



## *Assembly Manual For*

**100cc aerobatic plane**



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## 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, it does not cover any component parts damaged through use or modification.

The manufacture cannot supervise the assembly, operation or maintenance, and is not responsible for radio malfunctions. Please ensure your radio system is in good condition. **We are not responsible for any accident or damage while using this product.** It is impossible to determine for certain whether crash damage was the result of improper installation of our products, a radio system failure, or pilot error. Model airplane owners use our products at their own risk.

Pilot-RC will not be liable for any costs, unless agreed and proved beyond doubt the failure was due to faulty materials or fabrication. Any agreed cost will not exceed the cost of the airframe and not include engine, radio equipment or third party claims.

Should you wish to return a product or receive replacement parts, all shipping cost must be paid by the customer.

**Do not regard this plane as a toy!**

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

Building and operating an RC Plane of this nature requires previous experience and competence to an experienced level. This plane is not for a beginner!

If you are in doubt have an experienced pilot at hand. Diligent practicing and correct guidance is essential, accidents can cause bodily harm and property damage.

Seek assistance from an experienced person or airplane model clubs in assembly, operation and maintenance to ensure successful training.

**Fly only in a registered RC model club airfield** that is approved by your local Academy of Model Aeronautics (AMA).

**Pilot-RC has the right to revise the plane, the instructions and the limited warranty without notice.**

**If you have any problems and questions please contact Pilot –RC at:**

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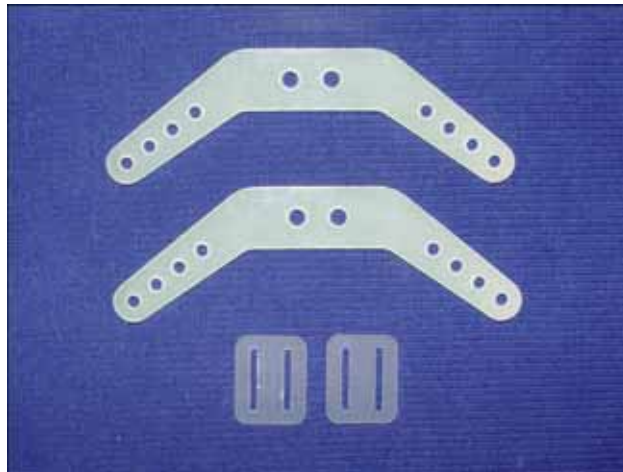
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## *Rudder Assembly*

### 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



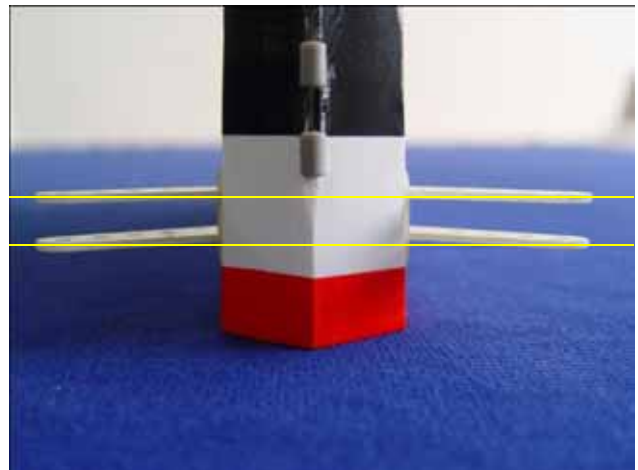
4. Apply the 30 minutes epoxy inside the pre-cut slot, and coat the horn with epoxy as shown



5. Slid the horns into slots slightly Mount the locking plates in place. Wipe away excess glue with rubbing alcohol



6. Make sure the horns line up (by installing the steer bolts )and align the both side before epoxy has cured



### Tail Wheel Installation



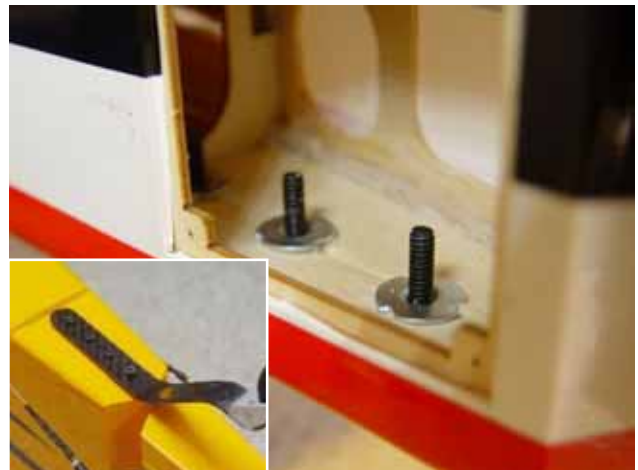
1. Draw a center line with a pencil as shown



2. Drill holes on the tail wheel mounting block according the bracket taped on place or mounted with bolt as shown

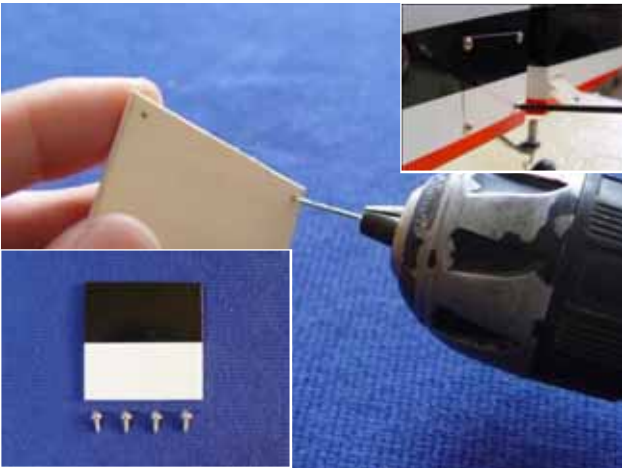


3. Install the blind nuts through the opening in the rear of the fuse and mount screws for the tail wheel using Blue Loctite in the thread





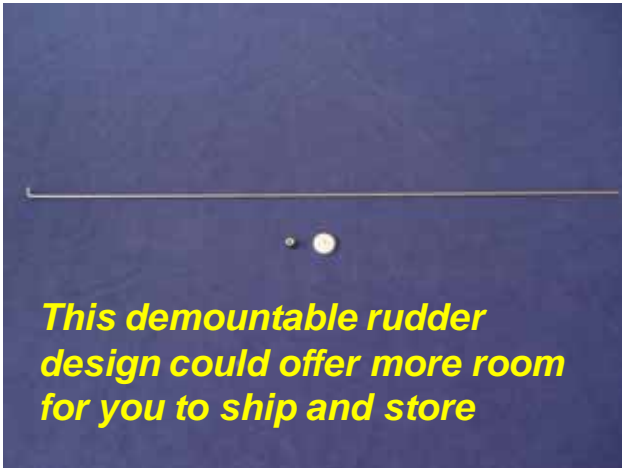
4. Install the hatch over the opening in the rear of fuse with 4 screws in accordance with the pre-drilled holes



5. Mount the self-tapping screw and washer in rudder and ensure the proper length without the spring excess tension



## Rudder Axis Installation



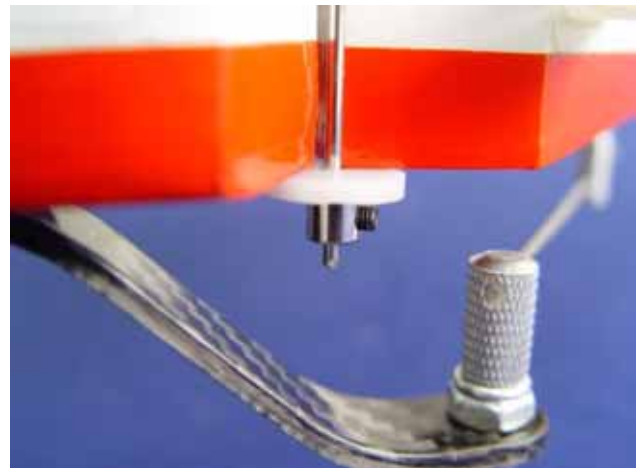
1. Using the rudder pin pierce the cover through the pre-installed brass tube by trial fitting through hinges in reverse direction



2. Align the rudder in place inserting the steering arm through the steering tube in top of rudder ensure pin bent end sits flush on top of rudder



