



## *Assembly Manual For*

# **Columbia 400**



**[www.pilot-rc.com](http://www.pilot-rc.com)**



***Thank you for purchasing our Columbia 400. we strive to achieve the real Quick Built and ARF aircraft .***

***It just requires the least amount of assembly of any kit that almost finished in factory. To obtain the perfect performance, both the design and manufacturing have been taken care with the highest quality from any hardware, covering ,wood and glue in the construction as well. By optimal weight and reliable construction, you will find this plane is really ideal for relaxing.***

***So we hope every effort and service we offer will make you feel easy and have a wonderful time in the pleasure of flying.***

**More information on website**

**[www.pilot-rc.com](http://www.pilot-rc.com)**



## WARRANTY

All Pilot-RC products are guaranteed against defects for 30 days of receiving your airplane. This warranty is limited to construction or production defects in both material and workmanship, doesn't cover any component parts damaged by use or modification.

The manufacturer can't supervise the assembly, operation and maintenance, and can't ensure your radio system is in good condition. **Therefore, we are not responsible for any damage occurring during the use of a radio controlled model.** It is impossible to determine for certain whether crash damage was the result of a radio system failure or pilot error even improper installation of our products. Model airplane owner is using it on his own responsibility.

In no event should Pilot-RC accept the liability exceeds the original cost of the airframe (not include engine and radio system).

No matter what reason you wish to return this airplane, all shipping cost will be paid by customer. If some parts require replacement from us, the original parts' return is at customer's expense.



## **ATTENTION**

### **You should not regard this plane as toy!**

To ensure safety, please read the instruction manual thoroughly before assembly .

Building and operating model plane require diligent practicing and correct guidance. Any neglect, carelessness and missing experience can cause serious bodily harm and property damage.

Seek the assistant of a experienced person or airplane model clubs in assembly ,operation and maintenance to ensure quick and successful learning

**Fly only in proven model airfield** that AMA (Academy of Model Aeronautics) approved

**Pilot-RC has the right to change to this plane ,instruction and limited warranty without notice. If you have any problems and questions ,please contact pilot –RC**

Email: [pilot-rc@139.com](mailto:pilot-rc@139.com) , [pilot-rc@hotmail.com](mailto:pilot-rc@hotmail.com)

Cellphone: +86 760 88781293

FAX: +86 760 88780293

Address: No.34, Chengnan Er Road , Zhongshan city, 528400, Guangdong Province, China



<b>Introduction</b>	.....	1
<b>Warranty</b>	.....	2
<b>Attention</b>	.....	3
<b>Fuselage Unit</b>		
Landing Gear Assembly	.	
Front landing Gear Installation	.....	5
Rear landing Gear Installation	.....	12
<b>Servo Unit</b>		
Wing Servo Assembly	.....	15
Rudder Assembly	.....	21
Rudder Servo Assembly	.....	23
Elevator Servo Assembly	.....	27
<b>Engine Unit</b>		
Firewall Assembly	.....	32
Engine Assembly	.....	34
Throttle Servo Assembly	.....	34
Ignition Module	.....	36
Hatch And Fuel Tank	.....	37
<b>Final Assembly Unit</b>		
Cowl Assembly	.....	38
Canister Assembly	.....	39
Light system Assembly	.....	41
Handrail Assembly	.....	43
Canopy lock Assembly	.....	44
Footplate Assembly	.....	45
Accessories Assembly	.....	46
<b>CG And Control Throws</b>	.....	50
<b>Flight Preperation</b>	.....	51

***Front Landing Gear Installation***

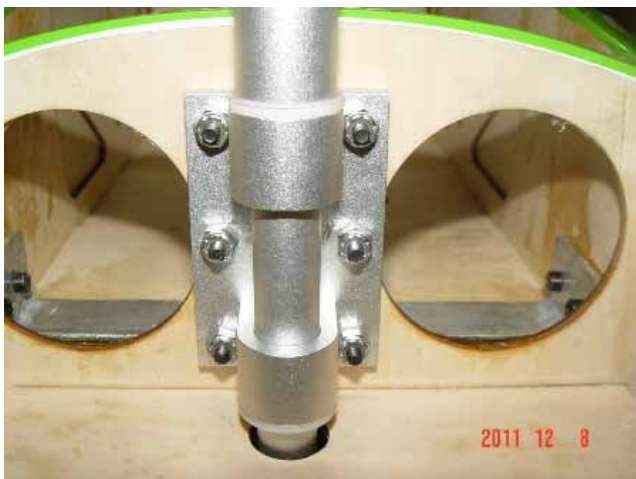




1, there are 6 holes in the bottom of the engine box which are for the front landing gear.



2. Mount the front landing gear to the fuselage with 6 bolts.



3. Inside view of mounting front landing gear.



4 Outside view of mounting front landing gear.



5. Install the servo for front landing gear. Put the servo to the servo bay which is on the back of the firewall.



6. Put the fiber glass arm on the top of the front landing gear. put the plastic washer on the top of the arm. Then install the circlips.



7. Adjust the rod length to make the front wheel in the middle place.



8. Finished view.

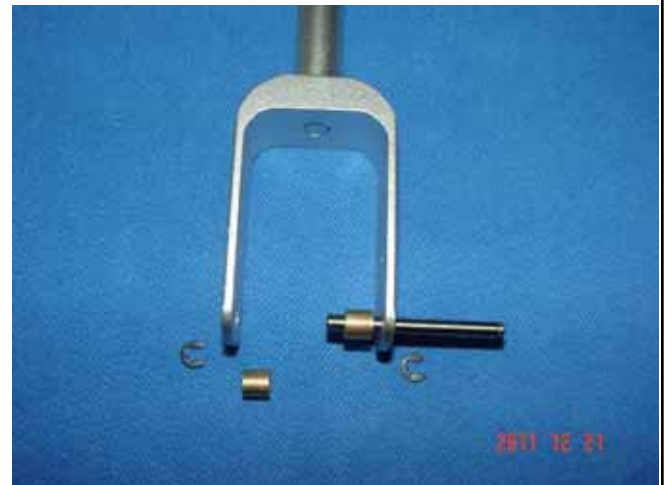




9. Take off this bolt.



10. Take off the bottom part of the landing gear .



11. Install the tire into the front landing gear with the circlips outside.



### *Install the front wheel pants:*

Note: the front wheel pants are different shape from the rear wheel pants.



1. There is a hole on the top of the front wheel pants.



2. Put the pants into the front landing gear .



3. Screw two side bolt to fit the wheel pants.



### *Install the front landing gear covering:*

**Note:** The front landing gear covering only install after you install the cowl.

1. Cut the hole on the bottom of the cowl to fit the front landing gear.



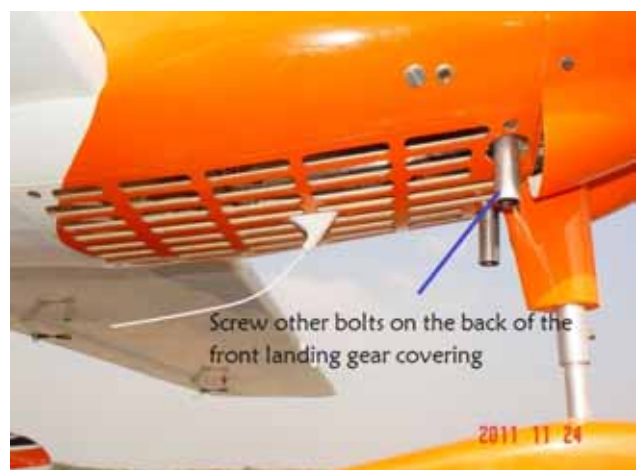
2. Glue two pieces of wood inside the cowl.



3. Screw two bolts in front of the landing gear covering.



3. Screw other bolts on the back of the landing gear covering.

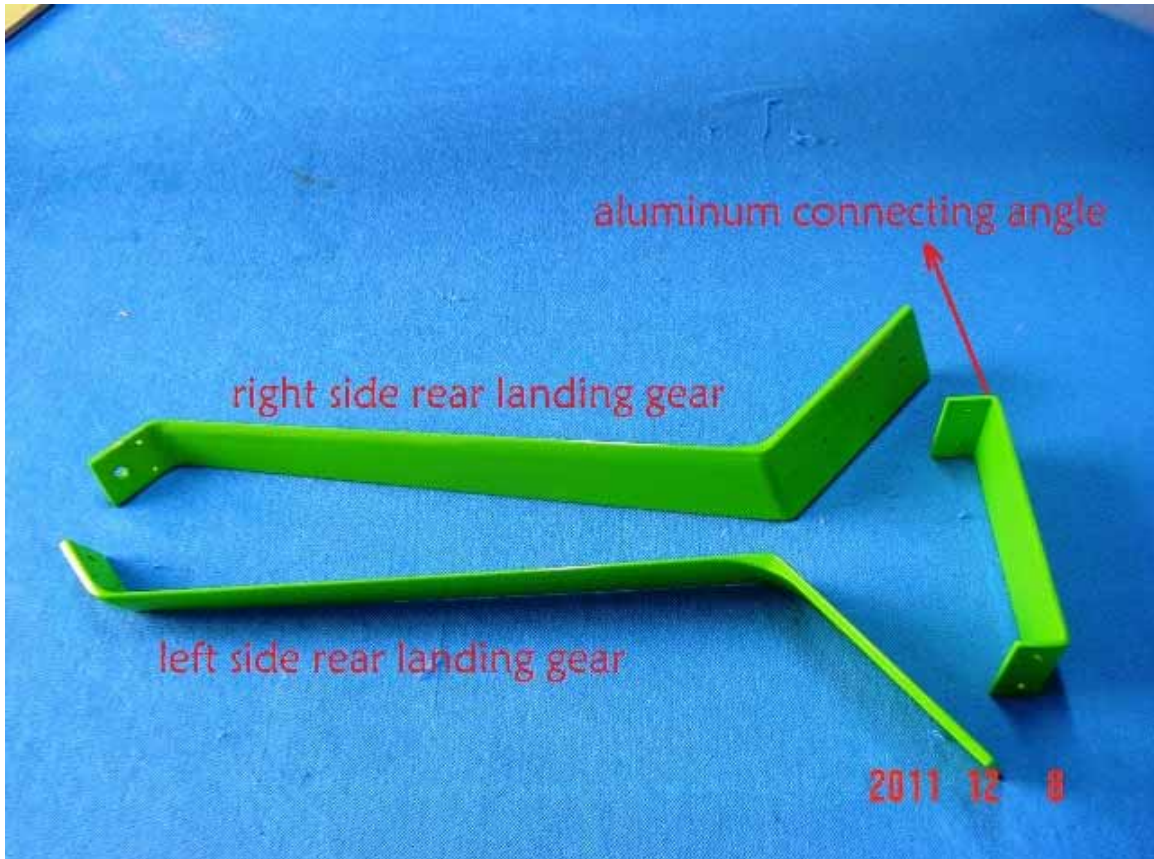


***Finished front Landing Gear covering***





**Rear Landing Gear Installation**





1, Find the slot for the landing gear on the rear of the wing. Cut the covering. Put the landing gear into the slot.



