



Assembly Manual For
100-170cc Planes



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Assembly is quick with most of the major work already completed at our factory.

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Pilot-RC is strong but light weight making it an ideal aircraft for 3D and freestyle flying as well as aerobatics.

We hope you enjoy flying your model as much as we enjoyed designing and building it.

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- All Pilot-RC products are guaranteed against defects within 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 components or parts damaged by misuse or modification.
- The manufacturer can not control the assembly, operation and maintenance of this product therefore, **Pilot-RC are not responsible for any damage that occurs as a result of the use or misuse of this radio controlled model.**
- In no circumstance will Pilot-RC accept liability exceeding the original cost of the airframe. (not including engine and radio system).
- Shipping costs for ALL returns (regardless of the reason for return) will be paid by the customer. Shipping costs for replacement parts will be paid by the customer.

- **You should not regard this plane as toy!**
- To ensure safety, please read the instruction manual thoroughly before assembly.
- Building and operating a model plane requires diligent practice and correct guidance. An inexperienced flyer can cause serious injury and property damage.
- Seek the assistance of an experienced RC pilot or model airplane club for help with assembly, operation and maintenance to ensure your flying experience is both enjoyable and safe.
- **Fly only in AMA (Academy of Model Aeronautics) approved areas.**

Pilot-RC reserves the right to make changes and amendments to construction manuals, terms and conditions without notice. If you have any problems and questions please contact Pilot –RC

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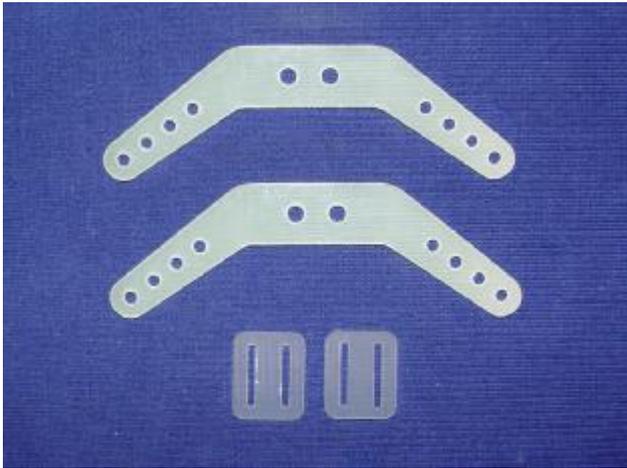
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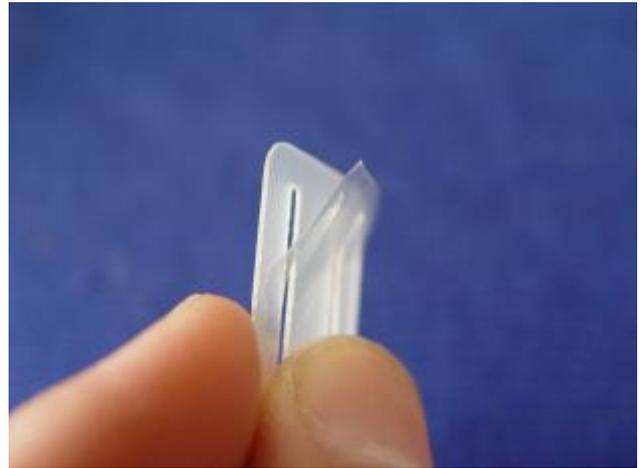
Rudder Assembly

Rudder Control Horn



Please refer to the **HARDWARE LIST** (download with instructions) to get the exact information about each step. A printed list is recommended for easy checking.