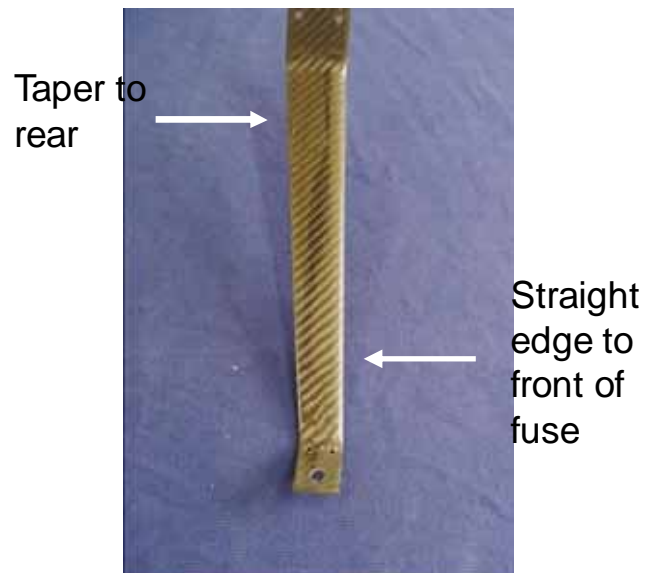
3. Tighten the collar set screw with 1.5mm Hex Wrench as shown



**Main Landing Gear Installation**



**NOTE:** the correct edge in mounting



1. Install the landing gear with the bolts and locking nuts  
Note: Don't over tighten and crack the carbon fiber



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



3. Lift the rear of fuse to line it up with ground as shown



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



5. 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.

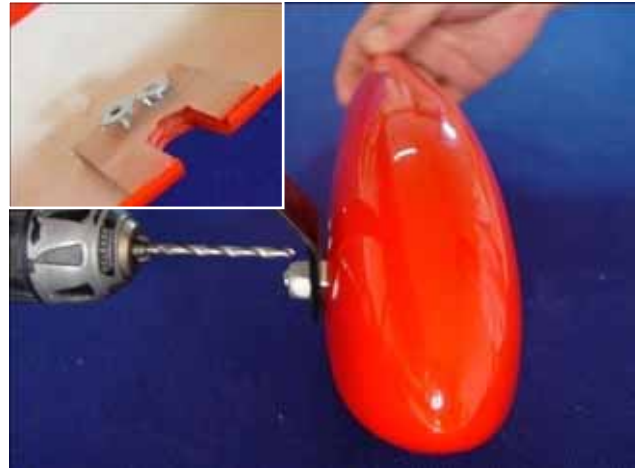


### Pants Installation

1. Lift the rear of fuse and line the wheel pants up with the ground by slipping them over the axles and supporting them from the rear for the proper clearance



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



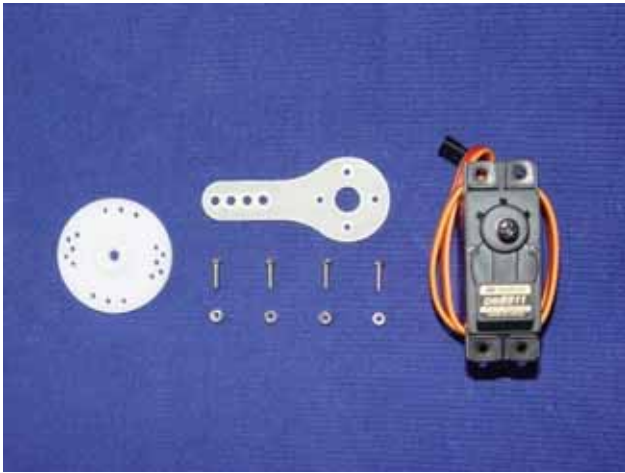
3. Finish the wheel pants mounting with the bolts and use Blue Loctite on the threads



## Wing Servo Assembly

### Servo Arm Installation

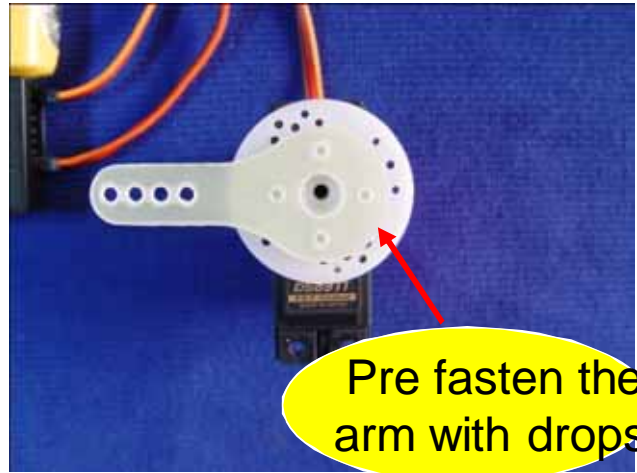
Minimum Request Servo:  
180 in.zo / Metal Gear / Digital



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

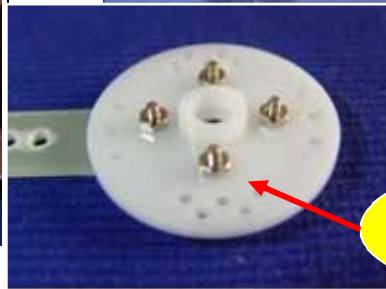
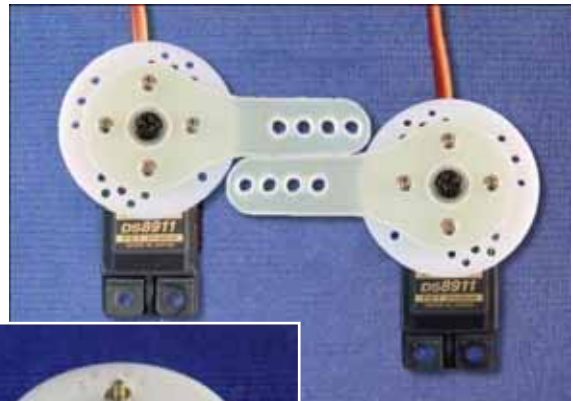


2. Ensure the servo arm is 90 degrees with servo as shown. Then mark and drill holes with 2mm bit



Pre fasten the arm with drops of fast cured gule on edge

3. Mounting screws and nuts

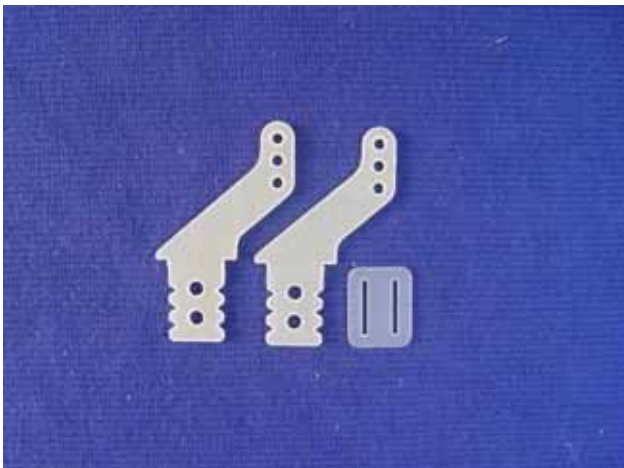


A drop of fast cured gule here



## 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 slots, and coat the horn with epoxy as shown

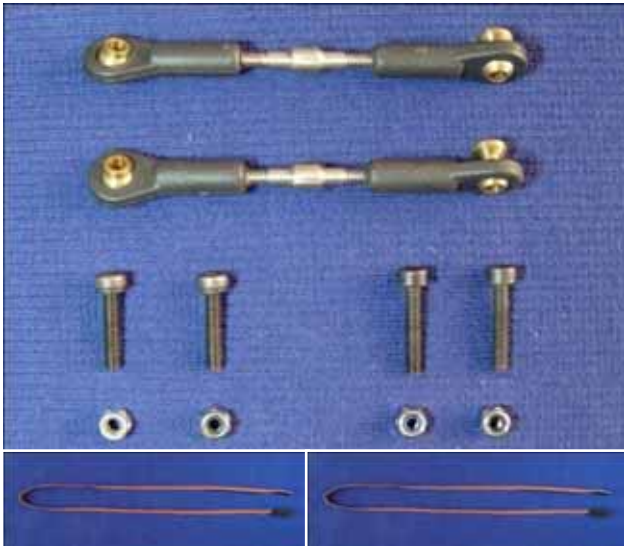


5. Slide the horns into slots slightly and Mount the locking plate in place. **Align the right and left sides** before epoxy has cured. Wipe away excess epoxy with rubbing alcohol





