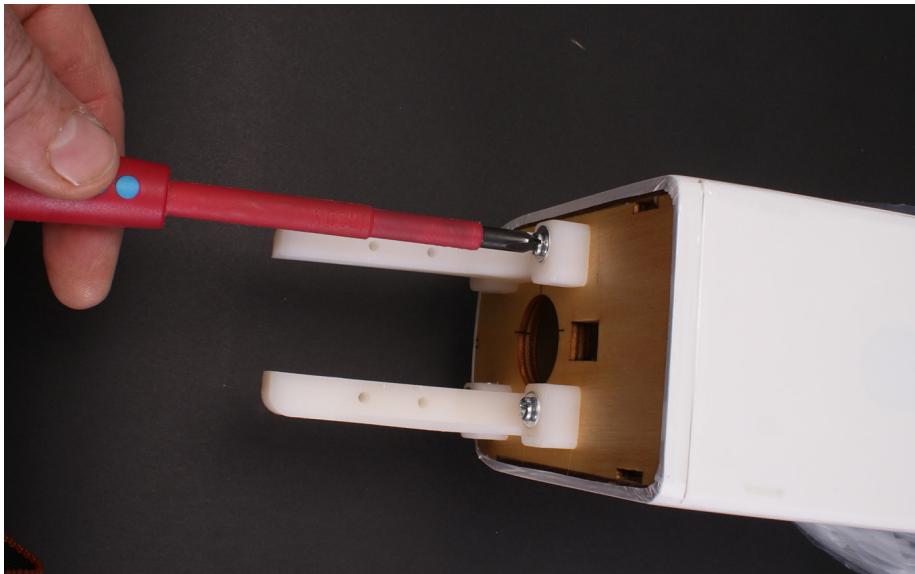
- 1 x Radiant Motor 4250 800kv(RDNM4250800)
- 1 x Radiant ESC 60-80A (RDNE8026)
- 1 x Suitable Propeller and Propeller Adapter
- 1 x Radiant LiPo 14.8v 4s 2200-2700mAh (RDNBS2700S4C50X6)



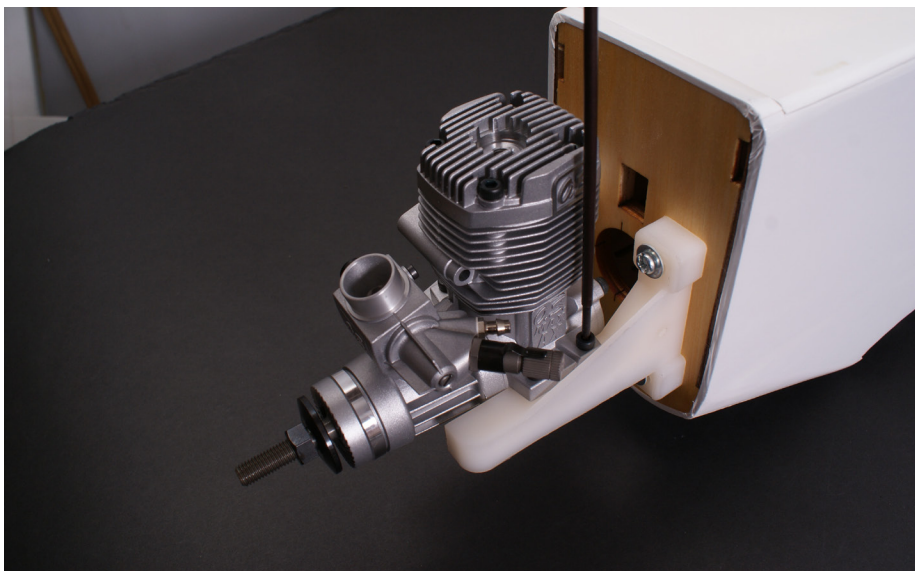
## Building Your IC Riot



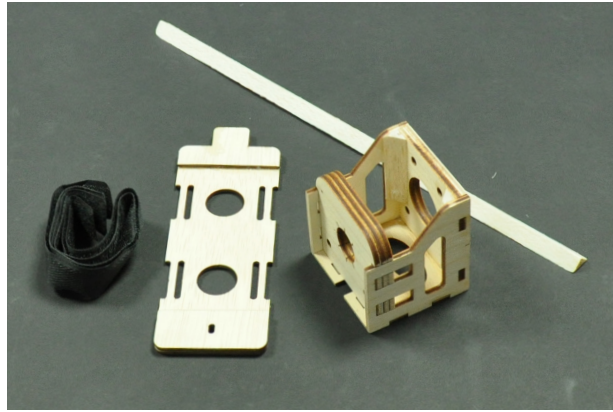
- 1. IC Version.** Using the 4mm x 25mm philips head screws (x4) and washers attached the engine mount to the bulkhead on the front of the model. Install the screws through the mount and make sure the mount is spaced correctly for your engine then test fit the cowl, 2 degrees of side thrust is built in to the model. Once happy with the position tighten the screws, if in doubt use a small amount of thread lock.



- 2. IC Version.** Use the 3mm x 25mm cap head screws, washer and 3mm lock nuts to fix the engine to the engine mount. The engine should be mounted with approx 2 degrees of right side thrust so make sure the spinner lines up the cowl.