1. Remove the protective covering from the horns and locking plates.



2. Trace around the locking plate with a knife and remove the covering below to expose the pre-cut slots.



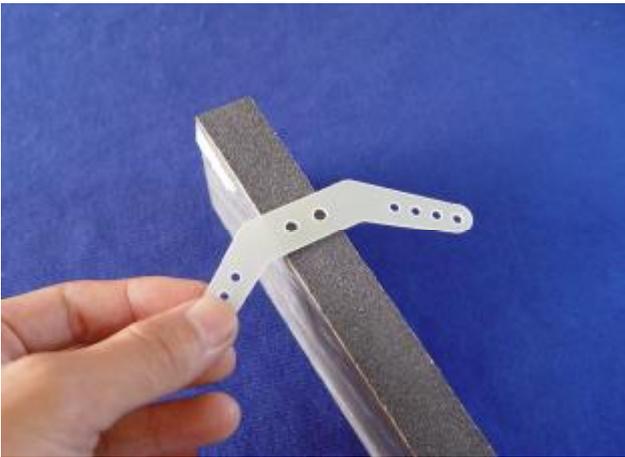
Example:

On the step of Rudder Control Horn installation

Rudder ← You can search

no.	From	Year of Int.	Qty.	Material
1	Rudder Servo Arm	fiber	2	Screw And Locking Nut
2	Rudder Control Horn	fiber	2	Locking Plate

3. Scuff the middle of the horns with sand paper to ensure a good glue bond.



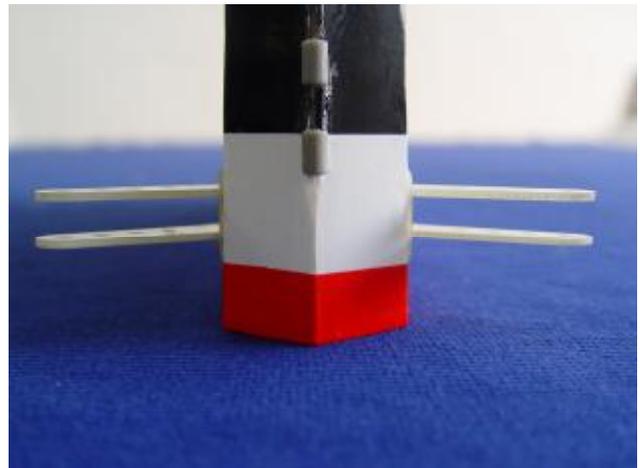
4. Apply 30 minute epoxy inside the pre-cut slot, and coat the horn with epoxy as shown.



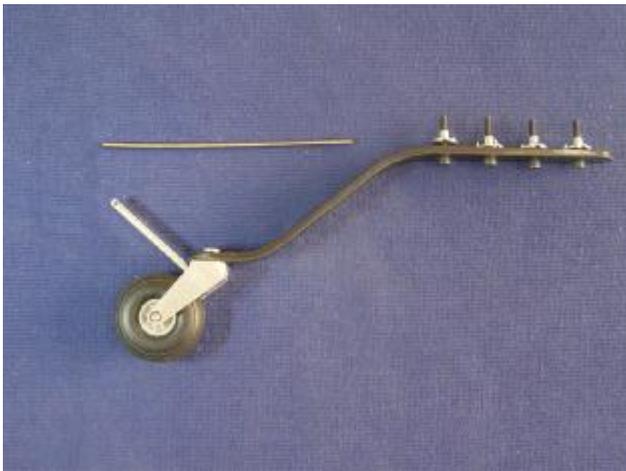
5. Fit the horns into the locking plate and then insert them into the pre cut slots. Wipe away excess glue with rubbing alcohol.



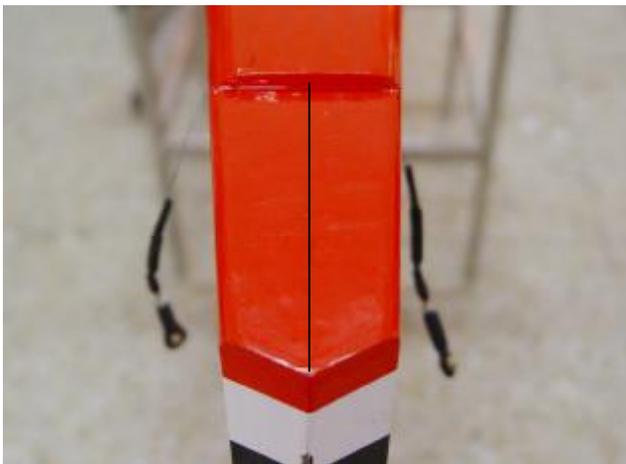
6. Make sure the horns are correctly aligned (by installing the linkage bolt) before the epoxy has cured.