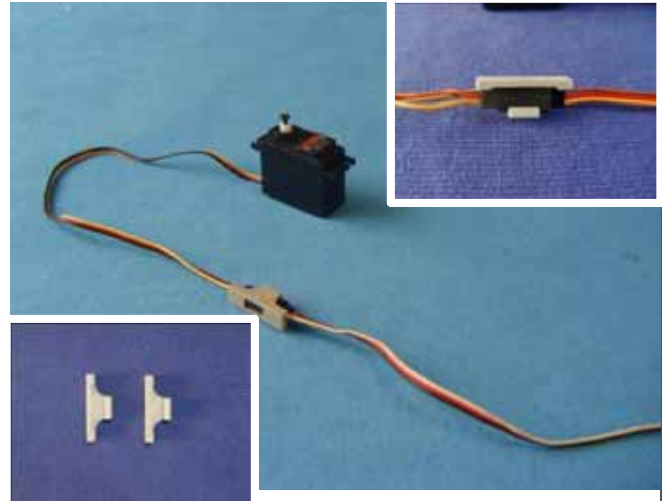
## Servo Installation



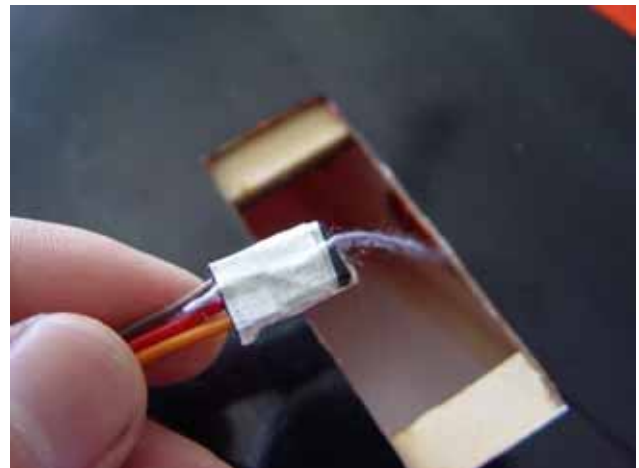
1. Cut out the cover for servo location carefully as shown



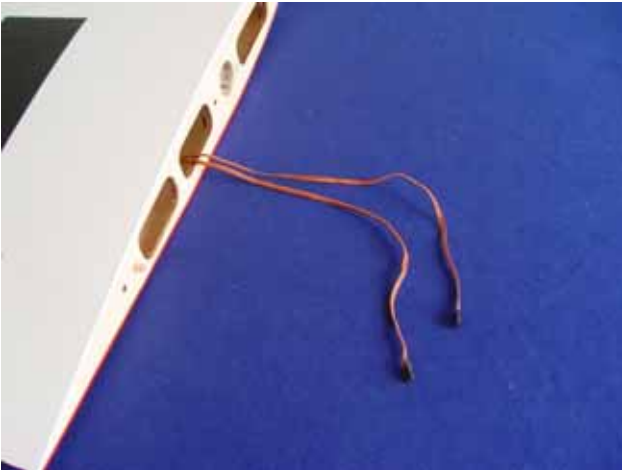
2. Lock the connector with the provided safety clip against vibration and loosened tension as shown



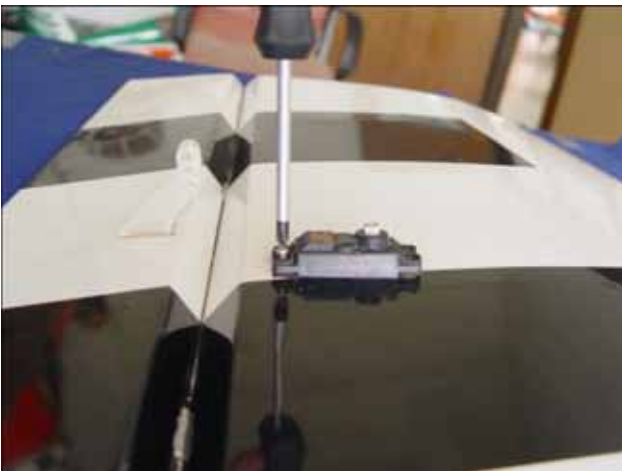
3. Tape the lead to pull-string tightly. In order to ensure the servo wire can be pulled out without hanging up inside wing



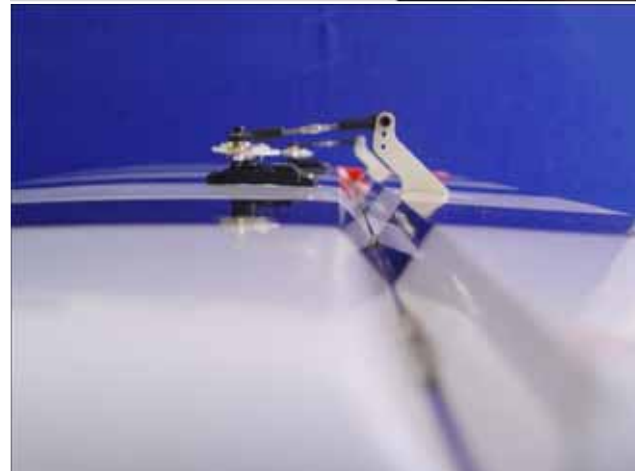
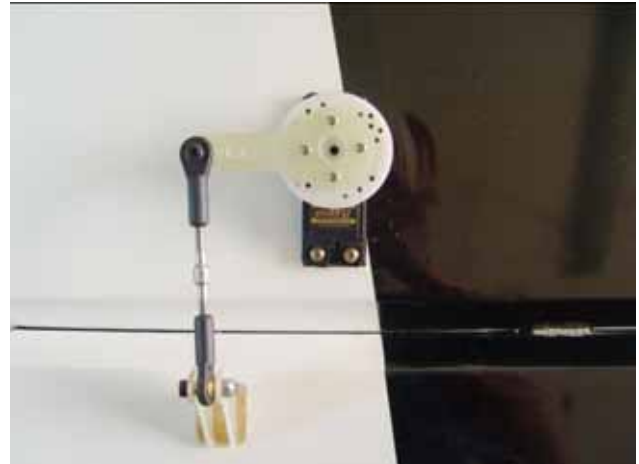
4. Then put the extension lead through the root of wing



5. Install servo with mounting screws. Face the brand toward the trailing edge of the wing. Use 1mm bit to drill the mounting holes



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



7. Repeat all the step above for the other wing

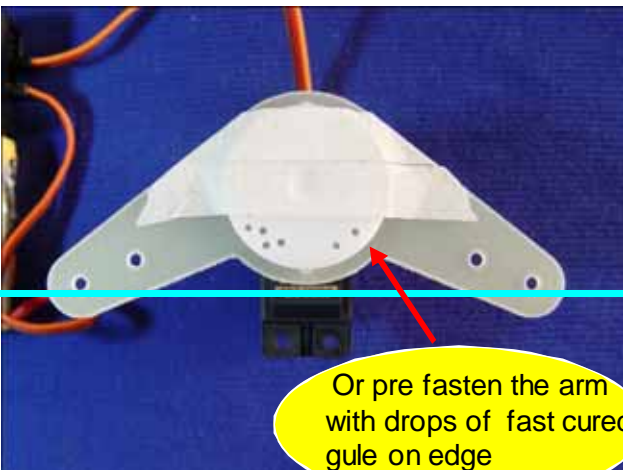
The carbon tube and wing bolts use to be mounted in the final assembly

## Servo Tray Installation

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



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



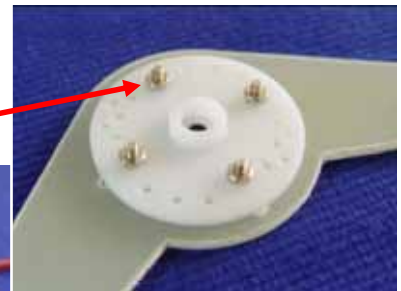
Or pre fasten the arm with drops of fast cured gule on edge

2. Drill holes with 2mm bit



3. Mounting screws and nuts

A drop of fast cured gule here



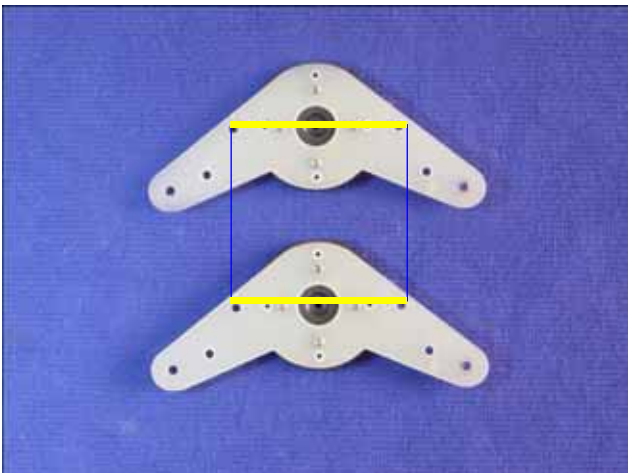
4. Repeat above step for other horn and gether the coupler rods