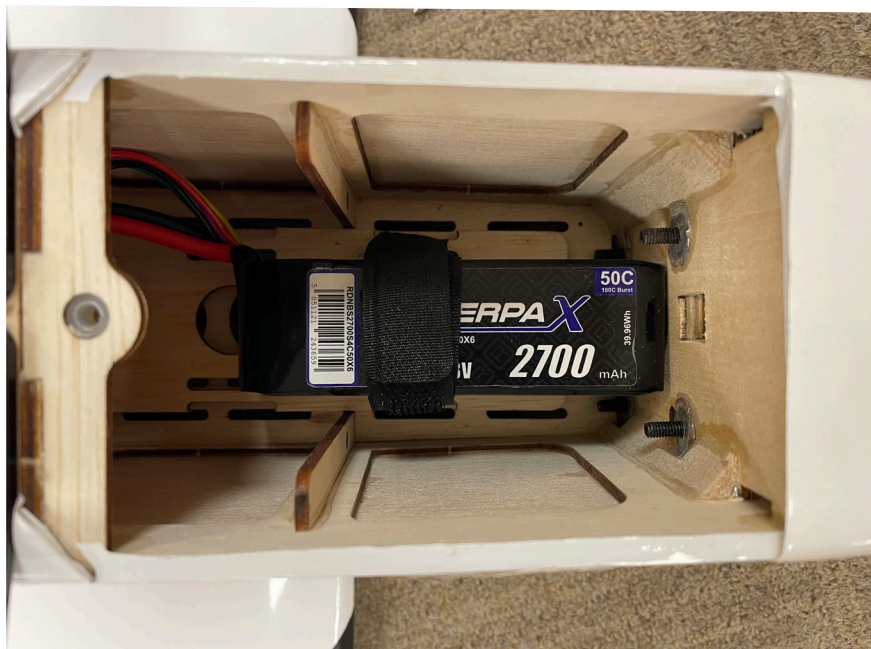
## Building Your Electric Riot



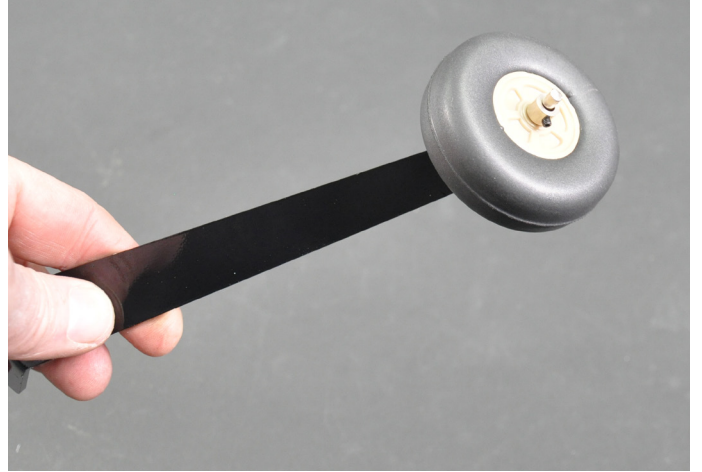
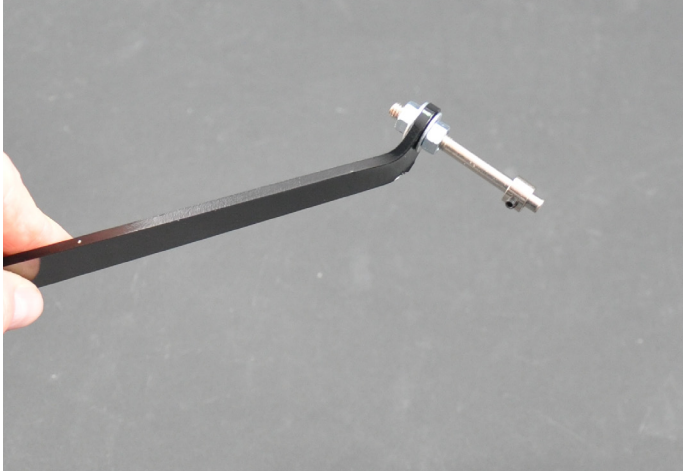
- 1. Electric Version.** Screw the wooden motor mount on using the 4mm x 20mm cap head screws and washers. Mount the brushless motor using 3mm x 20mm cap head screws and captive nuts on to the central line of the mount. Test fit the cowl and adjust the motor position forwards or backwards to make sure the spinner and prop clear the cowl.



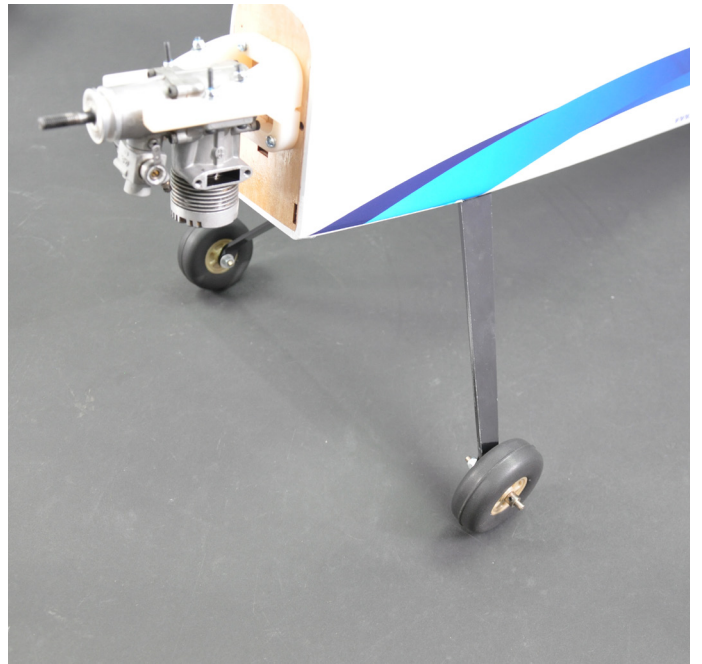
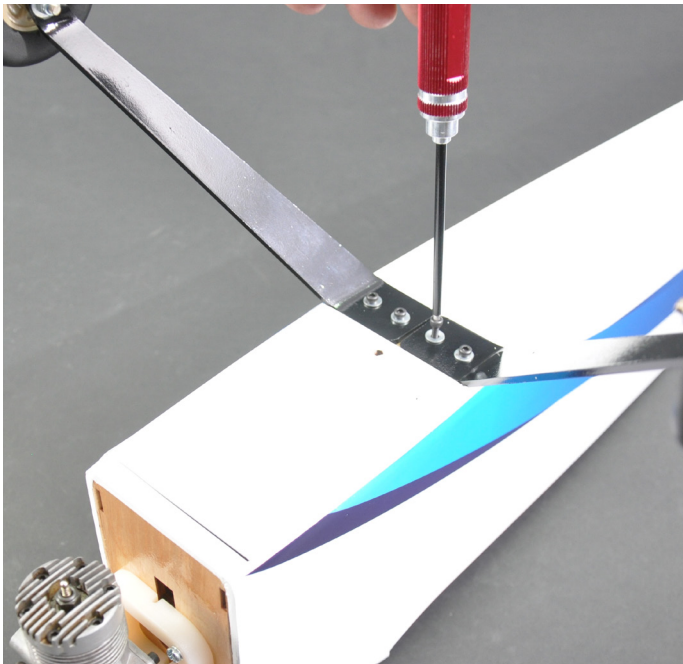
- 2. Electric Version.** Once happy with the position of the motor glue the plate in place using 2 part epoxy glue and use sections of the triangle balsa to reinforce the joint and also apply glue to all the existing joints to reinforce them. The battery is placed on the battery tray and secured with velcro. This plate is then screwed in to place in the battery/fuel tank bay that is accessible by undoing the small screw. Once in place you should be able to remove the battery by undoing the velcro.