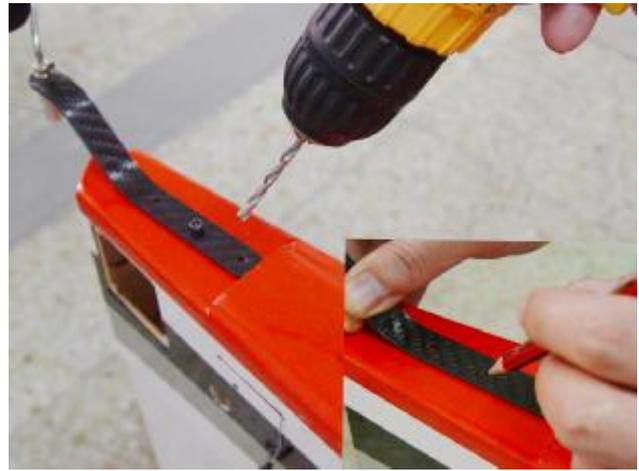
Tail Wheel Installation



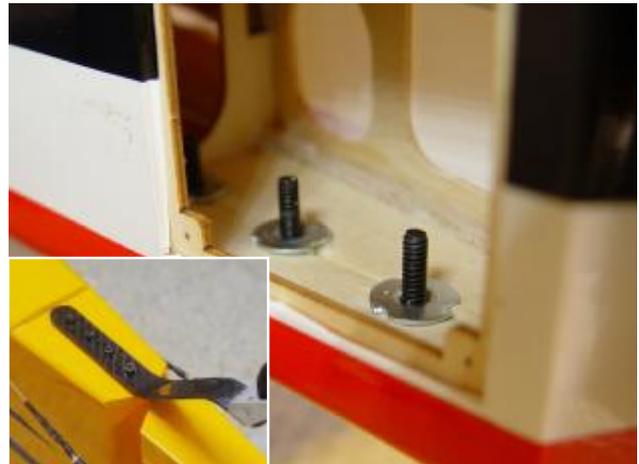
1. Draw a center line with a pencil as shown



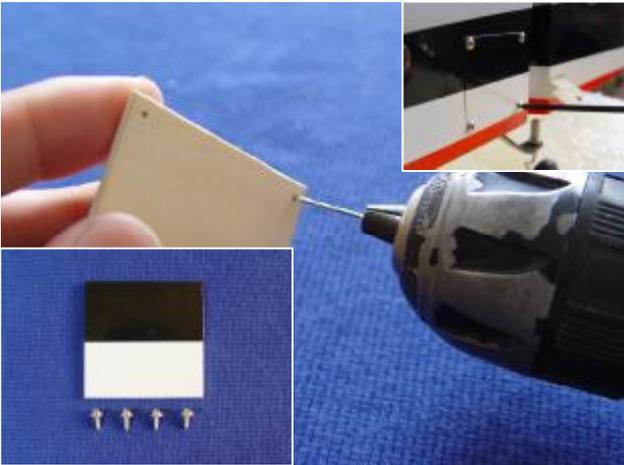
2. Use the tail wheel bracket as a template and drill holes for the mounting bolts.



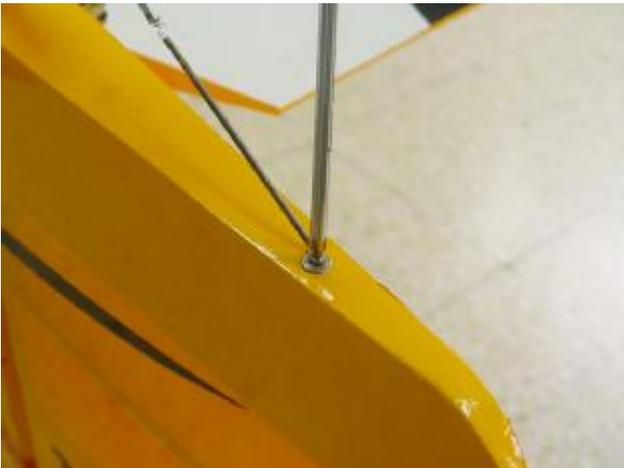
3. Install the blind nuts through the opening in the rear of the fuselage. Attach the tail wheel bracket and secure the bolts with Blue Loctite.