6. Cut off the excess horn as shown



5. Use 3mm bit to drill the coupler mounting holes which must be lined up with the center of servo tray and symmetrical on both side. Drill the same holes for the other horn

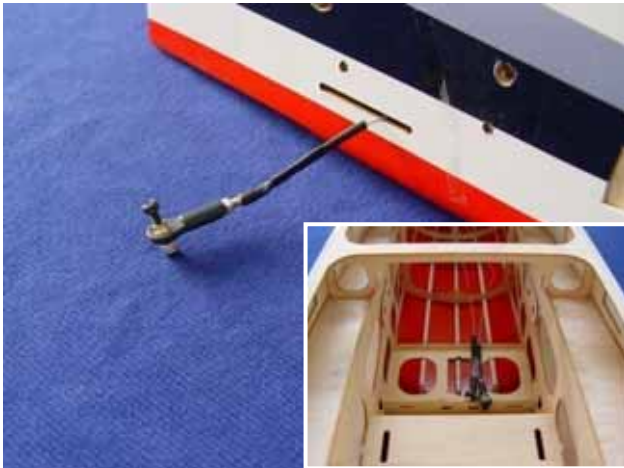


7. Attach the two rudder coupler rods to both rudder servo arms. Adjust the precise length of the rudder coupler rods at center position after the servos have been mounted. Secure with bolts and locking nuts



### Servo Installation

The rudder cables and couplers have been installed as shown



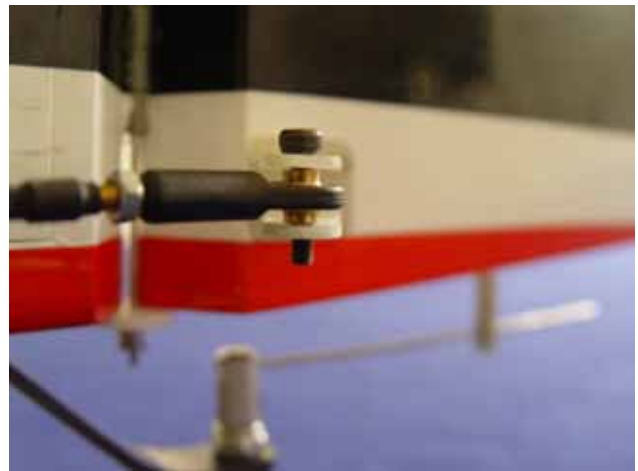
1. Mount servo with mounting screws and face the brand toward the rudder. Drill holes with 1 mm bit



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



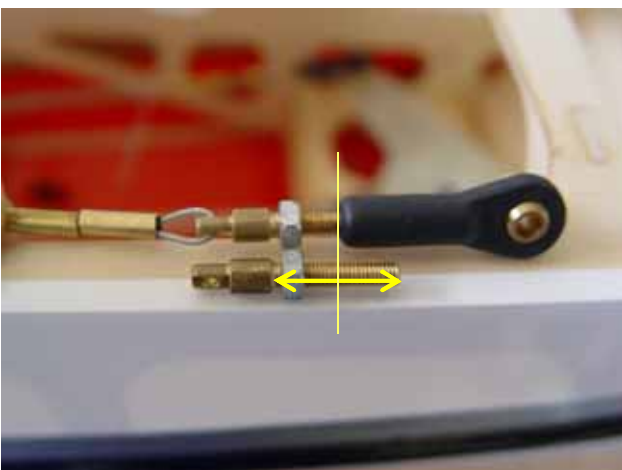
3. Attach the pre-installed boll link to the rudder horns without locking nut as shown



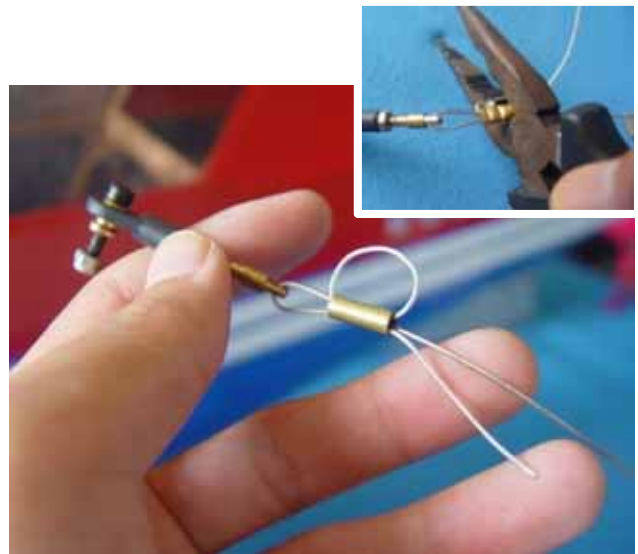
4. Turn on your radio to keep the servo neutral. Mount the pre-installed boll link to the rudder arm without locking nut. Put two brass tube through the cable and thread through the coupler hole. Ensure the cables are straight



NOTICE: The coupler is best to thread half way into ball link for further tightening next



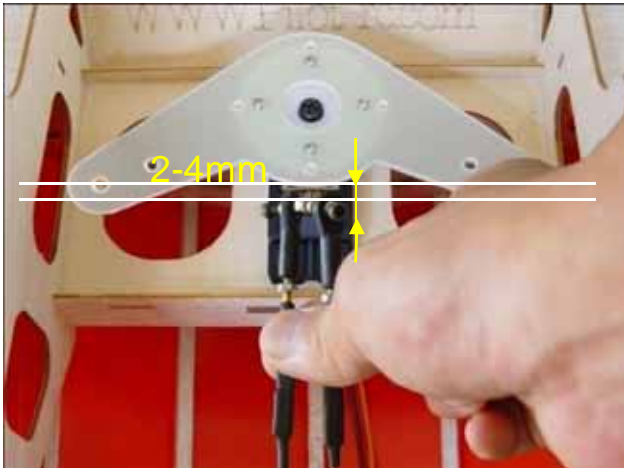
5. Crimp them in place with crimping pliers



6. Cut away excess cable



7. Thread the coupler in 2 – 4 mm. Ensure the same length of cables and tension



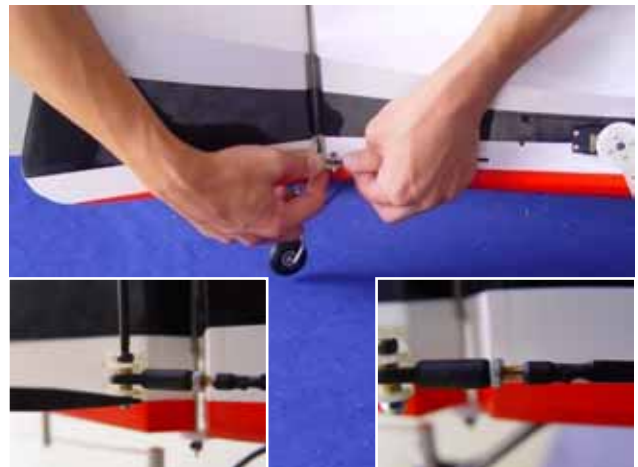
8. Shrink the heat shrinking tube on the brass tube



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

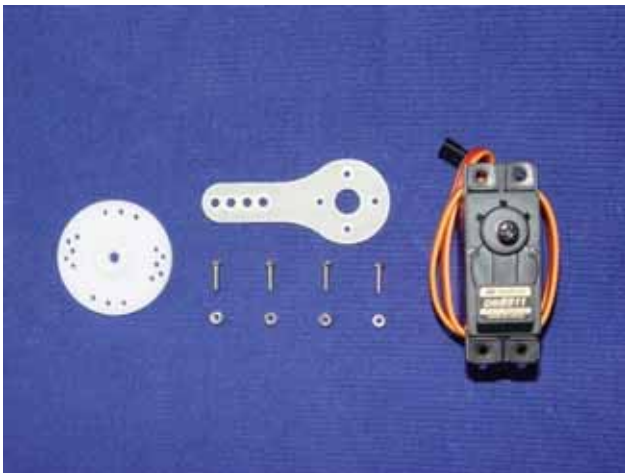


10. **Turn off the radio now.** Reinstall the ball link (Don't pull strongly to hurt the rudder or back to step 7 for readjustment )you can find a helper and do that at certain deflection with supporting the bottom of the rudder.