3. Put the axles on to the alloy landing strut and tighten the 5mm nuts and washers hard against each other. Fit the wheel and secure in place with the wheel collet. Repeat on both sides. You can use thread lock or a dab of Cyno to stop the nuts coming loose.



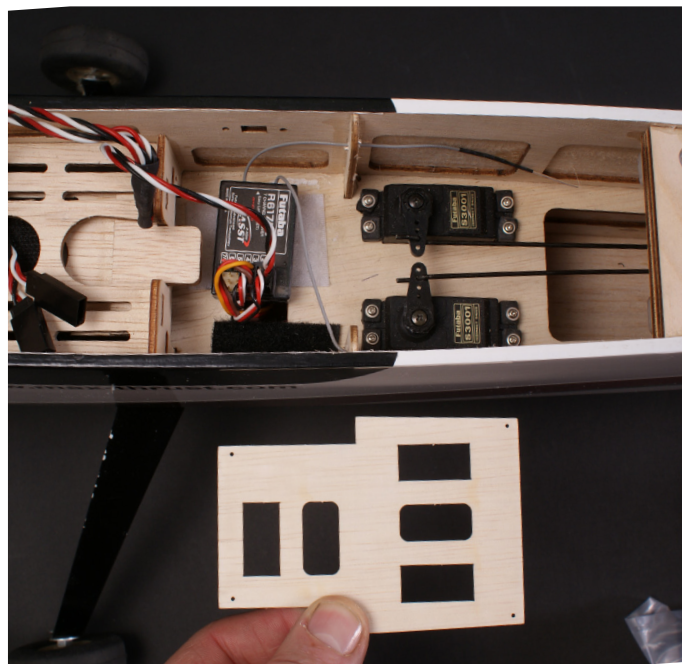
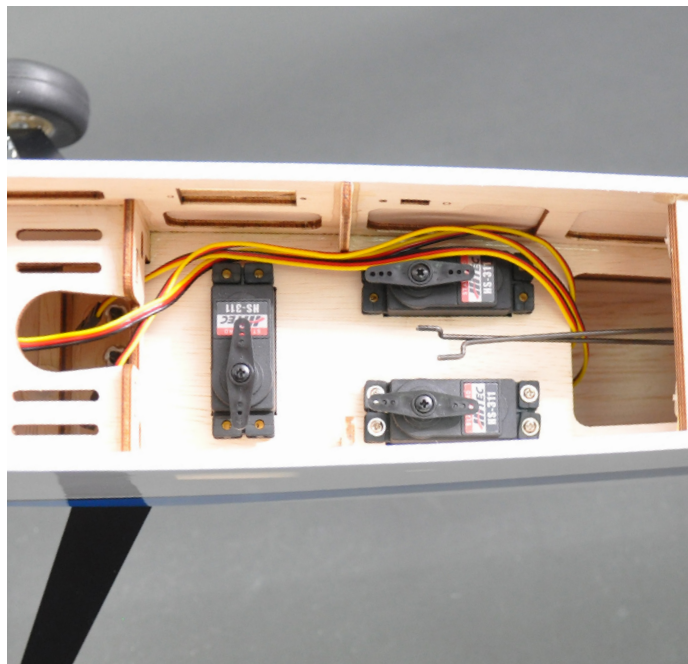
4. Position the assembled landing gear on to the fuselage and secure with the 3mm x 20mm screws and washers. Putting the screws in partially to start with will help with lining up the screw holes and you can then tighten everything once all the screws are in place and you are happy with the fit.



5. Locate the push-rods and remove the metal quick-links, you will now be able to push them down the pre installed plastic guide tubes in the fuselage, be careful when the push-rods exit the fuselage use a sharp knife to cut the covering, re-affix the metal quick-links with the 2mm nuts once installed.

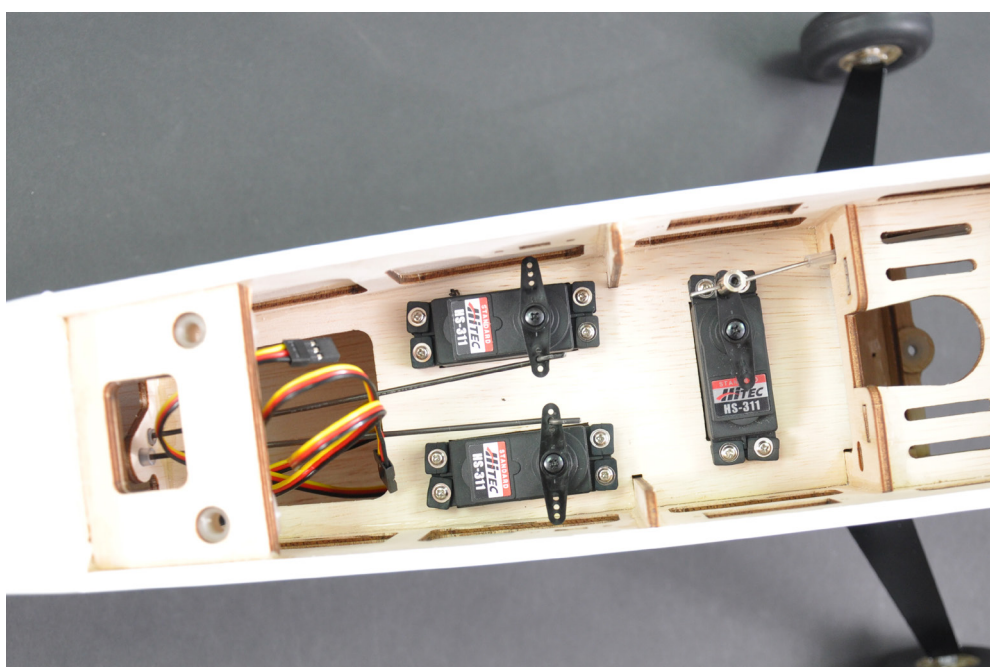
6. **IC Version.** Install the three servos (elevator, rudder, throttle) in to the fuselage.  
**Electric Version.** Install the elevator and rudder servos in to the fuselage.