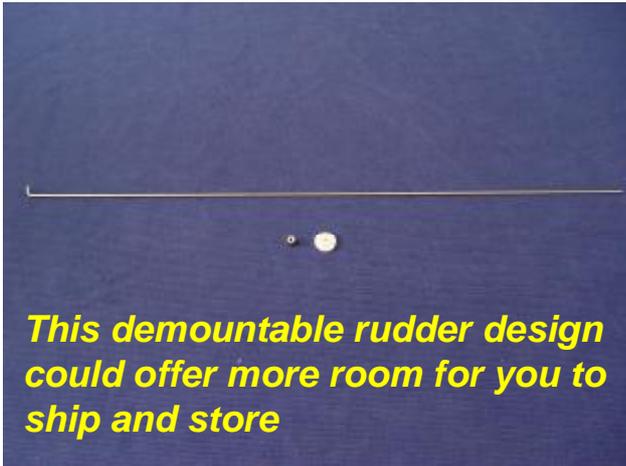
4. Install the hatch with 4 screws using the pre marked screw holes.



5. Install the tension spring using a self tapping screw and washer. Use the spring length with medium tension to determine where the screw should be located.



Rudder Hinge Installation



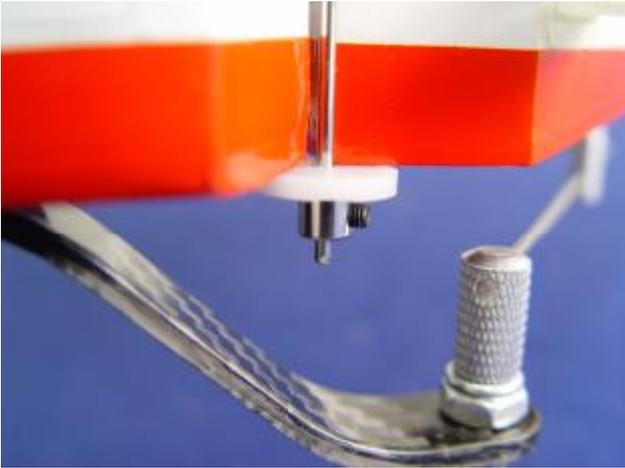
1. Insert the hinge pin into the hinges from the bottom of the rudder and push it right through to the top to locate the entry hole.



2. Fit the rudder by aligning the hinges and inserting the hinge pin from the top of the rudder.

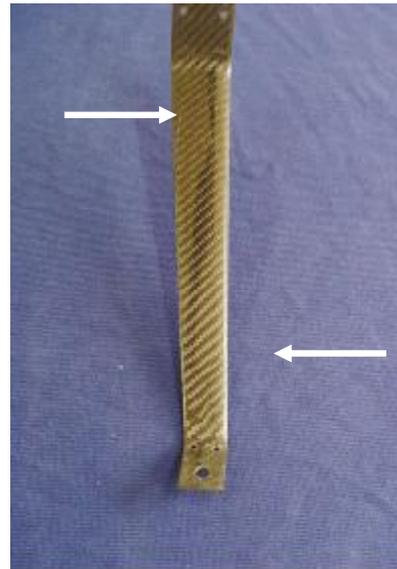


4. Fit the Teflon washer and tighten the collar set screw with 1.5mm hex wrench as shown.



NOTE: the correct edge for mounting

Taper to rear



Straight edge to front of fuselage

Main Landing Gear Installation



1. Install the landing gear in the pre drilled holes with the supplied bolts and locking nuts.

Note: Don't over tighten and crack the carbon fiber.