## Servo Arm Installation

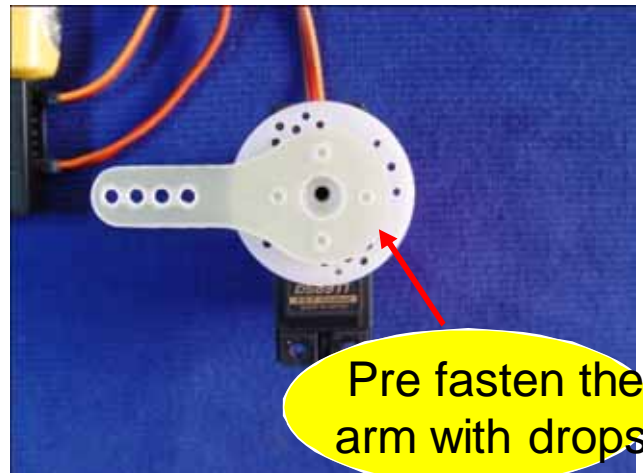
Minimum Request Servo:  
180 in.zo / Metal Gear / Digital



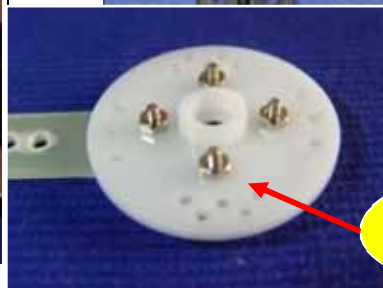
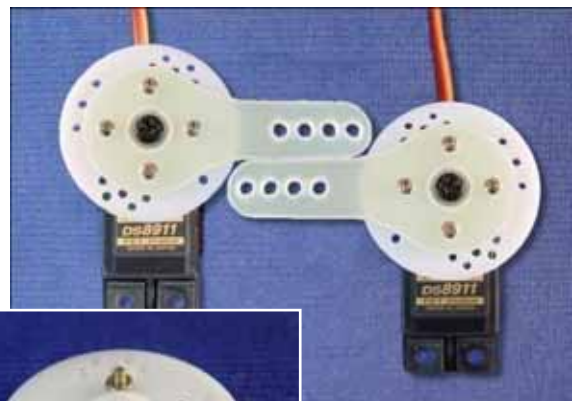
1. Turn on your transmitter and plug the servo into receiver. Ensure every channel is neutral



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

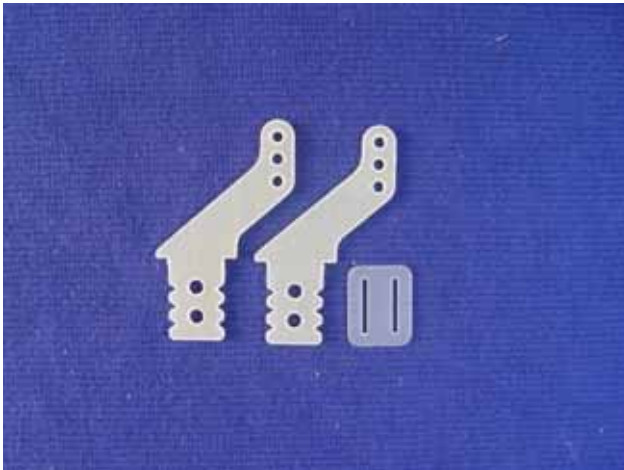


3. Mounting screws go on edge

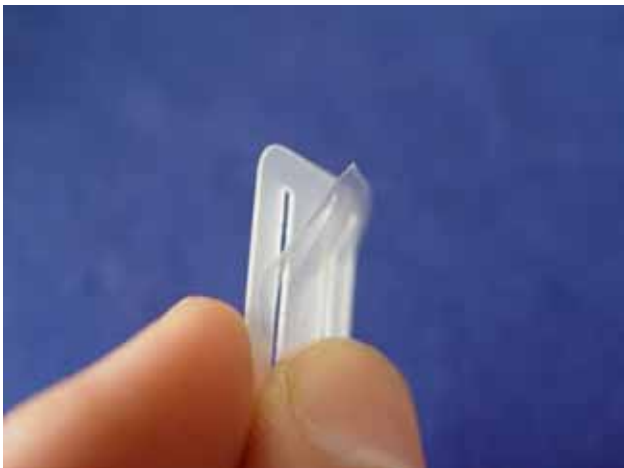




### Elevator Control Horns



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



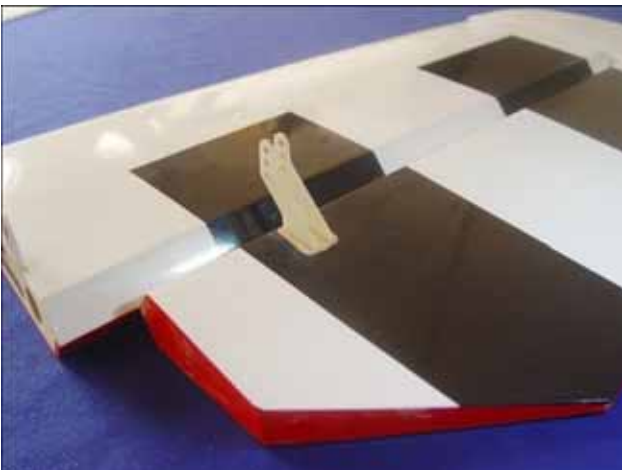
3. Scuff the horns with a piece of sand paper for good glue bond. Then clean up the surface



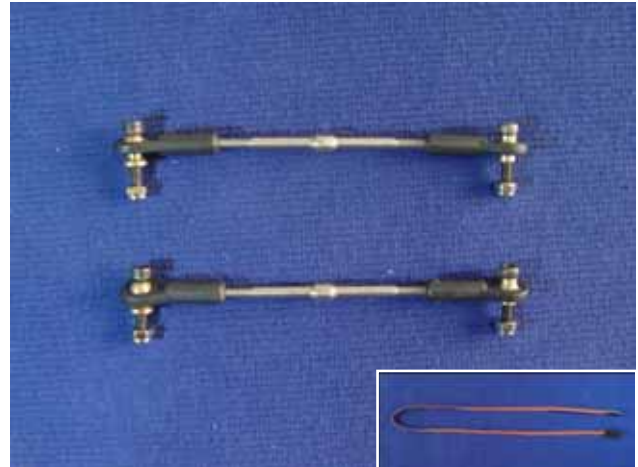
4. Apply the 30 minutes epoxy inside the pre-cut slots, and coat the horn with epoxy as shown



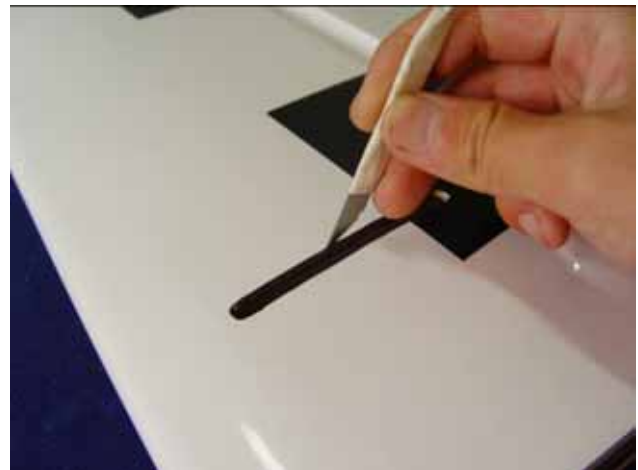
5. Slide the horns into slots slightly and Mount the locking plate in place. **Align the right and left sides** before epoxy has cured. Wipe away excess epoxy with rubbing alcohol



## Servo Installation



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



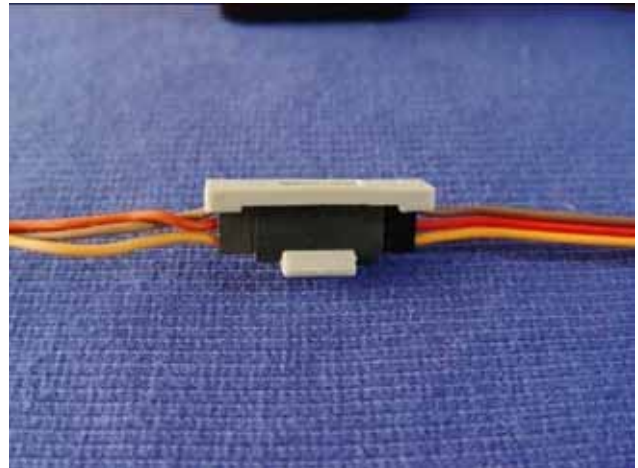
2. Install servos with mounting screws. Face the brand toward the rear of fuse.