The holes are pre cut for standard size servos but you will find in the kit that there is an additional servo plate that you can screw in to place to allow you to use smaller servos.

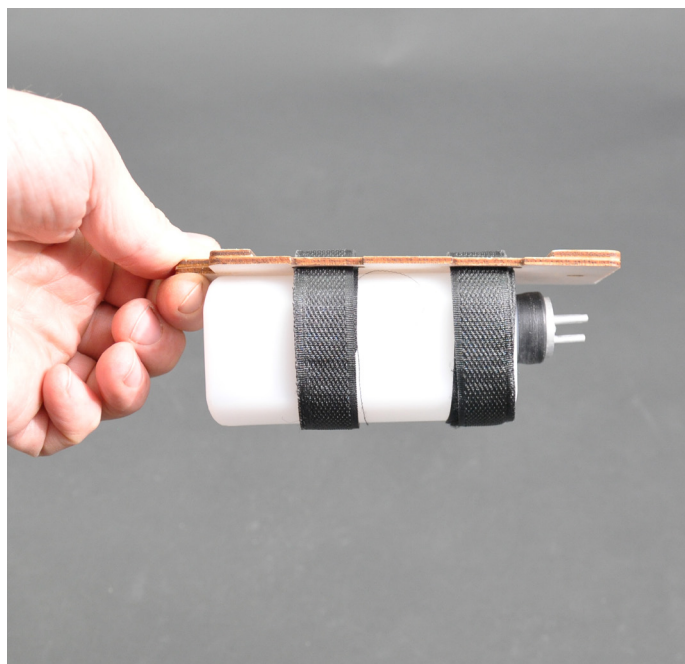
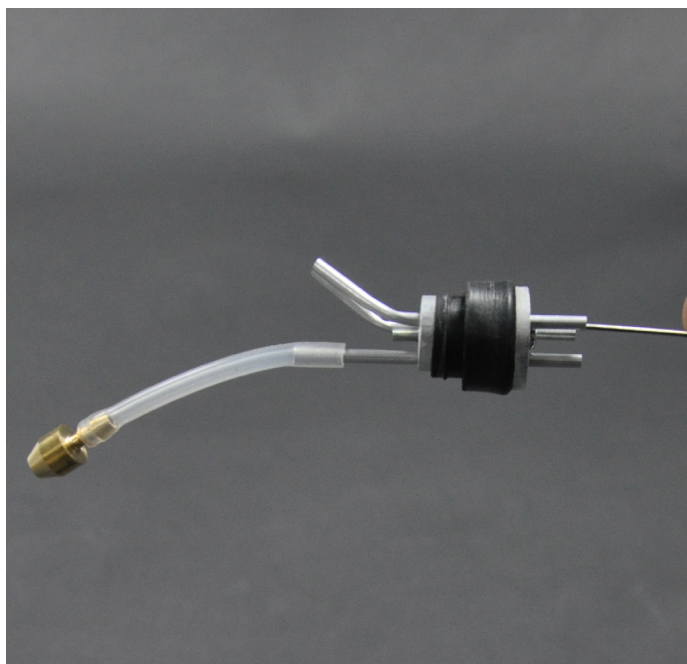


7. **IC Version Only.** Install the throttle push-rod, you can remove the battery/tank door to help rout the push-rod through fuel tank bay. Mount the rod connector to the servo arm for easy connection and then cut to length to suit your engine making sure you have full throttle movement.

**Both Versions.** Connect up the elevator and rudder push-rods to your servos and check for full and free movement.



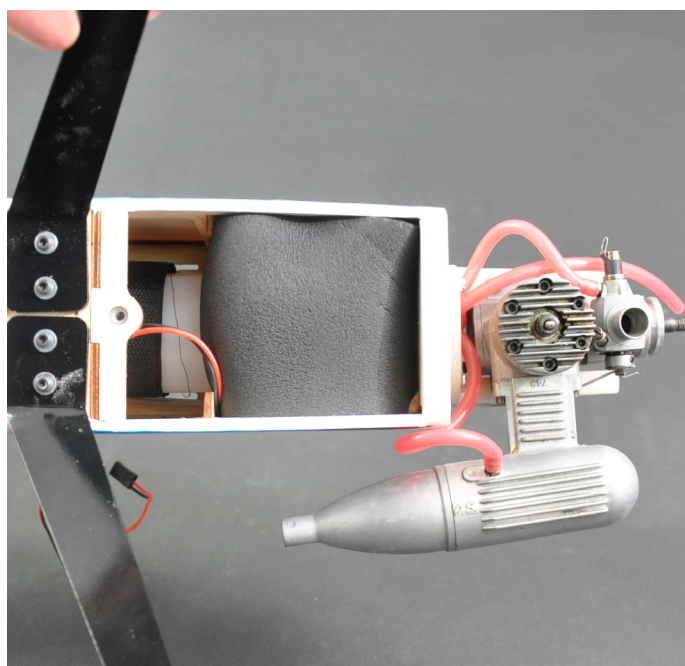
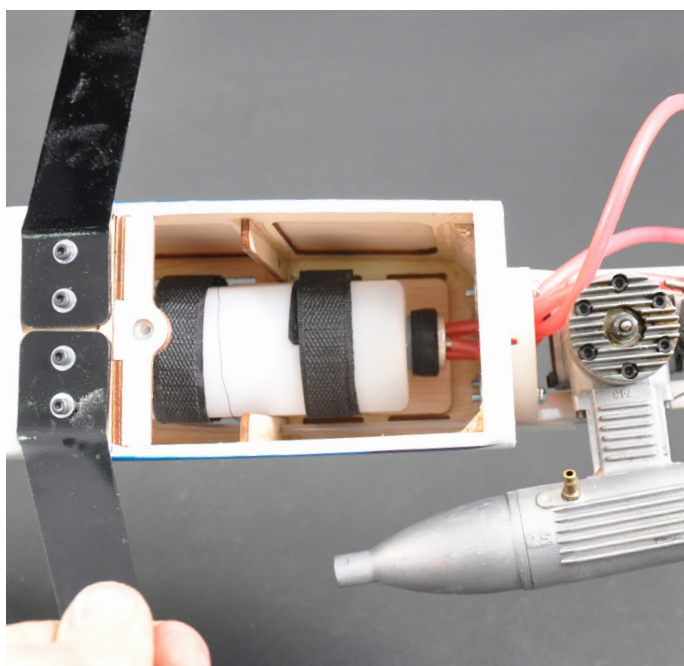
8. **IC Version.** Make up the tank and install in to the fuselage using extra fuel tube to help route through to the engine. The clunk needs to be approx. 70mm long and the vent pipes need to be softly bent up to the top of the tank. Remember to tighten the screw to secure the bung in place in the tank.