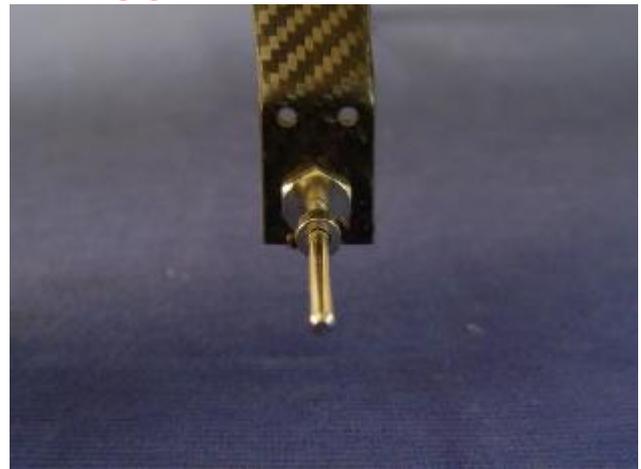
2. Install the landing gear axles with lock nuts, but do not tighten yet.



3. Lift the rear of fuselage parallel to the ground as shown.



4. Position the flat sides of the axle bolt vertically to the ground **then tighten the lock nut against the landing gear strut.**



5. Install the wheel and tighten the collar set screw using a drop of Blue Loctite. Make sure the wheel rotates freely.

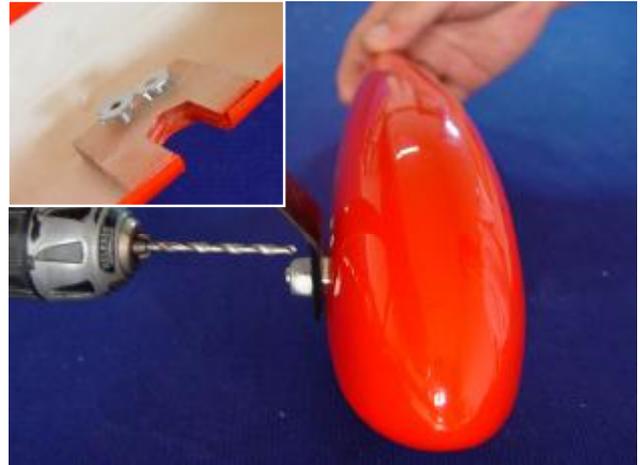


Wheel Pants Installation

1. Lift the rear of fuse and line the wheel pant up with the ground by slipping them over the axles as shown. Mark the location for the two attachment bolts.



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



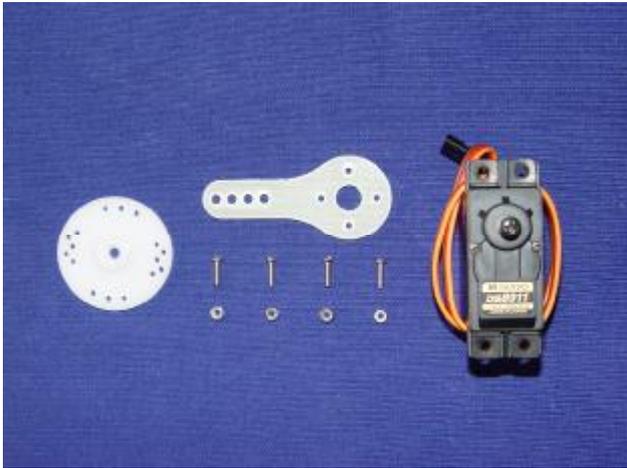
3. Mount the wheel pants and secure the bolts with a drop of Blue Loctite.