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



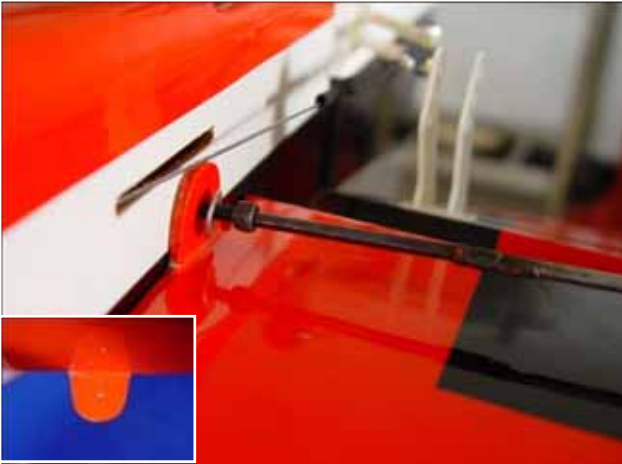
4. Lock the connector with the provided safety clip against vibration and loosened tension as shown



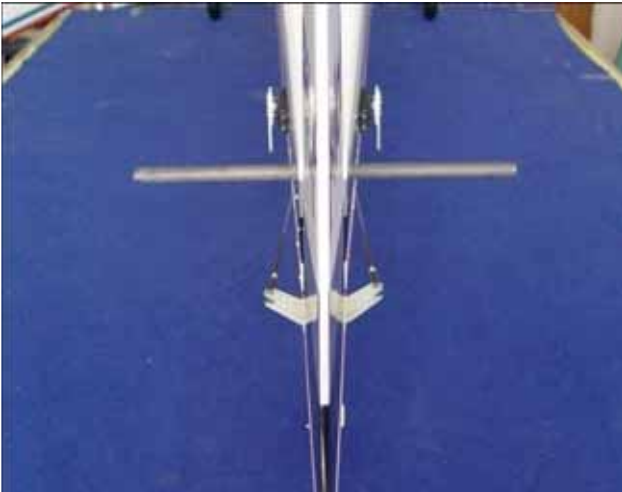
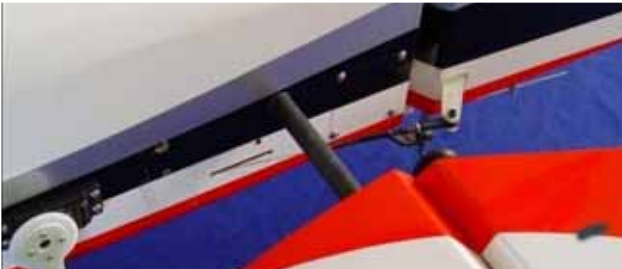
5. Then put the extension lead through fuselage



6. Install the stab with mounting bolts and washers



7. Repeat all the step above for the other stabilizer



### Switch Installation



**Note:** The switch mounting holes have been pre-cut for standar size. Otherwise fill it with the same size 1.7mm plywood and a larger one (both not included) as reinforce



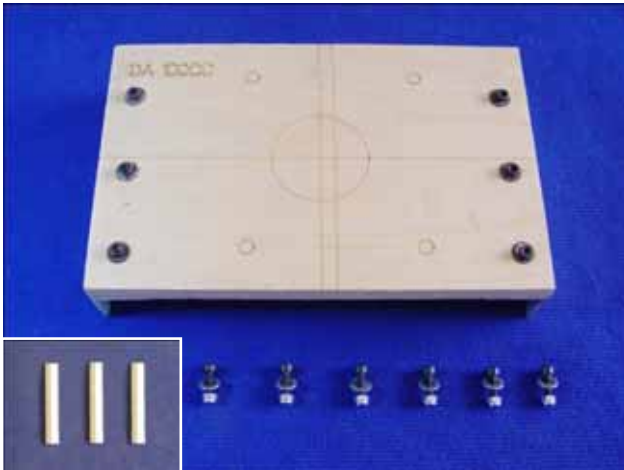
1. cut off the cover with a sharp knife



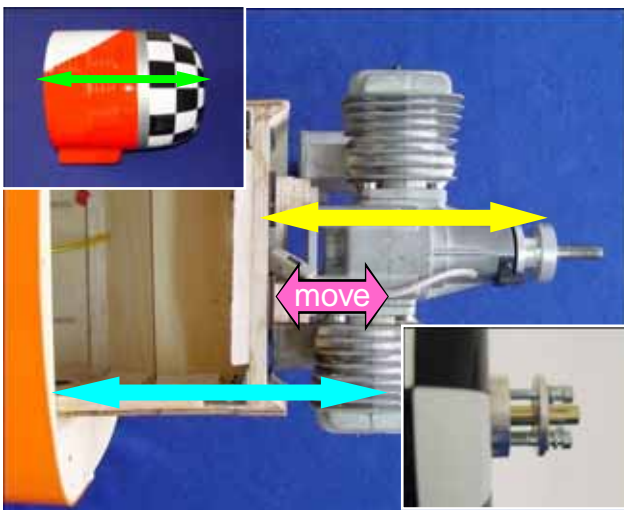
2. Finish the mounting with screws and nuts supplied.



## Firewall Assembly

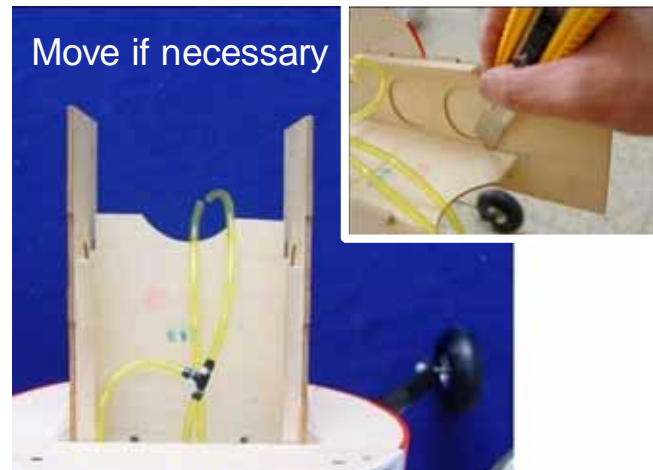


1. Measure the length of the engine (from the firewall to the prop thrust washer) , the cowl and the engine box for the proper distance allowing 1/4"to 1/2" from the edge of the cowl .Then mark the location

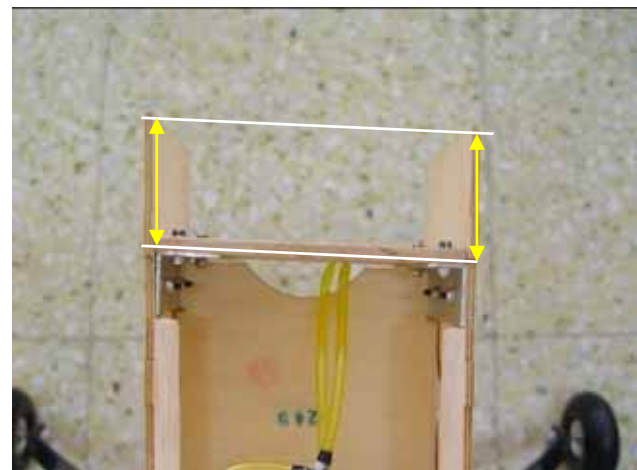


The excess plywood has been cut away

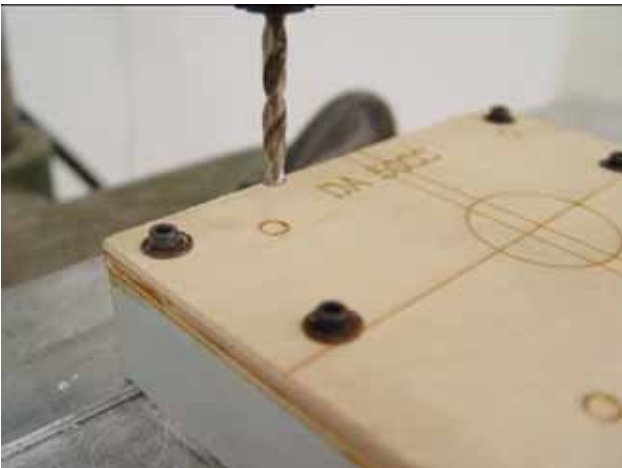
The method of 100cc assembly is similar to 50cc in Firewall Assembly. Please refer to 50cc as shown