2. Screw two bolts in the landing gear.

**Note: Must use washer between the landing gear and bolt.**



3, Install the aluminum connecting angle between two side landing gear as shown



4. Install the landing gear axles with lock nut ,but do not tighten



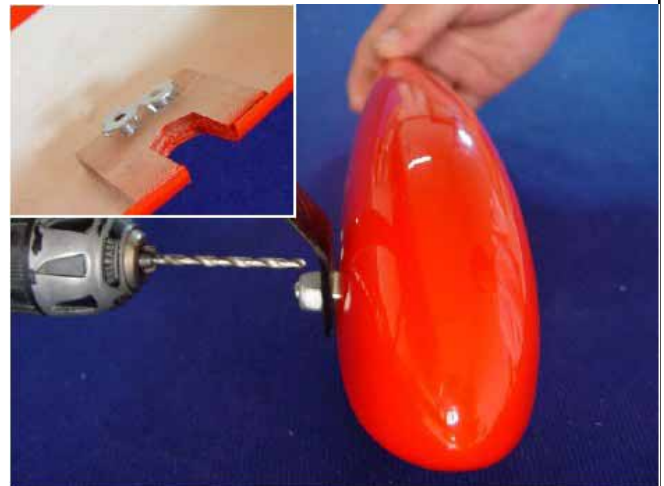
5. Make the flat sides of the axle bolt vertical with ground. Then tighten the lock nut against the landing gear strut



6. Install the collars and wheel in order with a drop of Blue Loctite on the collar set screw and ensure the wheel is free to rotate.



7. Drill the holes for the mounting bolts and install the blind nuts.



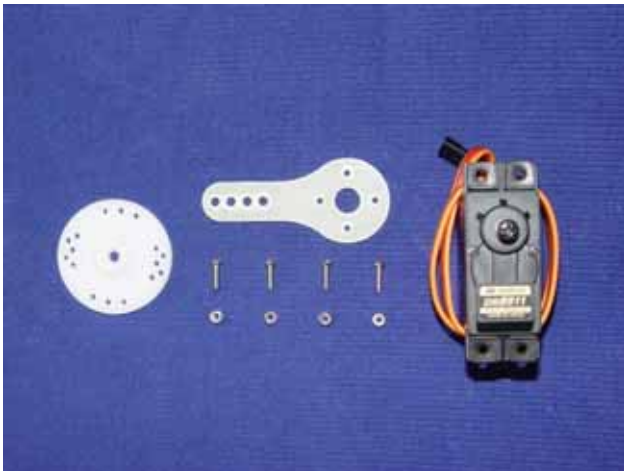
8. Finish the wheel pants mounting with the bolts.



## Wing Servo Assembly

### Servo Arm Installation

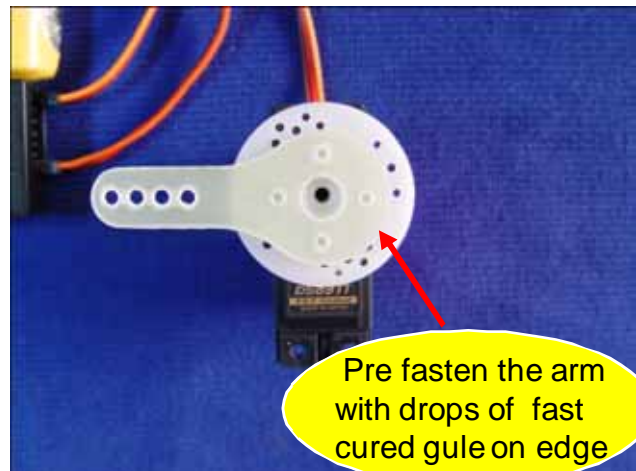
Minimum Request Servo:  
15 kg.cm / Metal Gear



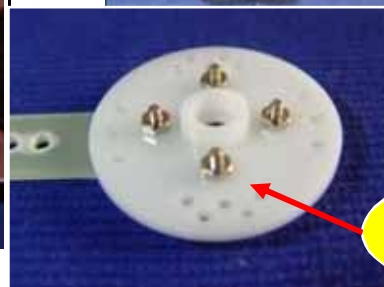
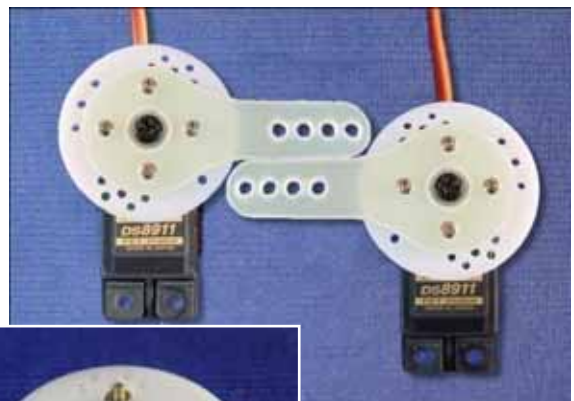
1. Turn on your transmitter and plug the servo into receiver. Ensure every channel is neutral



2. Ensure the servo arm is 90 degrees with servo as shown. Then mark and drill holes with 2mm bit

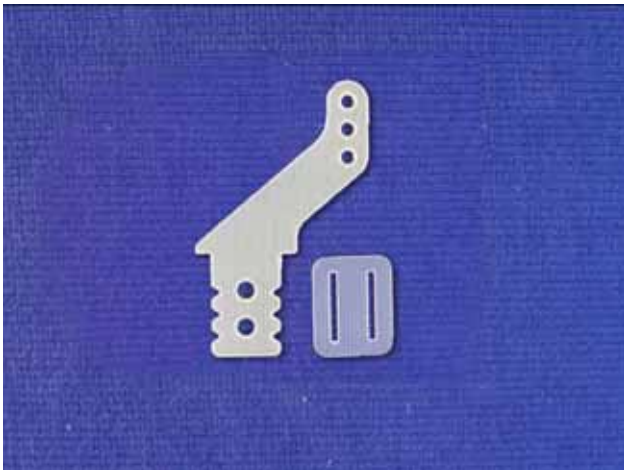


3. Mounting screws and nuts





### Aileron Control Horns



1. Tear off the cover on the horns and locking plates



2. Trace around the locking plate with knife and cut off the cover below. Then the pre-cut slots appear



3. Scuff the horns with a piece of sand paper for good glue bond. Then clean up the surface



4. Apply the 30 minutes epoxy inside the pre-cut slot for horn, and coat the horn with epoxy as shown



5. Slide the horn into slot slightly and Mount the locking plate in place. Wipe away excess epoxy with rubbing alcohol



### Servo Installation

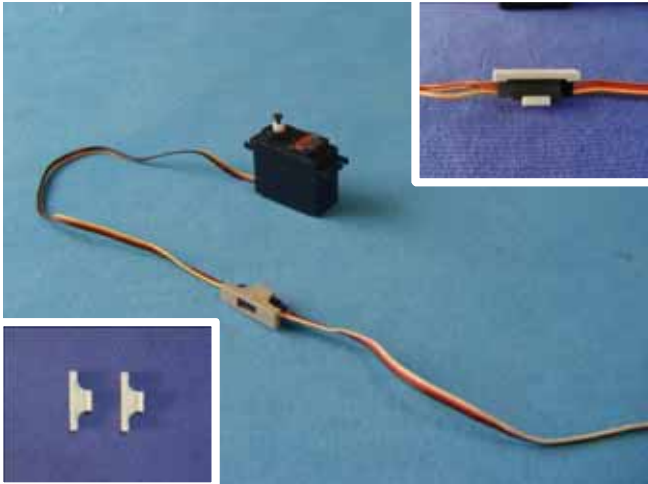


1. Cut out the cover for servo location carefully as shown

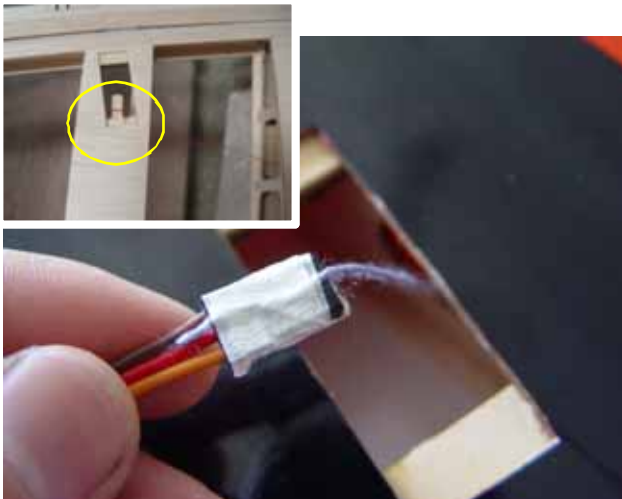




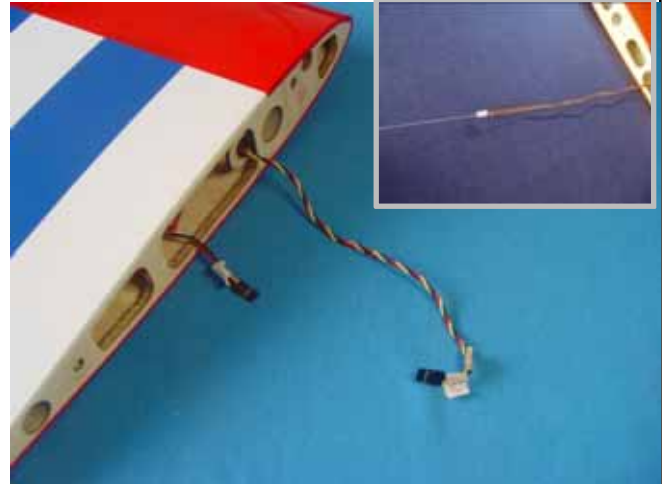
2. Lock the connector with the provided safety clip against vibration and loosened tension as shown