Wing Servo Assembly

Servo Arm Installation

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



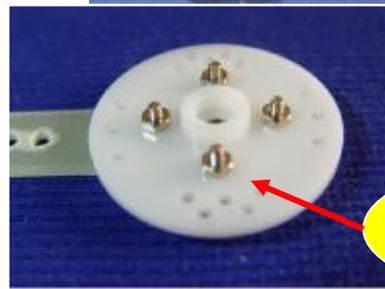
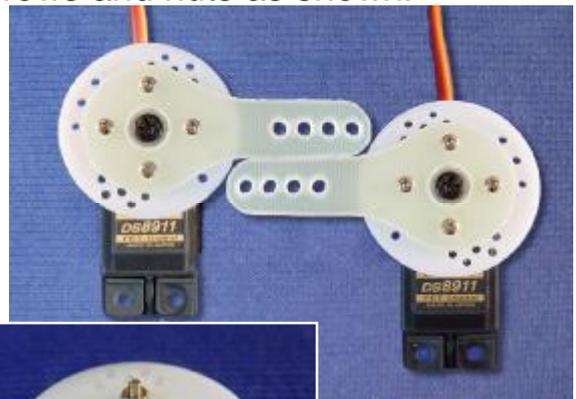
1. Turn on the transmitter and plug the servo into the receiver. Ensure every channel is neutral.



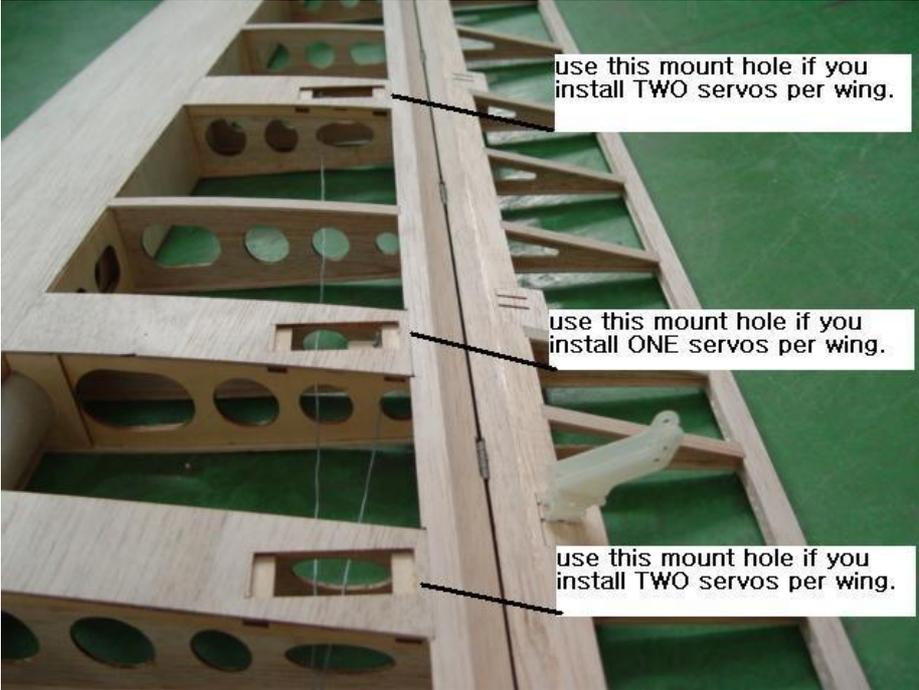
2. Position the servo arm 90 degrees to the servo as shown. Then mark and drill 2mm holes.



3. Mount the servo arm with screws and nuts as shown.



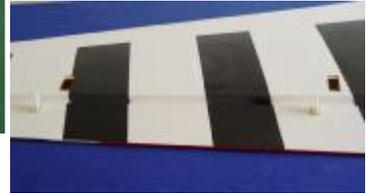
A drop of fast cured gule here



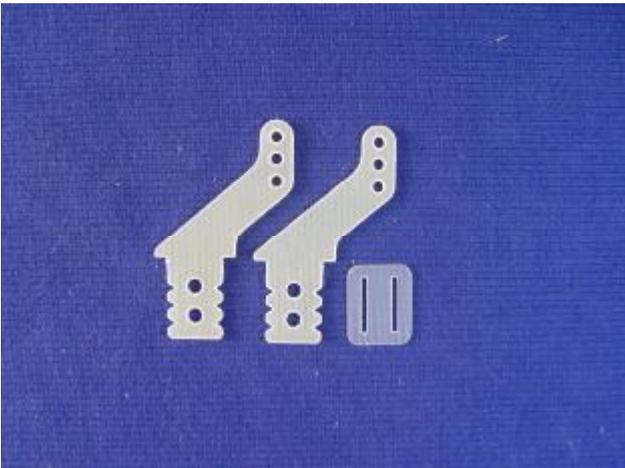
Please pay attention to picture on the left