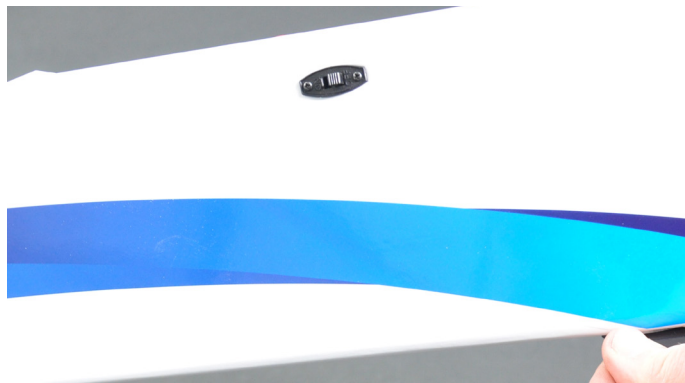
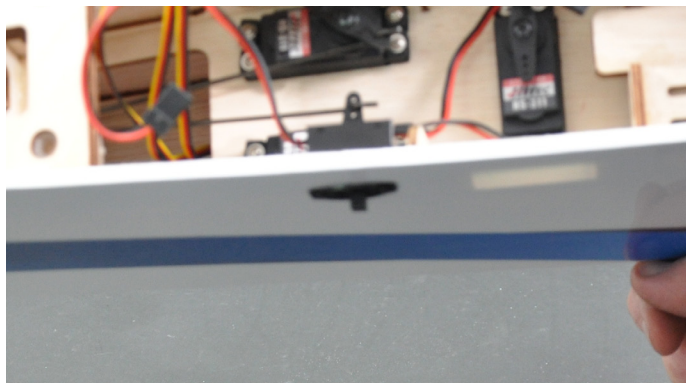
### 9. **IC Version Only**

The fuel tank is mounted on to the ply plate using the Velcro straps and then screwed in to place using the 3mm x 10mm cap screw and washer. Connect the carburettor to the feed/clunk line and one of the vent pipes to the muffle pressure feed, the remaining vent pipe is used for tank filling. Make sure to leave extra tube on vent and filling pipes as this will help later.

For IC Versions we recommend mounting the battery under the fuel tank wrapped in foam. We recommend using lead locks on all connectors. Its easier to fit the switch after installing the battery and connecting up using a lead lock.



**10. IC Version.** The On/Off switch is best installed on the non exhaust side of the model above the throttle servo. Photo shows prototype model switch position.



**11. IC Version.** Now you need to mount the cowl using 2mm x 8mm self tapping screws. Make 4 x 3mm holes in the cowl and 2mm holes around the firewall and self tap the screws in to the wood of the fuselage. To harden the holes you add a small dab of cyno/ca to the screw hole after removing the screw and allow to fully harden before reinstalling the screw. You can trial fit the spinner to help align the cowling.

You will need to cut a slot for the muffler in the cowling and a hole for the needle valve and for the glow plug driver. If you want to you can also add an extra cooling slot to the bottom part of the cowling.

**Top Tip.** Always cut or drill smaller openings to start with as they can always be made bigger if needed but you can't make a big hole or slot smaller without lots of work.

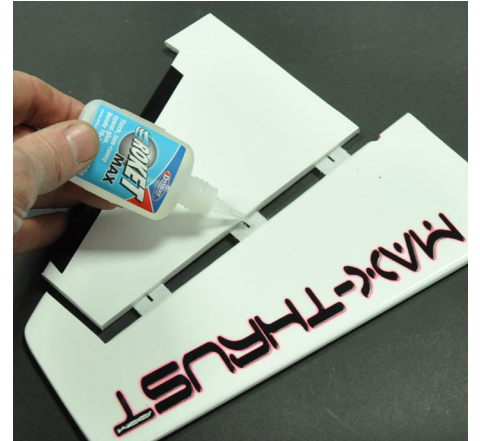
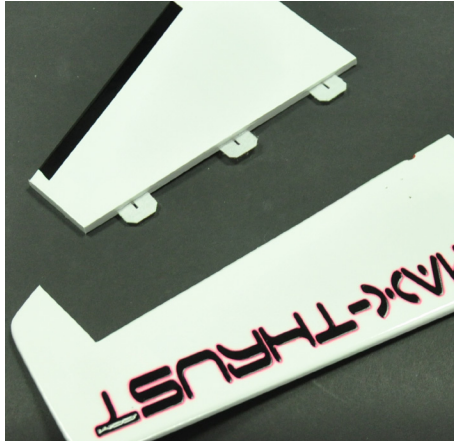
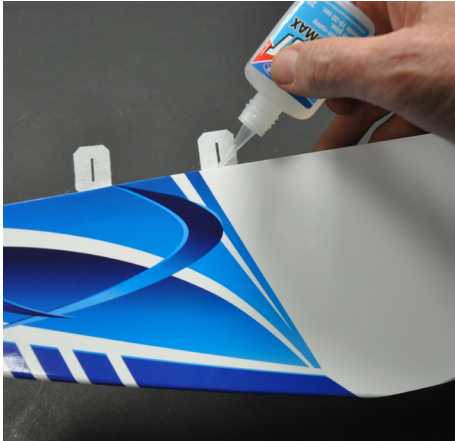
**For the Electric Version** you do not need to cut the cowling.