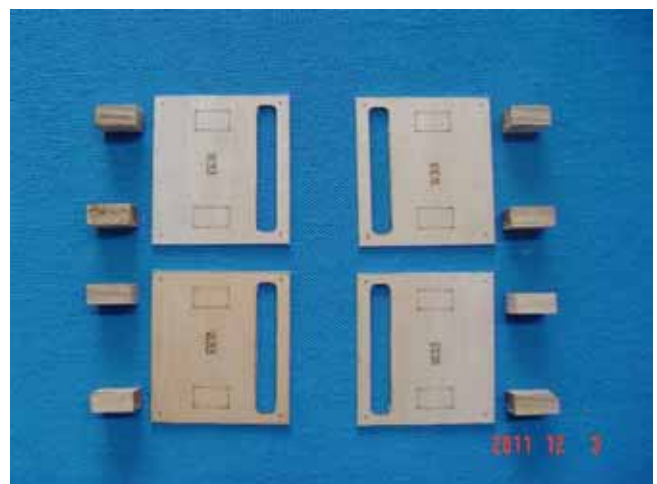
3. Cut out the cover for servo location carefully. Tape the lead to pull-string tightly. In order to ensure the servo wire can be pulled out without hanging up inside wing



4. Then put the extension lead through the root of wing

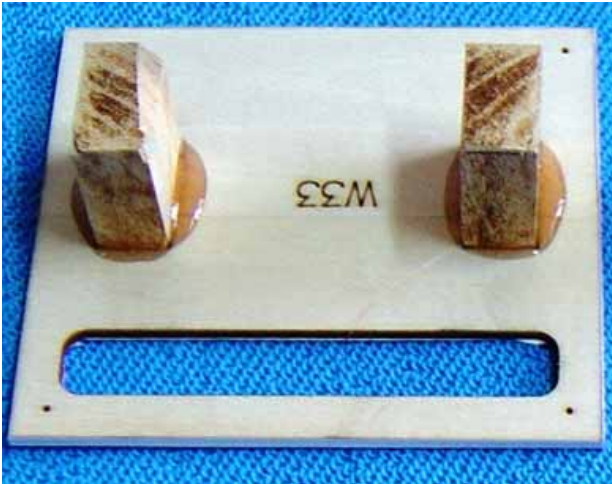


5. Find four sets of servo mounting plate.

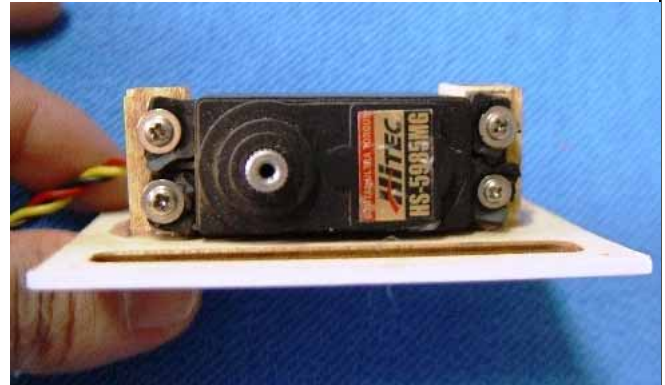
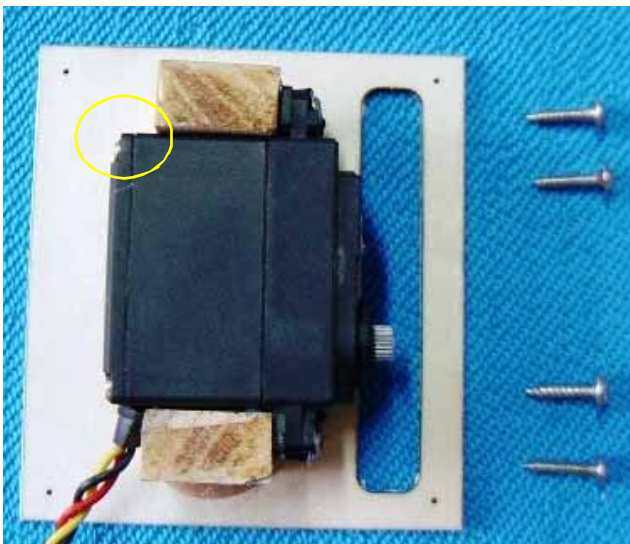


6. Glue two piece of wood to the servo mounting plate as shown

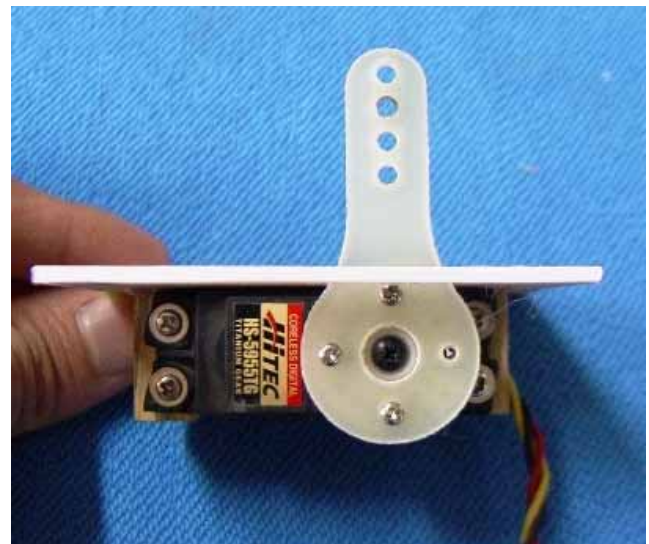
**Note: Be sure to glue it strong enough.**



7. Use 1mm bit to drill the mounting holes. Then screw four bolts to fix the servo to the servo mounting.



8. Install servo arm.



6. Install the servo arms facing toward the wing edge and adjust pushrod in proper length to keep the aileron panel on the neutral position



7. Repeat all the step above for the flap .

### Rudder Assembly

#### Rudder Control Horn



1. Tear off the cover on the horns and locking plates



2. Trace around the locking plate with knife and cut off the cover below. Then the pre-cut slots appear



3. Scuff the middle of horns with a piece of sand paper for good glue bond. Then clean up the surface

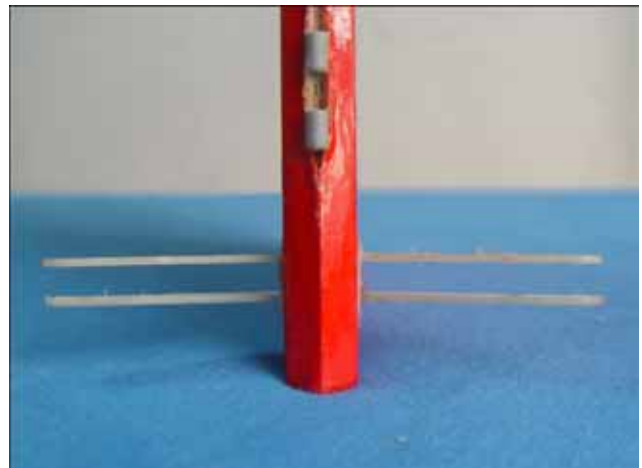




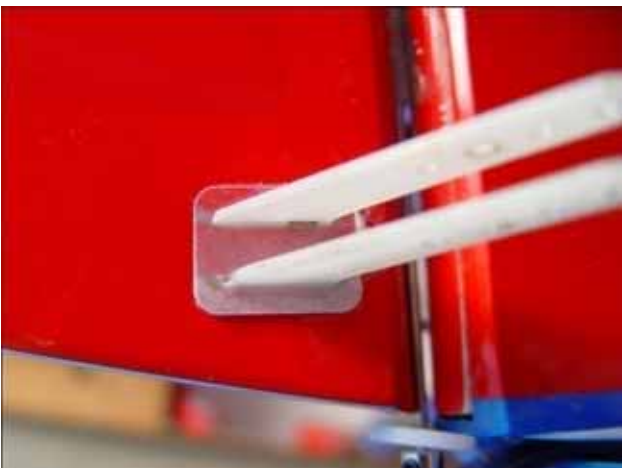
4. Apply the 30 minutes epoxy inside the pre-cut slot, and coat the horn with epoxy as shown



Make sure the horn line up with ground and align the both side before epoxy has cured`