If using ONE servo per wing cut out the covering in the center hole only and cut out the control arm slots on the center holes only and epoxy in control arms into control surface

IF using TWO servos per wing cut out the covering on the outer holes only and cut out the control arm slots on the outer holes only and epoxy in control arms into control surface



Aileron Control Horns



1. Remove the protective covering from the horns and locking plates.



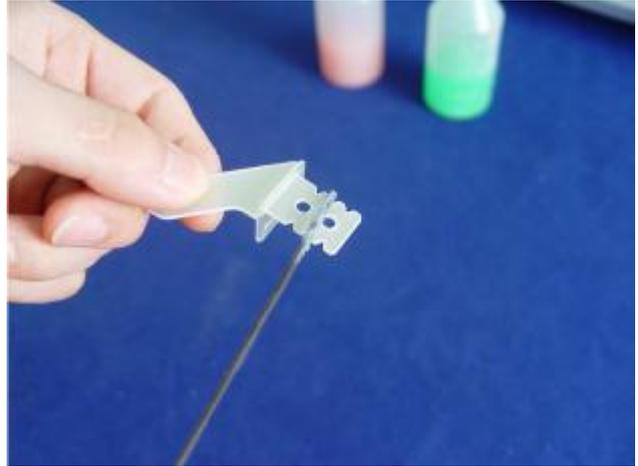
2. Trace around the locking plate with a knife and remove the covering below to expose the pre-cut slots.



3. Scuff the horns with a piece of sand paper for a good glue bond.



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



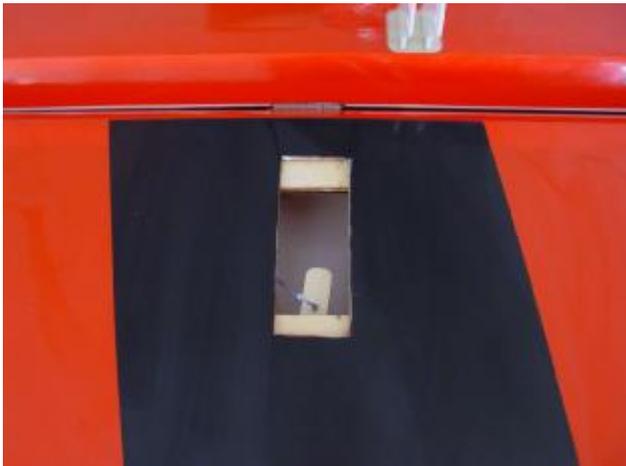
5. Fit the horns in to the locking plate and then insert them into the pre cut slots. **Align the right and left sides** before the epoxy cures. Wipe away excess epoxy with rubbing alcohol.