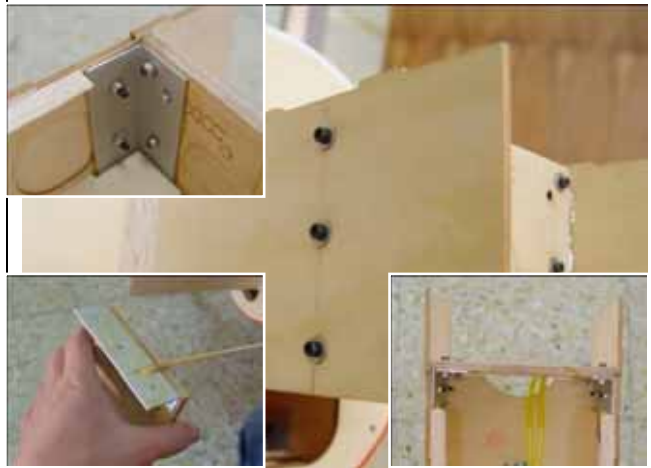
**Note:** The 2 degree right thrust have been built, just keep the firewall same distance from the edge



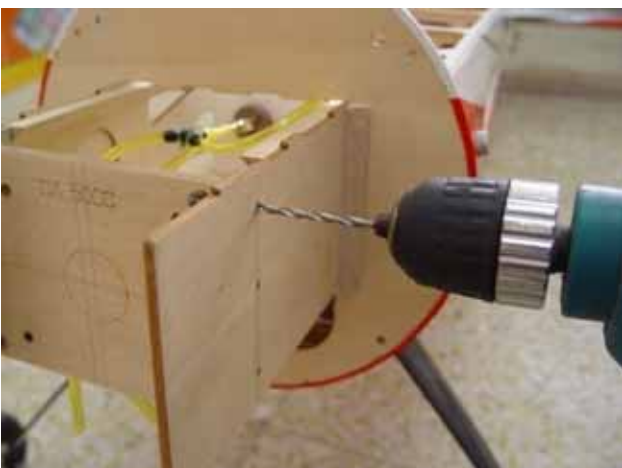
2. Drill the firewall according pre-set laser holes for DA. Otherwise measure your engine's mounting location.



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



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)



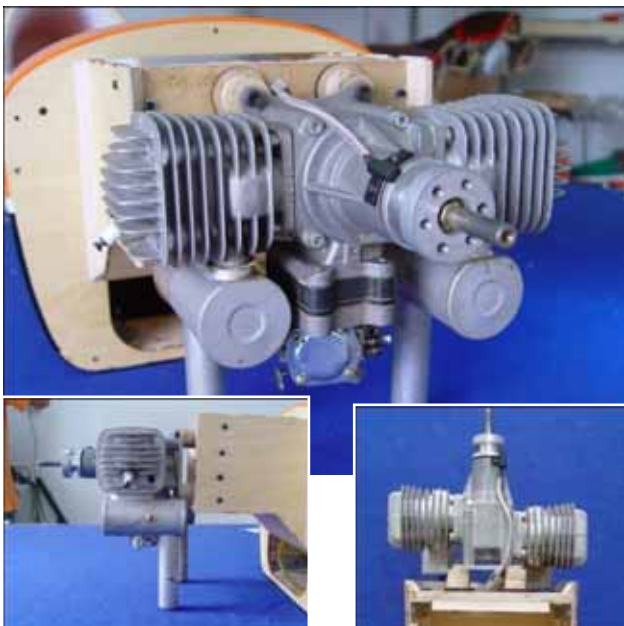
**Note:** Epoxy the triangular hardwood supports for reinforce. 100cc firewall needs to cut off the center hole for air exit



### Engine Installation



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



### Throttle servo Installation

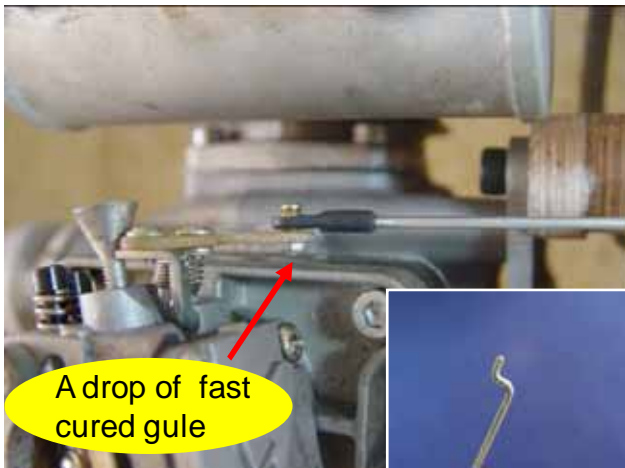


1. Install the engine throttle arm with a little Blue Loctite

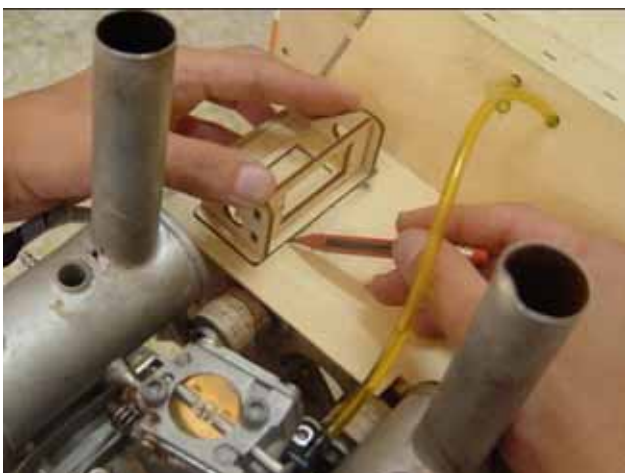




2. Measure and cut the extra wire  
Then bend to a sharp of “z” as shown  
Mount the throttle pushrod to engine.



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



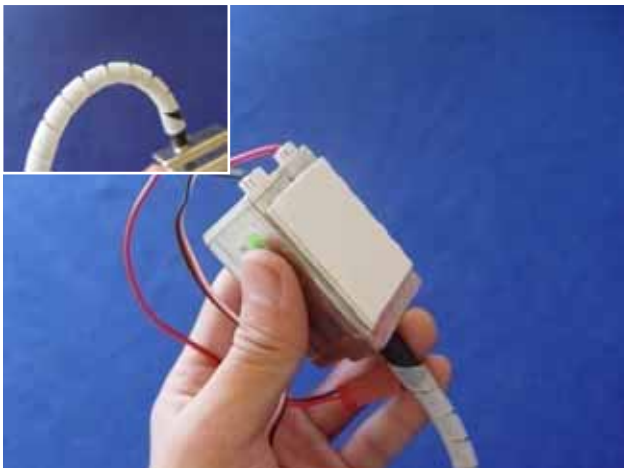
5. Finish the servo installation with mounting screws



## Ignition Module



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



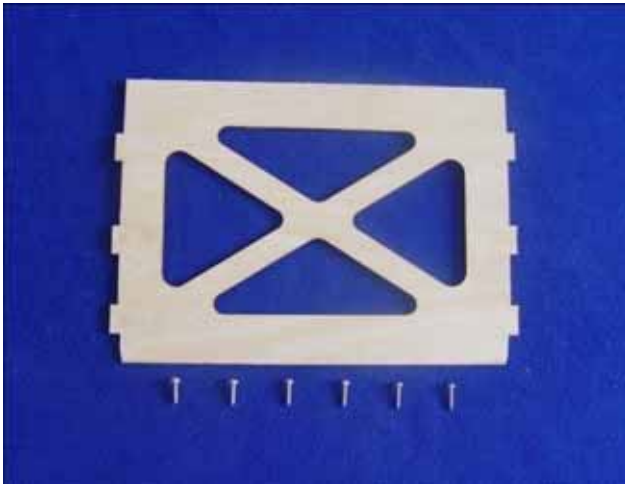
2. Position the ignition outside the engine box to allow the spark plug leads to connect the engine without excess tension .Drill for Nylon tie