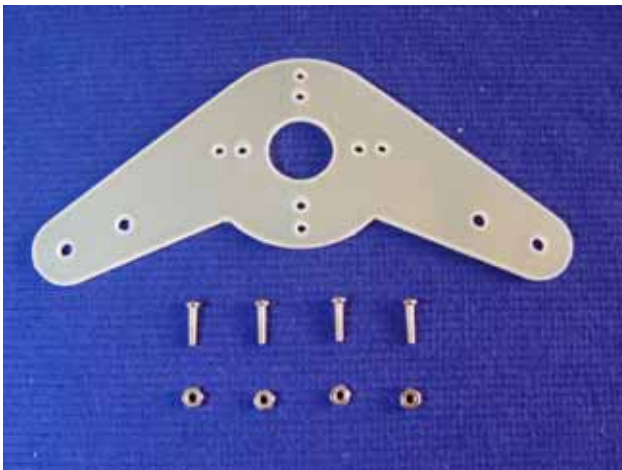
5. Slid the horn into slot slightly ,mount the locking plates in place.Wipe away excess glue with rubbing alcohol



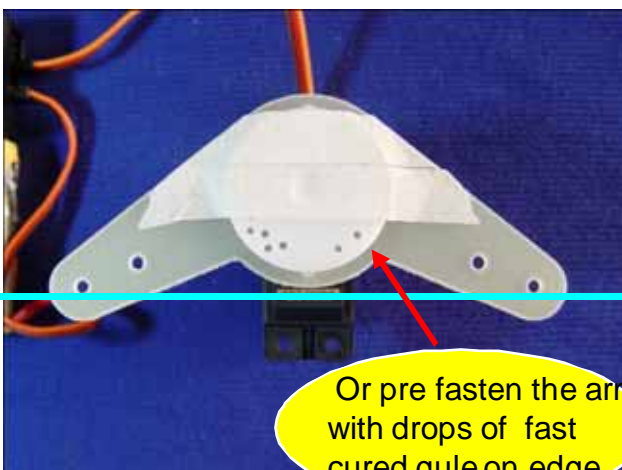


### Servo Tray Installation

Minimum Request Servo:  
15 kg.cm / Metal Gear



1. Turn on your radio device according the Wing Servo Installation. Keep the tray holes on center and the arm aligned with brand as shown. Then tape tightly

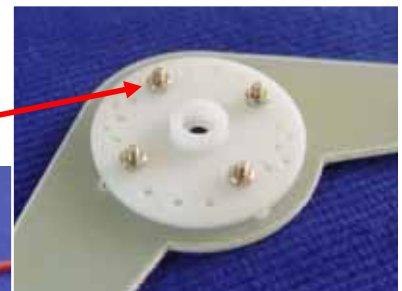


2. Drill holes with 2mm bit



3. Mounting screws and nuts

A drop of fast cured gule here



### Servo Installation

1. Mount servo with mounting screws and face the brand toward the rudder. Drill holes with 1mm bit

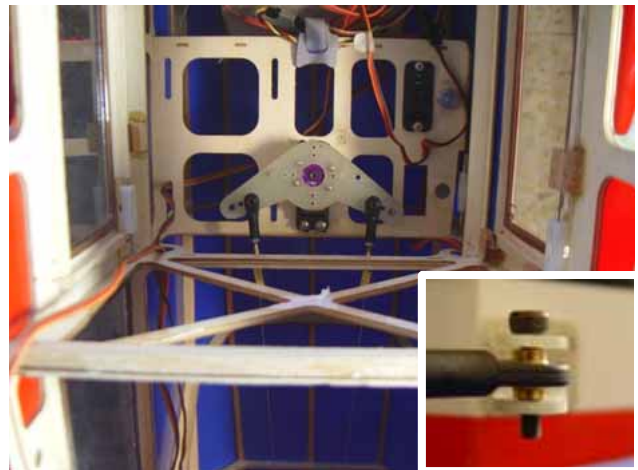


2. Tape the rudder panel to top of the vertical fin in the neutral position to make it straight

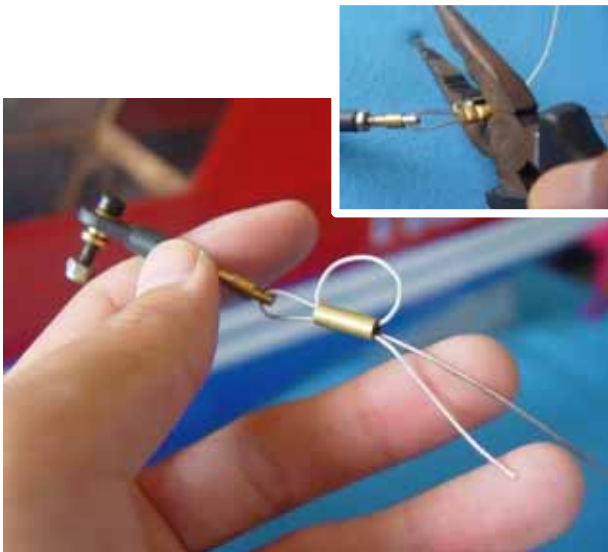


3. Attach the pre-installed boll link to the rudder horn and not tighten the locking nut

4. **Turn on your radio to keep the servo neutral.** Mount the pre-installed boll link to the rudder arm without locking nut. Put two brass tube through the cable and thread through the coupler hole. Ensure the cables are straight



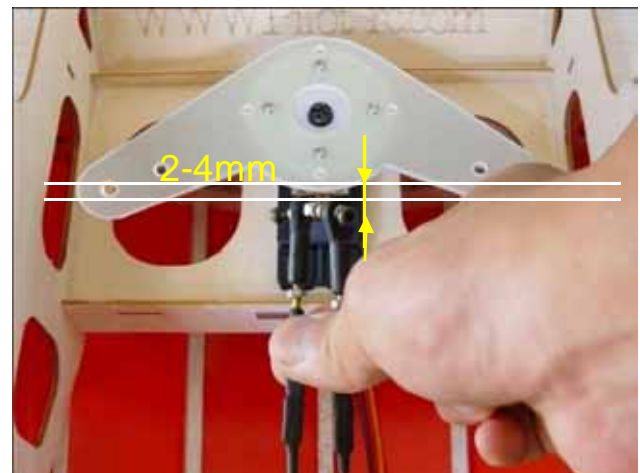
5. Crimp them in place with crimping pliers



6. Cut away excess cable



7. Thread the coupler in 2 – 4 mm (according the bolt holes center). Ensure the same length of cables and tension



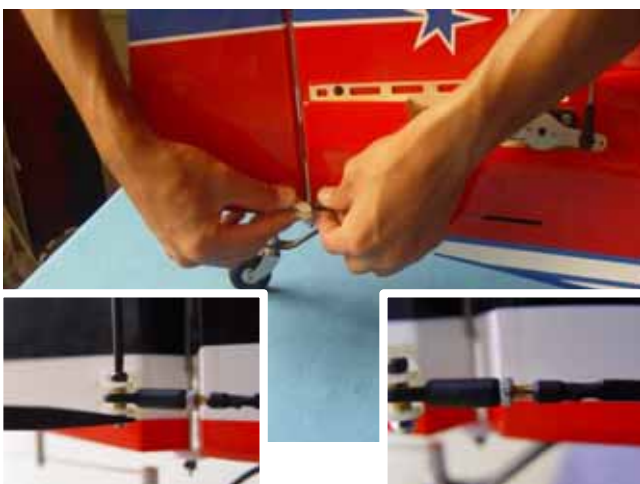
8. Shrink the heat shrinking tube on the brass tube



9. Remove the ball links from rudder horn and install the servo arm ball links with bolts and nuts



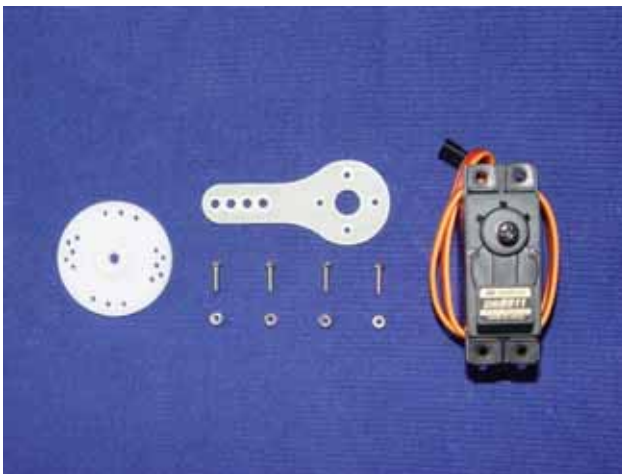
10. **Turn off the radio now.** Reinstall the ball link (Don't pull strongly to hurt the rudder or back to step 7 for readjustment )you can find a helper and do that at certain deflection with supporting the bottom of the rudder.