Fit the prop and spinner.

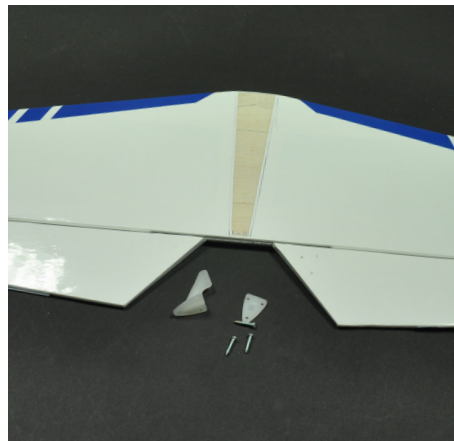
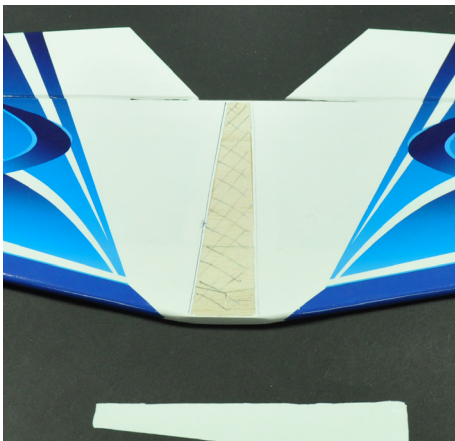
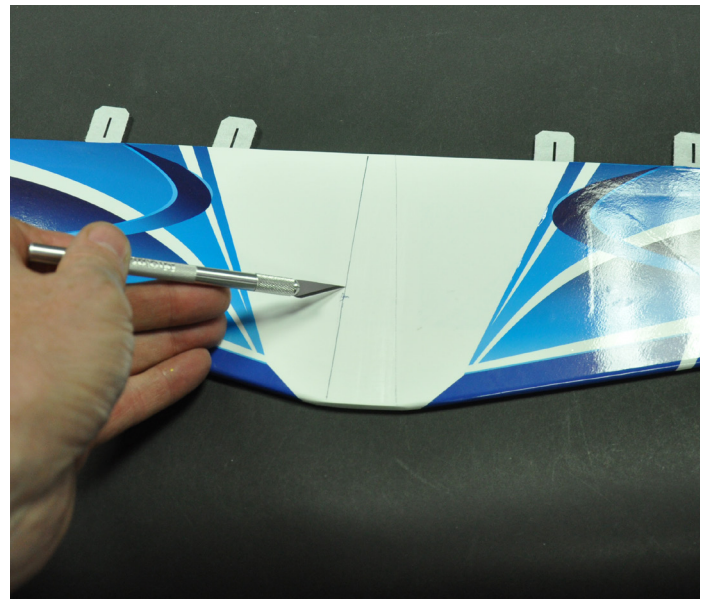
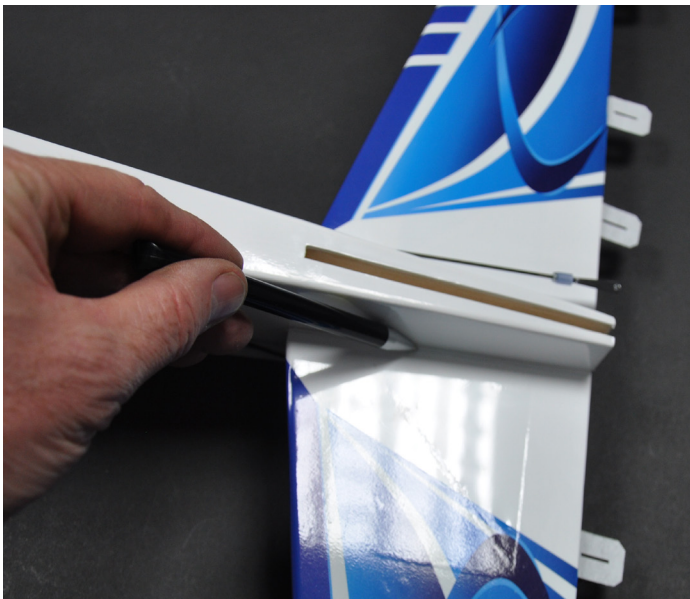


## Tail Feathers

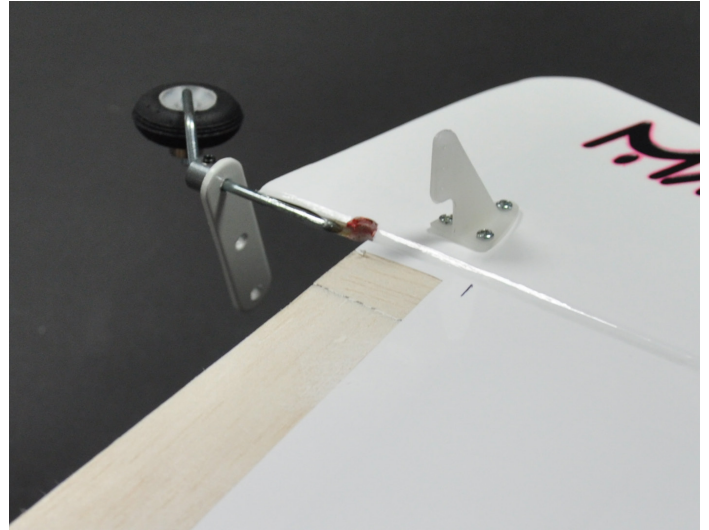
12. All of the hinges need to be glued in using slow CA. Start by gluing in the hinges to the tail and fin. The elevator and rudder can be fitted and glued in to place once you have checked the fit and made sure of full movement.