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



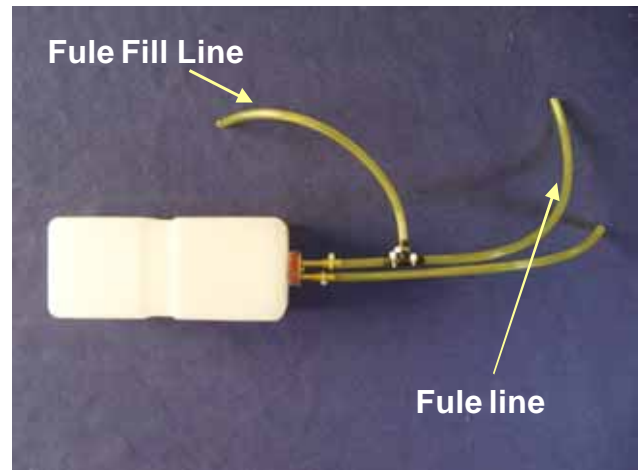
## Engine Box Hatch



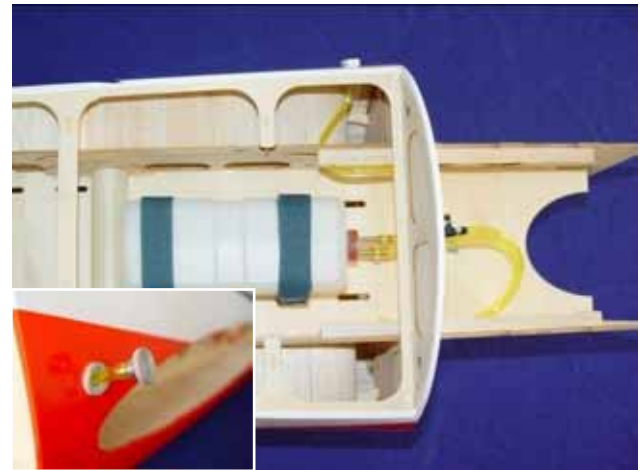
Epoxy the hatch in place and secure with self-tapping screws



## Fule Tank and Dot



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



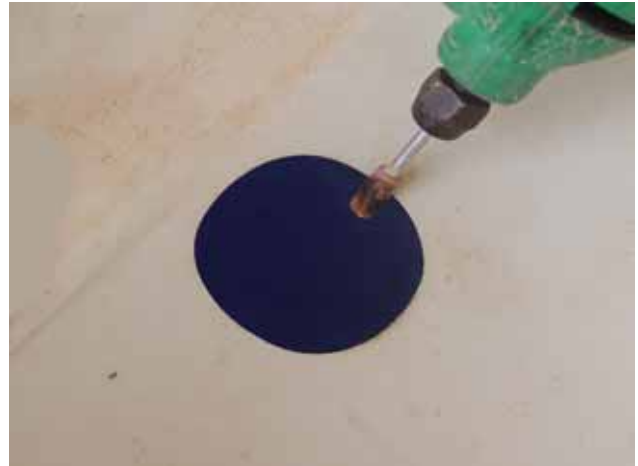
## Cowl Assembly



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



6. Install into position using the bolts. There are two that mount from the rear of the firewall on the top of the cowl and two that mount from the front of the cowl opening



### **NOTICE:**

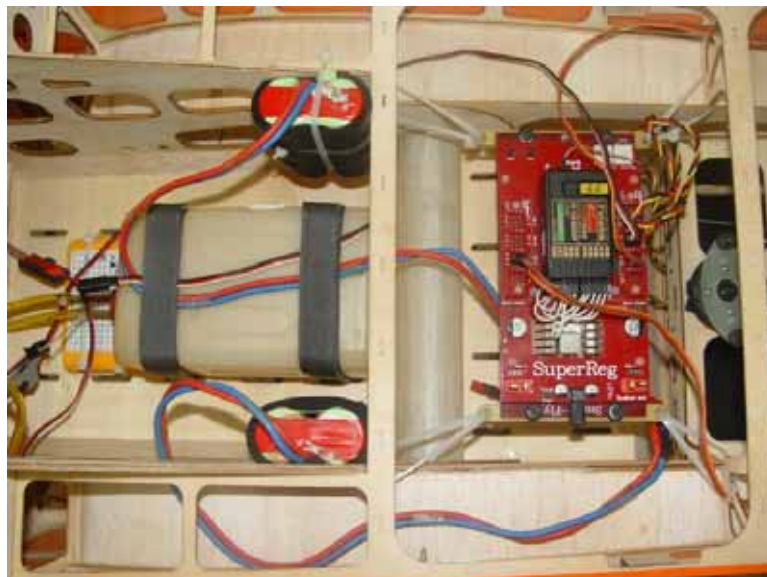
Maybe more exit air cooling will be needed to allow for depending on your engine's recommended running temperature. Always check your engine and Pilot-rc doesn't accept responsibility for any damage from improper engine cooling

## Center Of Gravity

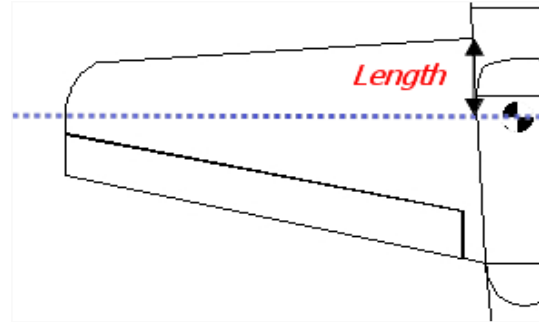
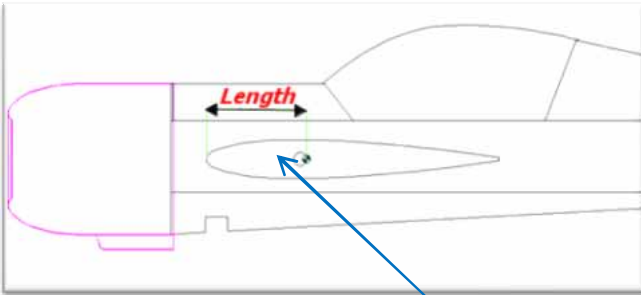
The center of gravity is on the rear of the wing tube .For more plane please refer to the CG list



Your balance at the CG will determine batteries final mounting location .Mount batteries and secure with Nylon ties



## The CG list of Pilot-RC products



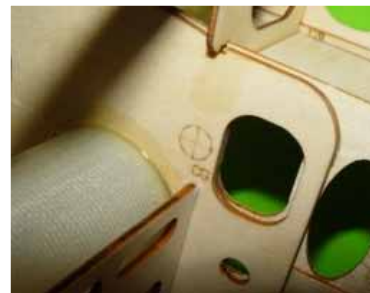
This recommendation balance point is for your first flight. The CG can be moved around to fit your personal taste.

PLANE	CG location
DECATHLON 107"	133mm/5.2inch
DECATHLON 122"	145 mm/5.7inch
DECATHLON 150"	182 mm/7.2inch
DECATHLON 180"	217 mm/8.5inch
YAKM55 73"	165mm/6.5inch
YAKM55 88"	216 mm/8.5inch
YAKM55 107"	267 mm/10.5inch
YAKM55 122"	287mm/11.3inch
YAK-54 53"	126mm/5.0 inch
YAK-54 73"	156 mm/6.1inch
YAK-54 87"	183 mm/7.2inch
YAK-54 107"	225 mm/8.9inch
YAK-54 121"	266 mm/10.5inch
YAK-54 129"	273 mm/10.7inch
YAK-54 148"	314 mm/12.4inch
YAK-54 180"	401 mm/15.8inch
EXTRA-300/330 73"	154mm/6.06inch
EXTRA-300/330 88"	170mm/6.7inch
EXTRA-300/330 107"	211mm/8.3inch
EXTRA-300/330 122"	236mm/9.3inch
Sbach 342 53"	132mm/5.2inch
Sbach 342 73"	145mm/5.7inch
Sbach 342 87"	173mm/6.8inch
Sbach 342 107"	234mm/9.2inch
Sbach 342 122"	269mm/10.6inch
Sbach 342 148"	305mm/12 inch

Columbia 400 128"	136mm/5.35inch
Columbia 400 150"	141mm/5.6inch

Edge-540 73"	116mm/4.5inch
Edge-540 87"	136mm/5.35inch
Edge-540 107"	141mm/5.6inch
Edge-540 122"	166mm/6.5inch

EXTRA-260 73"	140mm/5.51 inch
EXTRA-260 87"	170mm/6.7inch
EXTRA-260 106"	202mm/7.95inch
EXTRA-260 122"	248mm/9.8inch



The location of CG has been marked inside plane as show. Usually it is near the wing tube.

### 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: 45 Degrees on High rate  
40 Degrees on Low rate

After you have set the given control throws and have a few flights under your belt, you can change the throws as well as moving the CG back at 1/4" intervals to suit your requirements and skill level.

Learn to use exponential of about 40 percent on your elevator to make smooth landings and prevent over control on this highly aerobatic airplane. Use 70 percent exponential on High Rate!



Make sure you have the right model programmed into your transmitter

Check the direction of each control surface for correct operation 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 as per your radio manufactures instructions your body should be 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 your first time

Have an experienced pilot fly it for 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 burn off by bragging to your fellow members how good it flies

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

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 sure about the CG!

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