### Servo Arm Installation

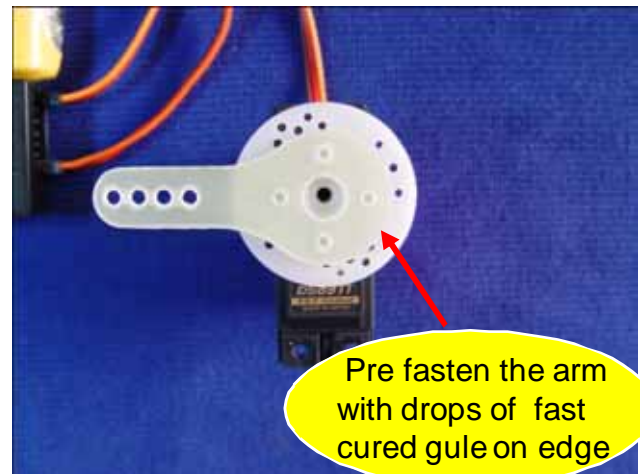
Minimum Request Servo:  
180 in.zo / Metal Gear / Digital



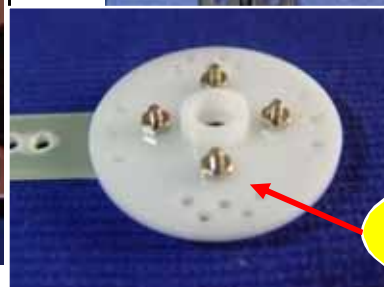
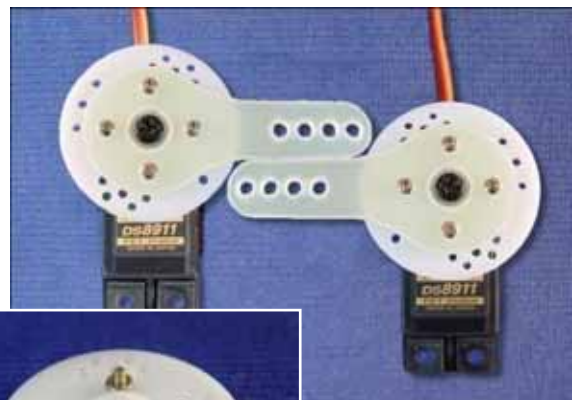
1. Turn on your transmitter and plug the servo into receiver. Ensure every channel is neutral



2. Ensure the servo arm is 90 degrees with servo as shown. Then mark and drill holes with 2mm bit

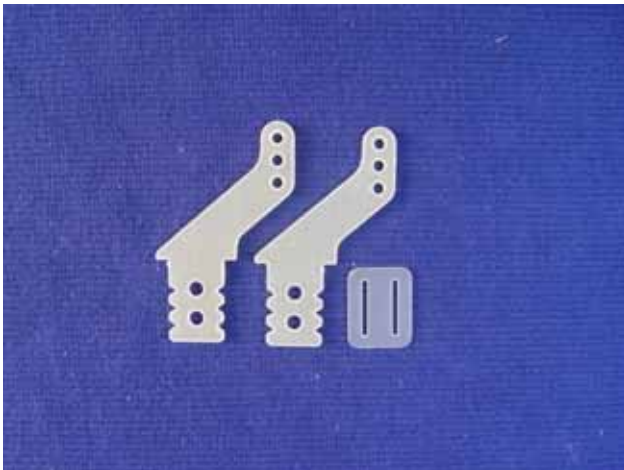


3. Mounting screws and nuts





### Elevator Control Horns



1. Tear off the cover on the horns and locking plates



2. Trace around the locking plate with knife and cut off the cover below. Then the pre-cut slots appear



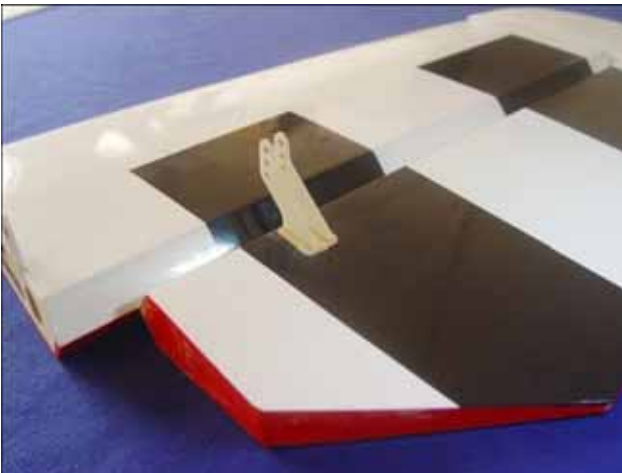
3. Scuff the horns with a piece of sand paper for good glue bond. Then clean up the surface



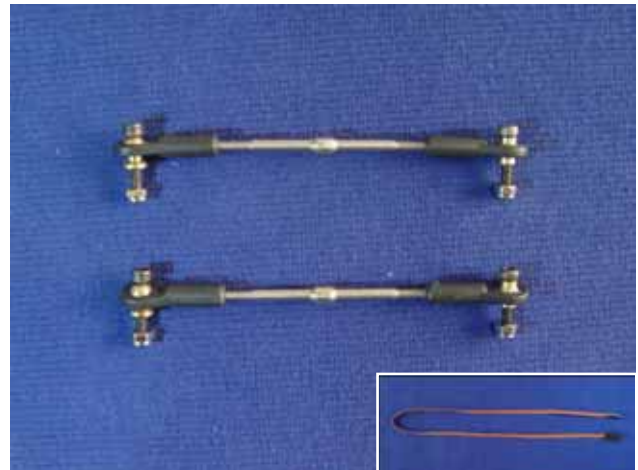
4. Apply the 30 minutes epoxy inside the pre-cut slots, and coat the horn with epoxy as shown



5. Slide the horns into slots slightly and Mount the locking plate in place. **Align the right and left sides** before epoxy has cured. Wipe away excess epoxy with rubbing alcohol



### Servo Installation



1. Cut off the cover on the pre-cut slot



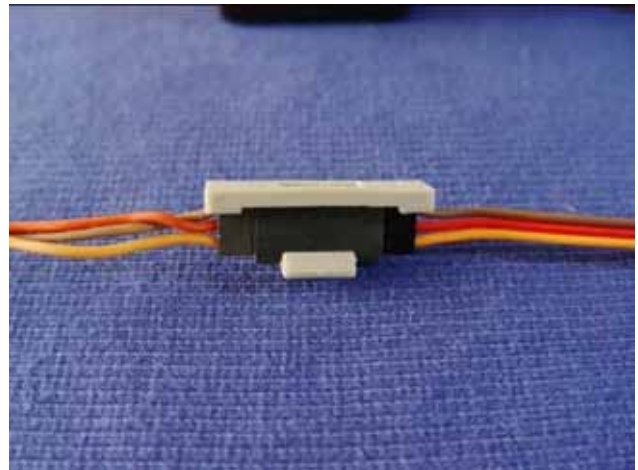
2. Install servos with mounting screws. Face the brand toward the rear of fuse.



3. Install the servo arm with mounting screw and make it vertical with ground. Adjust pushrod in proper length to keep the aileron panel on the neutral position



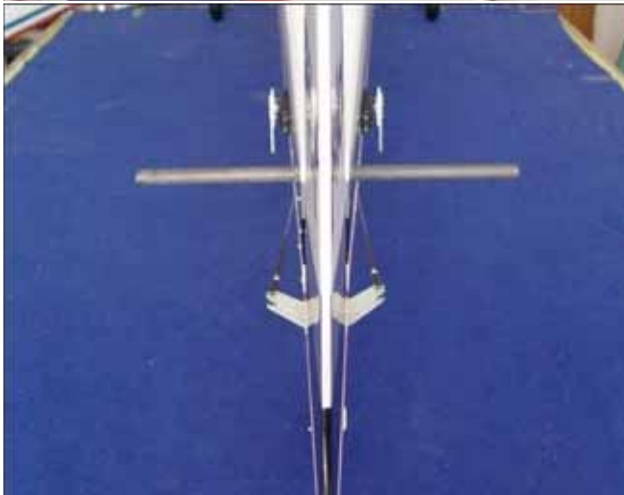
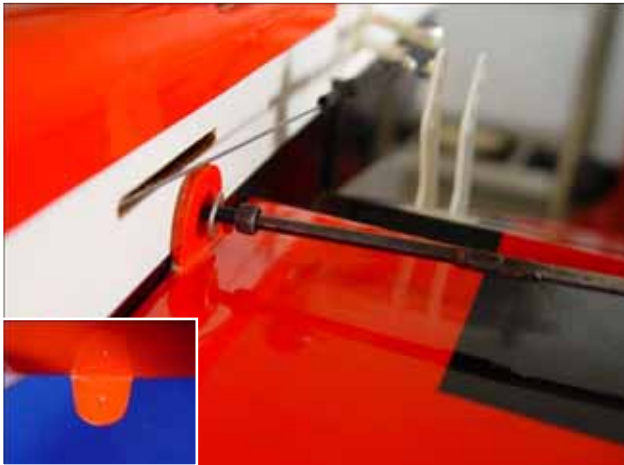
4. Lock the connector with the provided safety clip against vibration and loosened tension as shown



5. Then put the extension lead through fuselage



6. Install the stab with mounting bolts and washers

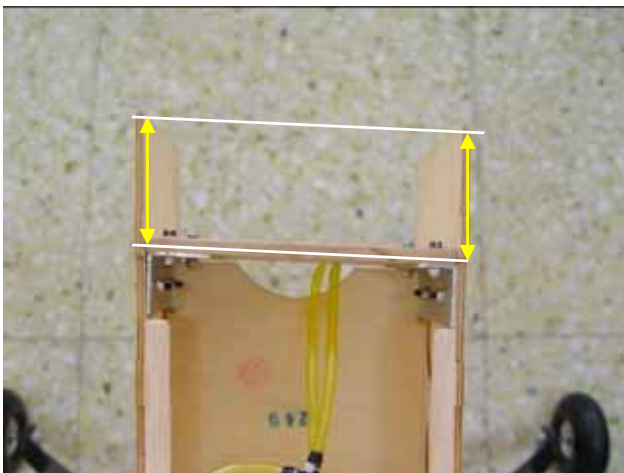


7. Repeat all the step above for the other stabilizer



## Firewall Assembly

**Note:** The 2 degree **RIGHT** thrust and 3 degree **DOWN** thrust have been built, just keep the firewall same distance from the edge



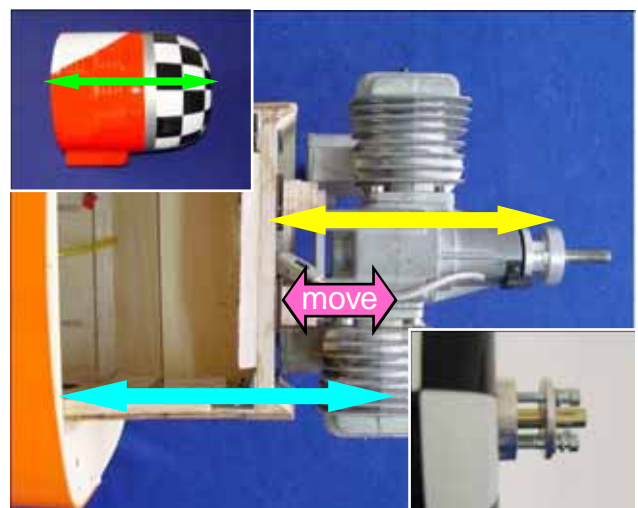
**Note:** There are both right thrust line and down thrust line marked on the engine box .