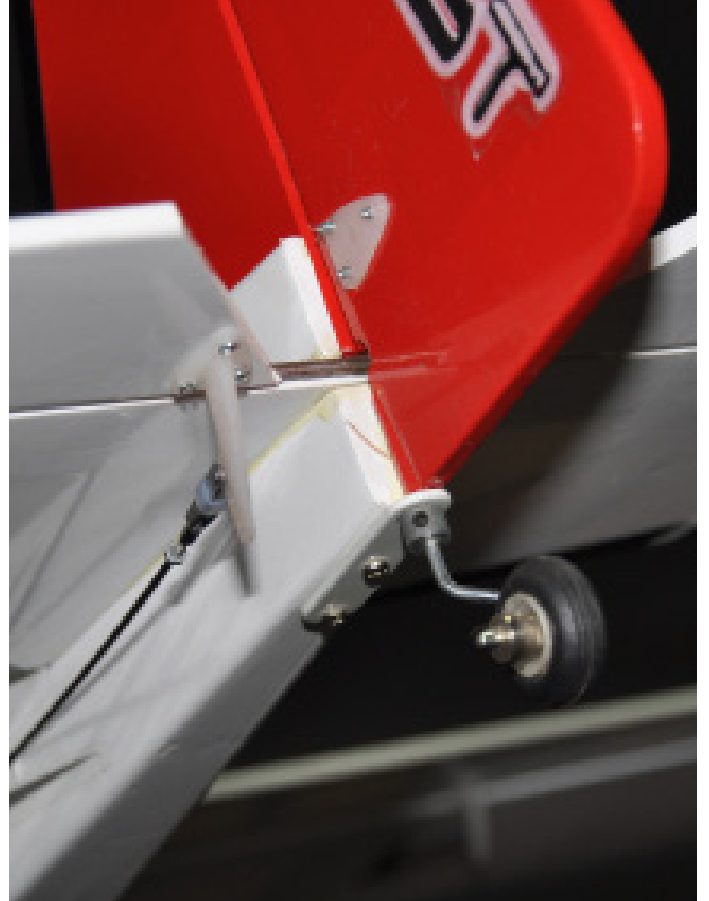
13. When fitting the tail and fin the covering needs to be removed so the 30 minute epoxy can set hard wood to wood. Slide the tail plane in to place making sure it is aligned and spaced correctly and mark the position on the film that needs to be removed using a pen on both the top and bottom. Slide the vertical fin in to place and mark the area of film that needs to be removed. Using a sharp knife remove the film approx 1mm inside of the line, this gives a better finish. Be careful not to cut in to the tail or the fin structure as this will weaken the surface. **Do not fit yet.**



- 14.** Install the tail wheel assembly on to the rudder and glue in place using 30 minute epoxy. Install the control horns on to both the rudder and elevator using the 3x12mm self tapping screws on each.

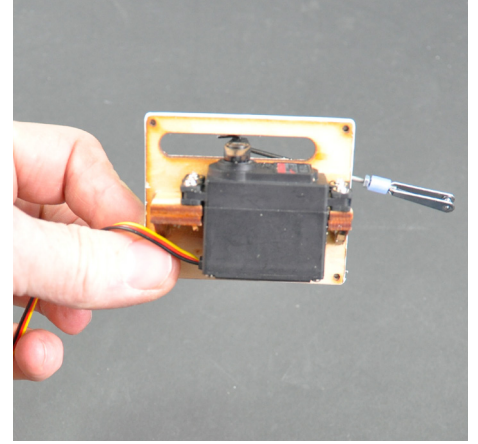
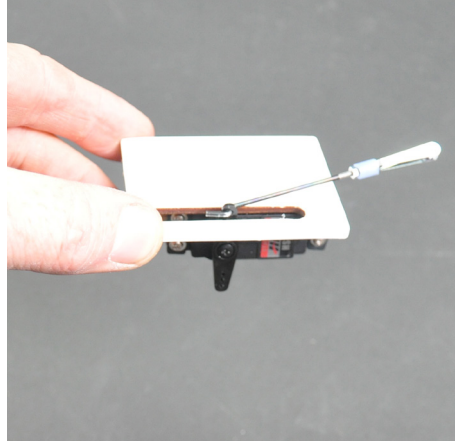
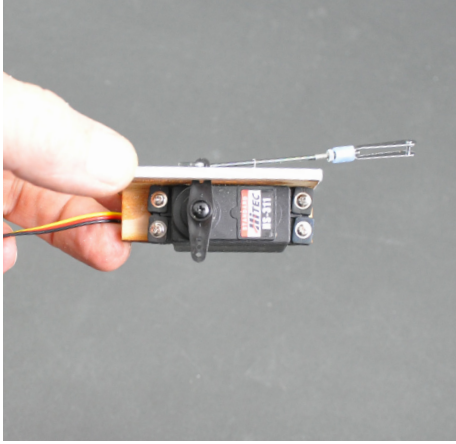


- 15.** Glue the tail plane assembly into place using a thin coat of 30 minute epoxy making sure that it is in the correct position and square with the fuselage, when set you can glue the rudder assembly in to place and once dry screw the tail wheel bracket in to place using the M3 x 10mm self tapping screws once again it is usefull to drill 2mm pilot holes for the screws to go into.



## Wing Assembly

**16.** Remove the servo mounts from the wing halves and install your servos to the plates. If using standard size servos remove the laser perforated part so they fit. Pilot drill the holes you need to suit the servos you are installing. Fit the aileron pushrods to the servo horn once the servo is centred and the horn is fitted.



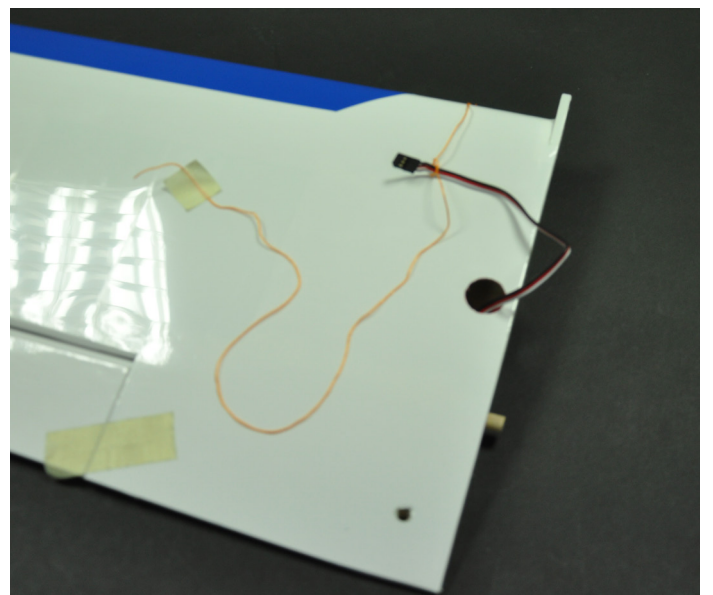
**17.** Fit the aileron hinges to the wing and glue in place using Cyno and once set fit the ailerons to the wing and glue. Screw the aileron control horns to the ailerons using 2x10mm self tapping screws. No horn clamps are needed as the screws are tapping in to a ply plate.