**Note:** The cowl is already pre-build for right thrust and down thrust. The center of the engine axle will be in the exact center of the cowl.

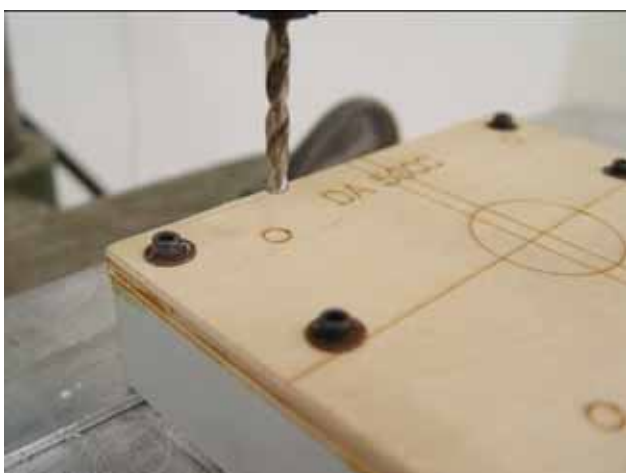


1. Measure the length of the engine (from the firewall to the prop thrust washer) , the cowl and the engine box for the proper distance allowing 1/4"to 1/2" from the edge of the cowl .Then mark the location

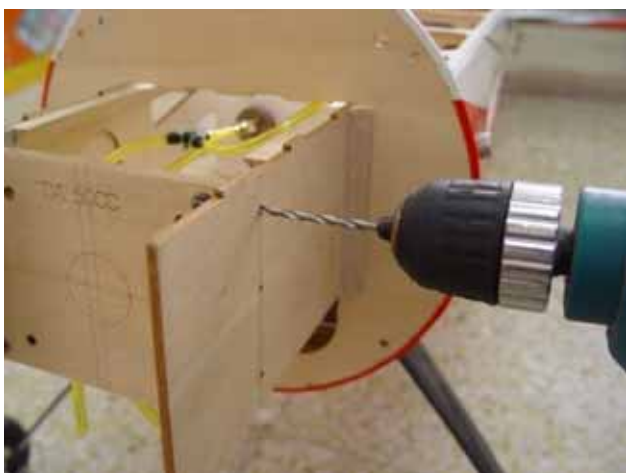


The excess plywood has been cut away

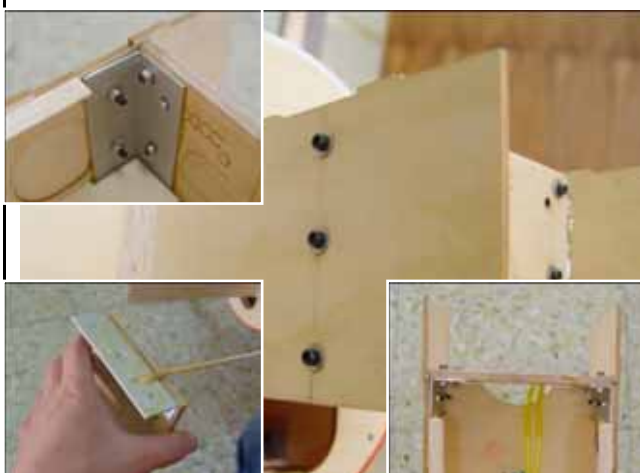
2. Drill the firewall according pre-set laser holes for DA-100. Otherwise measure your engine's mounting location.



3. Drill the screw mounting holes aligning the line you have drawn both side as shown with the firewall taped or glued slightly in place(3mm bit)



4. Epoxy the firewall with 30 minutes epoxy and use the mounting screws and locker nut to fasten it immediately as shown



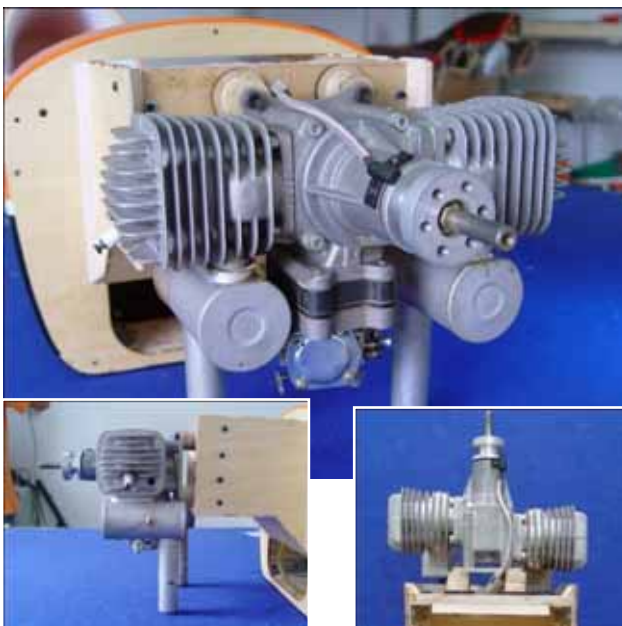
**Note:** Epoxy the triangular hardwood supports for reinforce. 100cc firewall needs to cut off the center hole for air exit



## Engine Installation



**Remember:** Use Blue Loctite on all engine mounting screws



## Throttle servo Installation

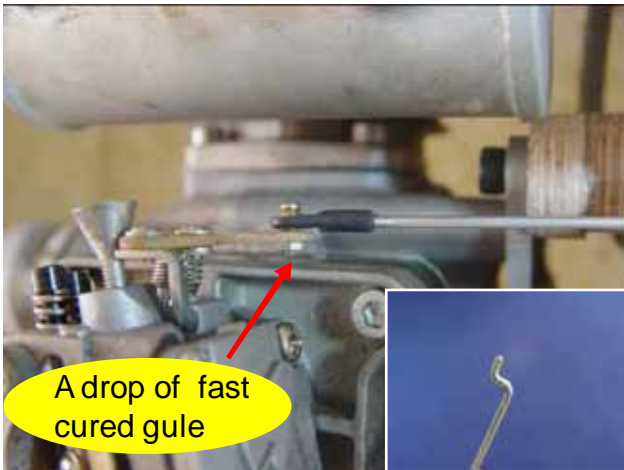


1. Install the engine throttle arm with a little Blue Loctite

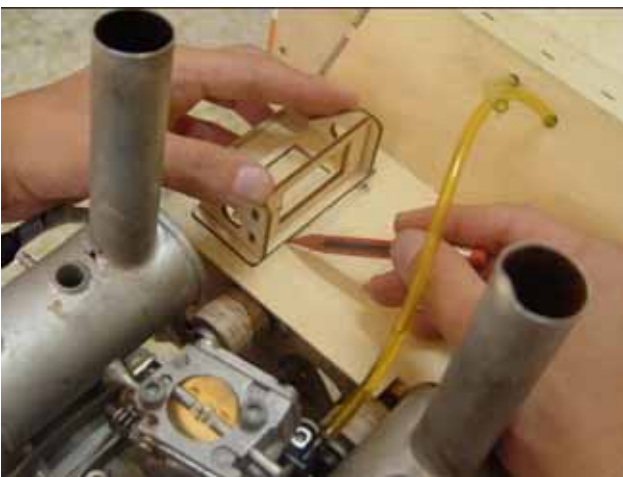




2. Measure and cut the extra wire  
Then bend to a sharp of “z” as shown  
Mount the throttle pushrod to engine.



3. Determine where the throttle servo mounting tray is going to be mounted on the engine box to get the straight and precise throttle linkage connection then make a mark



4. Epoxy the mounting tray in place and secure with self-tapping screws



5. Finish the servo installation with mounting screws

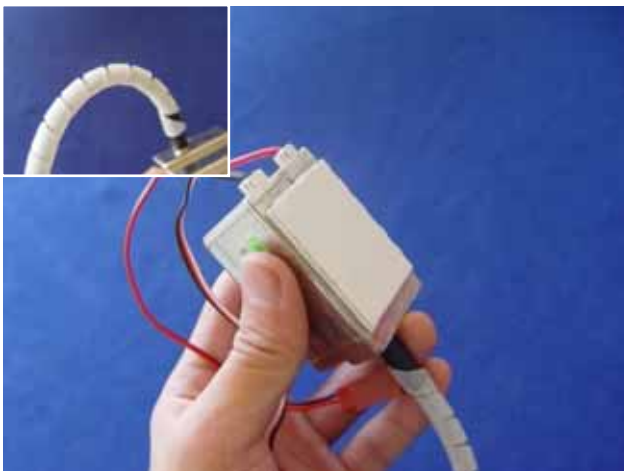




## Ignition Module



1. Tape foam rubber on bottom of ignition and attach to safety cover supplied as shown



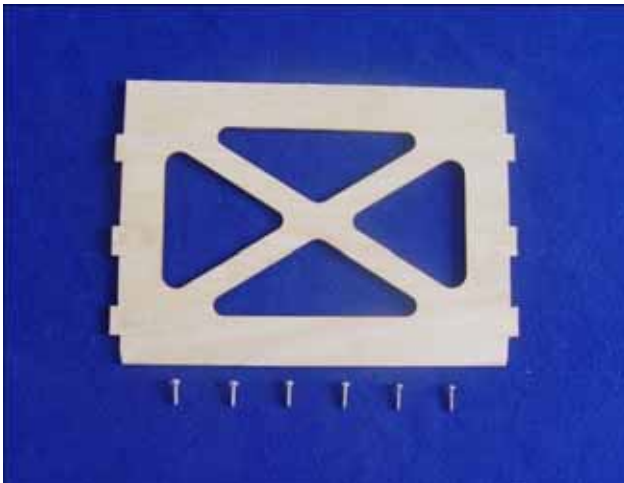
2. Position the ignition outside the engine box to allow the spark plug leads to connect the engine without excess tension .Drill for Nylon tie