Repeat For both wing halves.

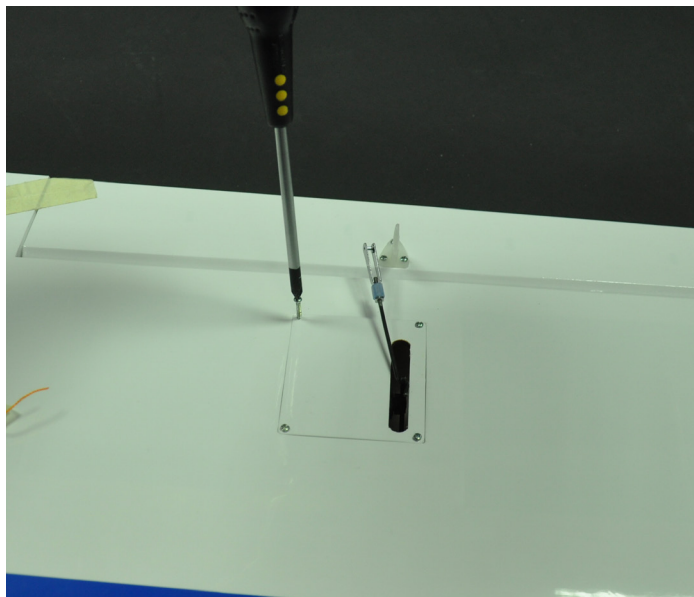


**18.** Connect the 200mm extension leads to the servoes using lead locks. Tie the string to the lead in the servo bay and pull the the lead through to the wing route carefully.

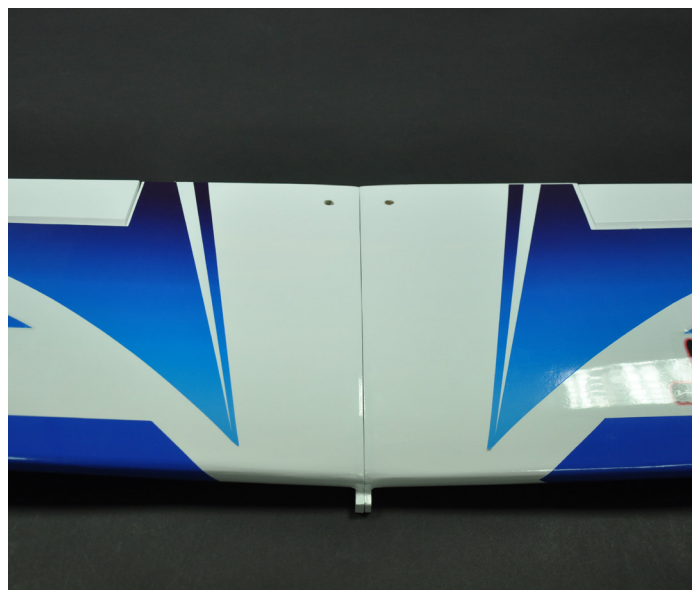
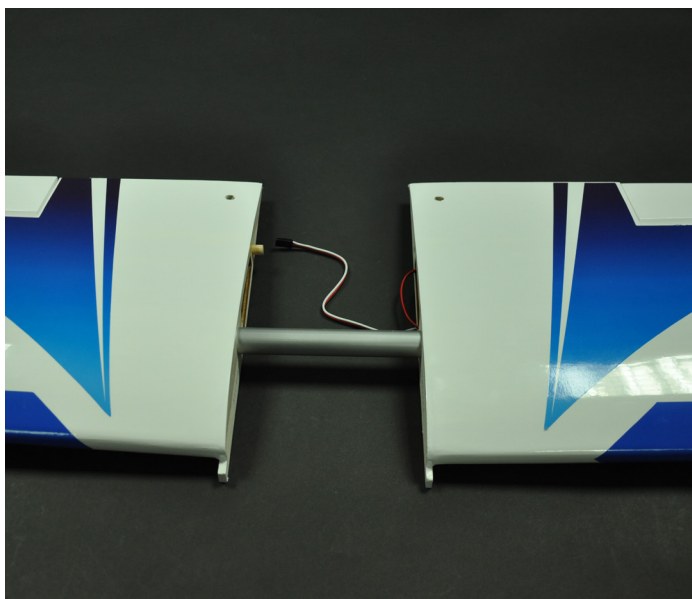
Repeat For both wing halves.



19. The holes for the 4 2x10mm self tapping screws are pre drilled in the servo cover, locate them and use them as a guide to drill 1.5mm holes for the screws to hold the servo hatch/mount in place on the wing. Repeat For both wing halves.



20. Insert the alluminium wing spar in to one half of the wing and then push the 2 wing halves together. Bolt the wing to the fuselage using the large nylon bolts. No glue is required so that the wing can be taking aparts for storage and transport.



21. Final Setup.

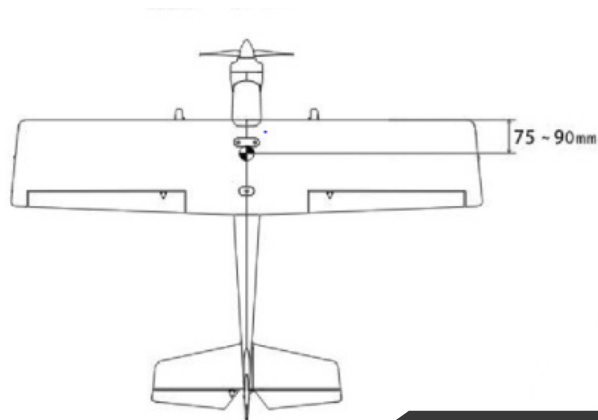
Control throws for first flight.

Aileron	10mm each way
Elevator	8mm each way
Rudder	12mm each way

You can increase these to suit your flying style after initial test flight are done.

*Happy Flying, Mark Tilbury.*

Centre of Gravity.



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