3. Lock the connectors with the provided safety clip against vibration and loosened tension as shown



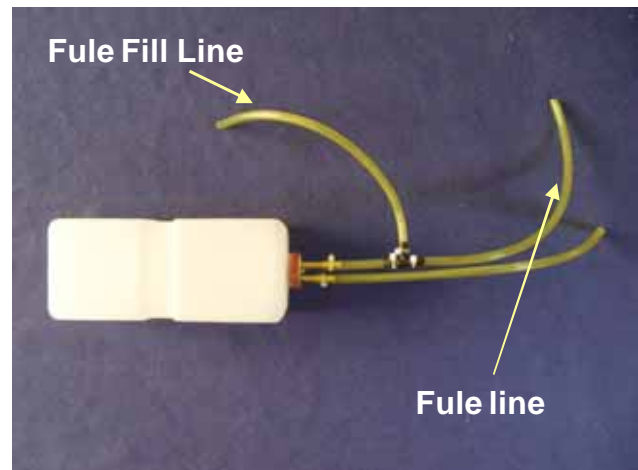
### Engine Box Hatch



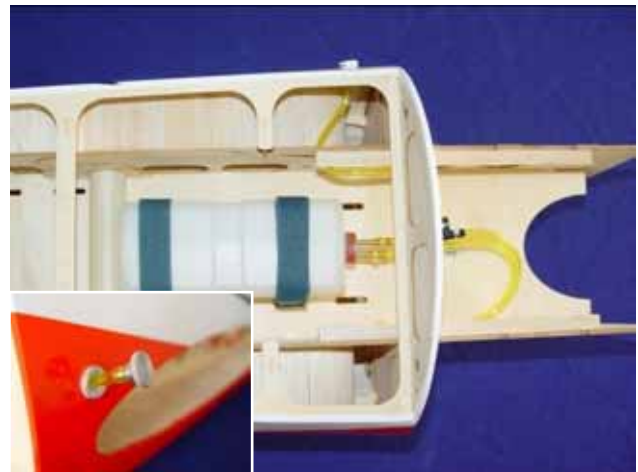
Epoxy the hatch in place and secure with self-tapping screws



### Fule Tank and Dot



Fule tank and fule dot have been installed. Just tighten the velcro ties



### Cowl Assembly



1. Make a pattern of the exhaust with a paper to hold its shape. Trial fit to make sure there is a minimum of 3/8" around the engine cooling.



2. Use a fiber cutting tool to rough cut the cowl and finish with a round sander



3. Ensure all the corners are rounded and not sharp 90 degrees against splitting under vibration. Trial fit till the cowl is right





### Canister Assembly

1. Put the canister to the mounting.



2. Glue the mounting to the canister room.



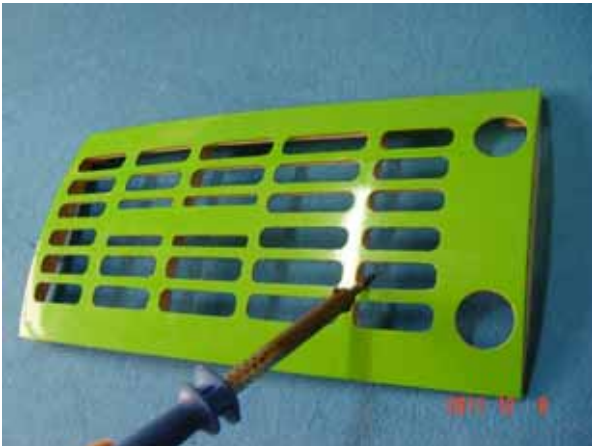
3. Install the headers.



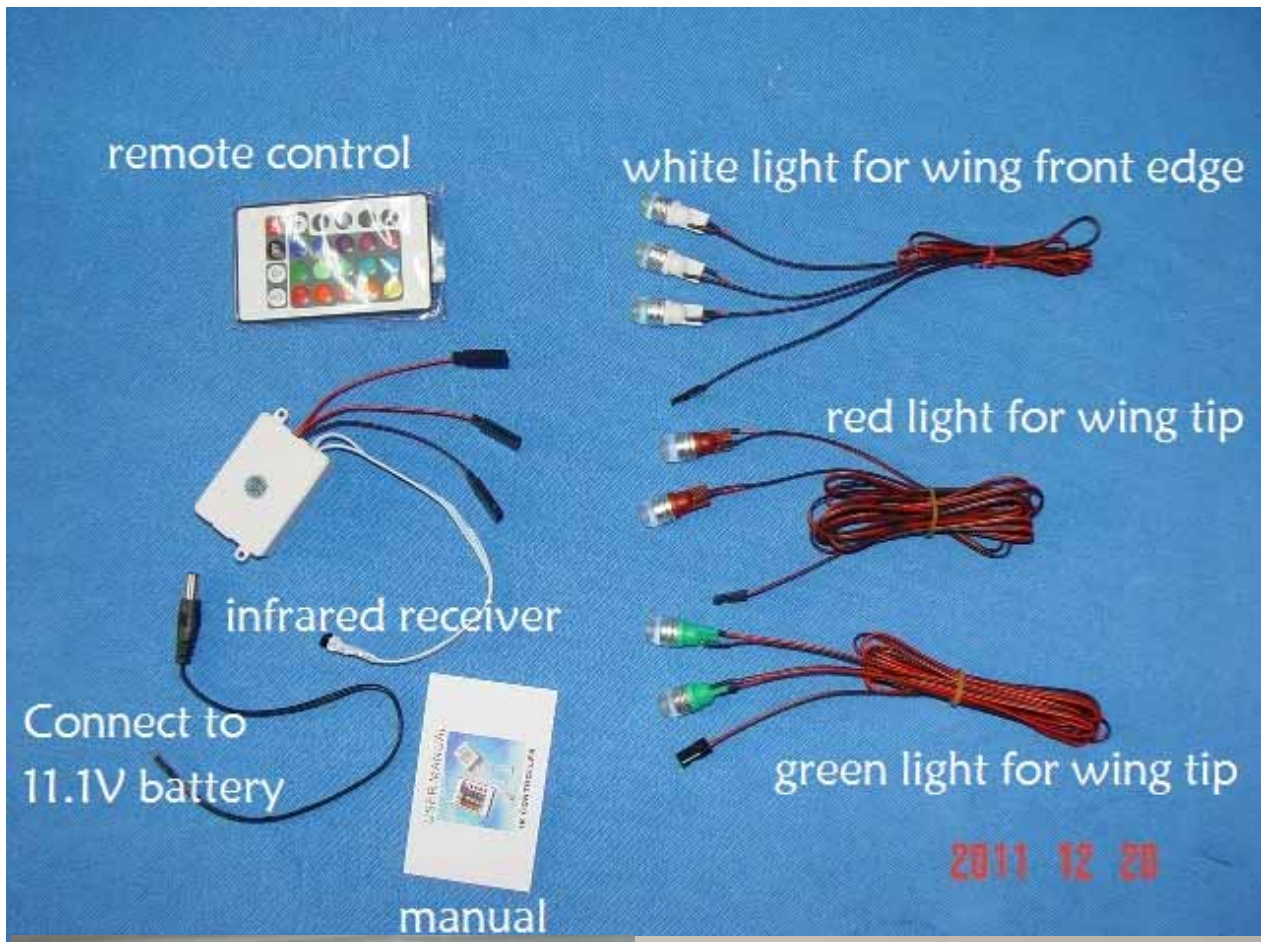


### Canister Assembly

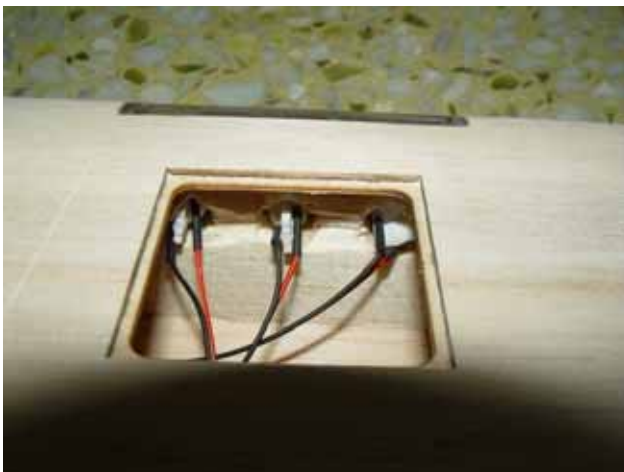
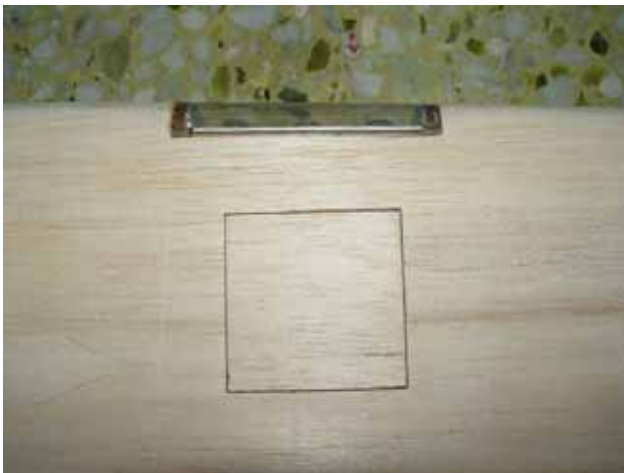
4. Cut the covering on the canister room cover. This is very important because it will cool the engine.



1, All light already pre-install in the factory. You only need to connect the wire to the flashing controller.



2, There is a wood cover near the light on the wing front edge. You can cut the Ultracote (Oracover). Open it and check the light if the light has problem.



### Handrail Assembly

1. The handrail is on two side of the fuselage. Near the back window on the fuselage as shown:



2. Find the reinforce wood for handrail which is inside of the fuselage. There are two holes for handrail to install.



3. Cut the covering on the hole. Put some glue into the hole. Then put the handrail into the hole.





### Canopy Lock Assembly



Drill a 1mm diameter hole. Then screw the bolt to fix the canopy lock.



### Footplate Assembly



### Footplate Assembly

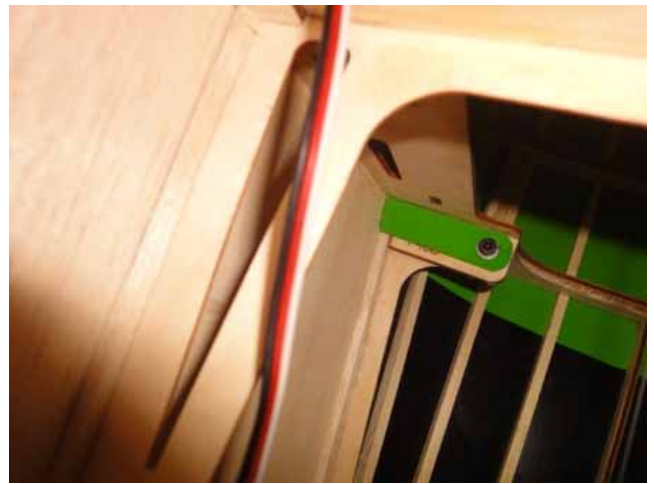
1. Find the hole for footstep. Cut the covering.



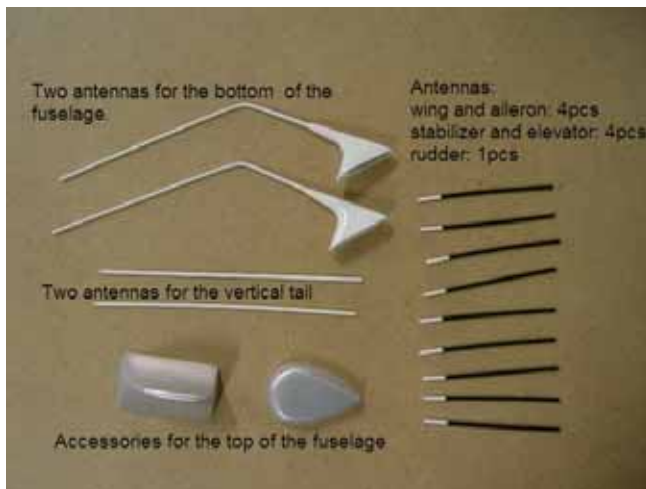
2. There is a blind nut for the footstep inside the fuselage.



3. Put the footstep into the hole. Screw the bolt into the blind nut.

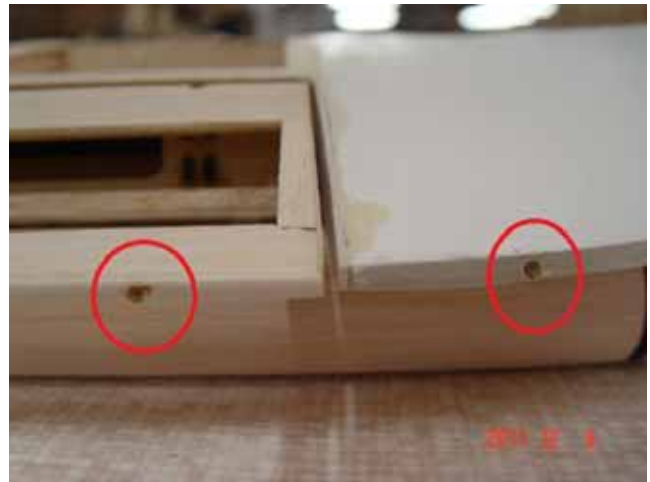


### Antenna and other accessories Assembly



### Wing and aileron antenna Assembly

1. Find the hole on the wing and aileron as shown.



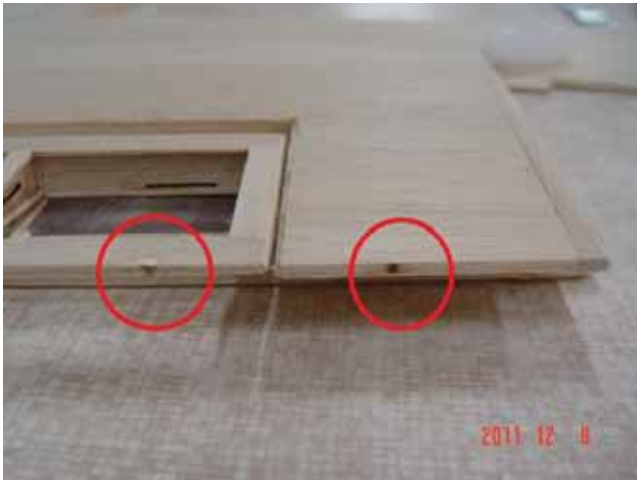
2. Put some glue on the black tip of the antennas. Then insert the antennas into the hole.

**Note: keep the white tip on the outside.**



### Stabilizer and elevator antenna Assembly

1. Find the hole on the stabilizer and elevator as shown.



2. Put some glue on the black tip of the antennas. Then insert the antennas into the hole.

**Note:** keep the white tip on the outside.



### Vertical tail and rudder antenna Assembly

1. Find the hole on Vertical tail and rudder as shown.



2. Put some glue on the black tip of the antennas. Then insert the antennas into the hole.

**Note:** keep the white tip on the outside.

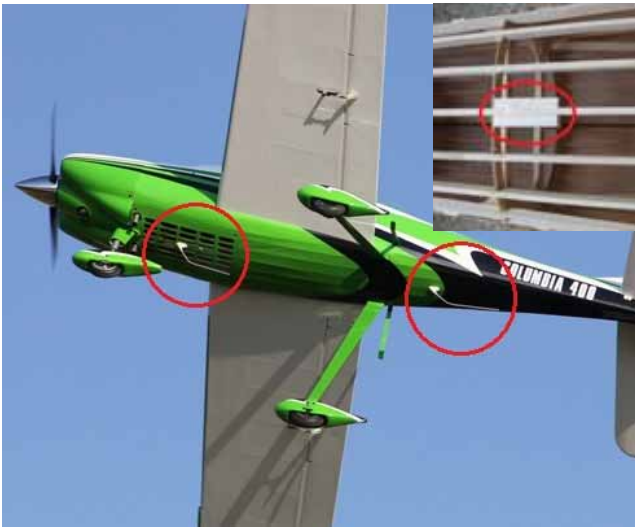




### Fuselage bottom antenna Assembly

1. Find the place on the bottom of the fuselage for antenna as shown.

Cut the covering.



2. Glue the accessories on the bottom of the fuselage.



### Fuselage top accessories Assembly

1. Find the place on the bottom of the fuselage for antenna as shown.

Cut the covering.



2. Glue the accessories on the top of the fuselage.

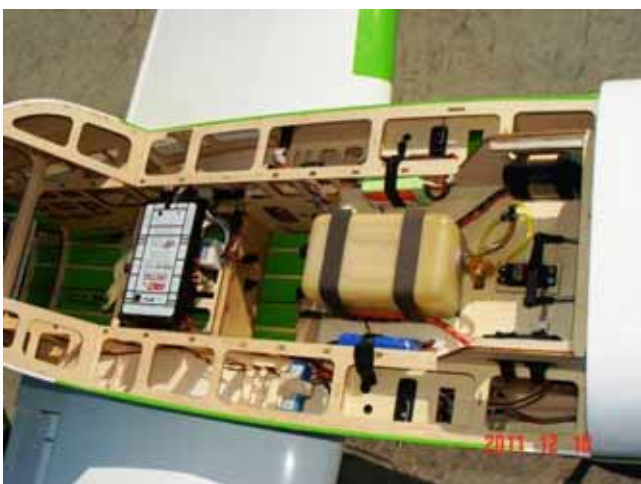


## Center Of Gravity

The center of gravity is marked inside the fuselage. Near to the wing tube as shown.



Your balance at the CG will determine batteries final mounting location .



## The First Flight set up

Throttle: Adjust idle –full

Elevator: 40 Degrees on High rate  
12 Degrees on Low rate

Aileron: 30 Degrees on High rate  
12 Degrees on Low rate

Rudder: 40 Degrees on High rate  
30 Degrees on Low rate

After you set the given control throws up and have a few flights under you belt, you can change the amounts as well as moving the CG as you like.

Learn to use exponential of about 40 percent on your elevator to make great landings and not over control as highly aerobatic plane. Use 70 percent exponential on High Rate!



## Flight Preperation

Make sure you have the right model programmed into your transmitter

Check the direction of each surface not and also right before you take off .

Remember nothing wrong on the ground ever improves in the air

Check the air plane with the engine running and do a range check with

your body between you and the plane at 150 feet.

Check your battery voltage after each flight in case one servo is draining your battery

Recheck all screws ,horns and linkages for slop after your maiden fight and check for damage if you made a bad landing you first time

Have an experienced pilot fly it for you the first time if you have any doubts in your mind about the maiden flight

Take a break after you first flight and let the adrenaline burned off by bragging to your fellow members how good it flies

Fly low and at a medium speed on your first few flight

Listen to your engine run and have an observer with you to remember what you talked about during the flight or if you get into trouble . Always balance your props, vibration is a killer.

Remember nose heavy airplanes fly all the time, tail heavy airplanes fly only once. Be on the CG!

Fly 3D two mistakes high in the beginning and not close to people, planes or runways. Being a center of the runway hog does not endear you to many modelers.