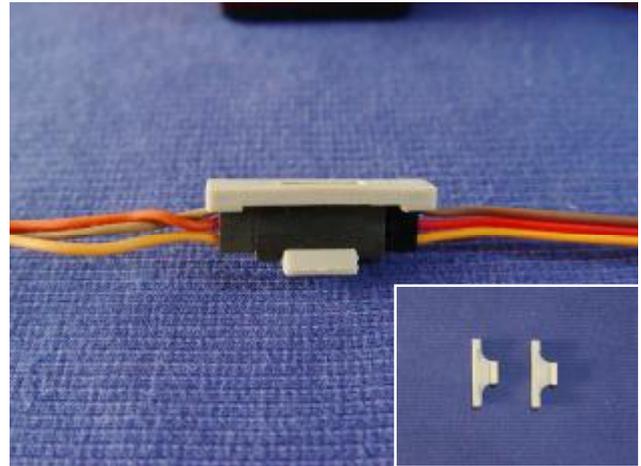
Servo Installation



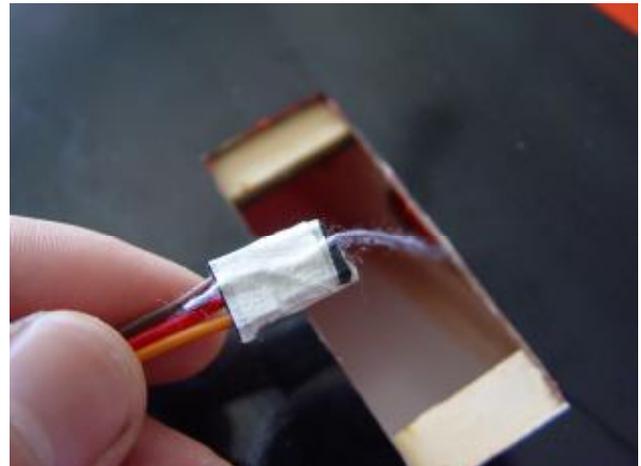
1. Carefully remove the covering from the servo location as shown.



2. Use the provided safety clips to secure the servo and servo extension leads.



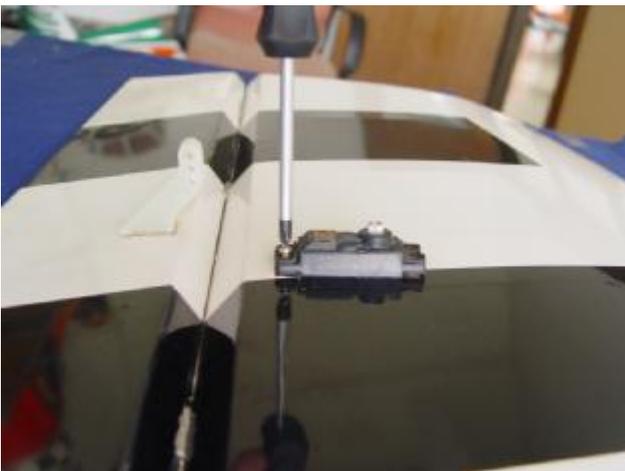
3. Tape the end of the servo extension lead to the pre installed pull-string.



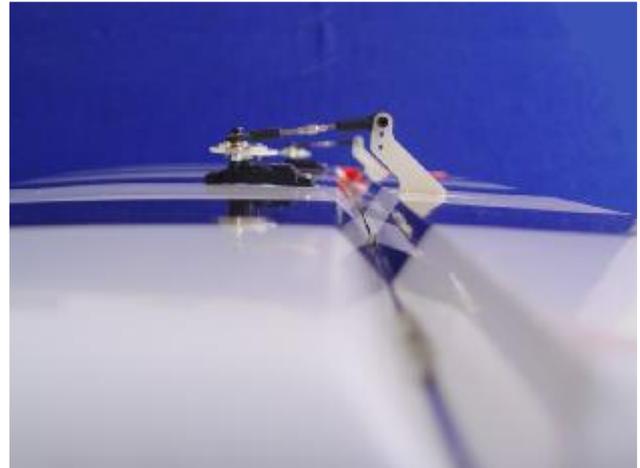
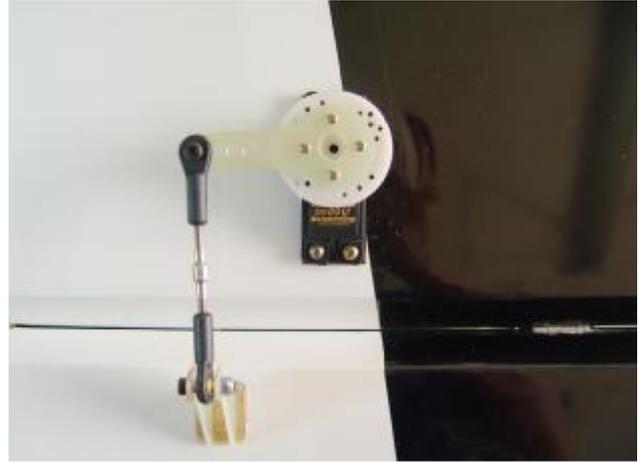
4. Pull the extension lead through to the root edge of the wing.



5. Drill 1mm holes for the servo mounting screws. Position the servo as shown with the servo label closest to the wing trailing edge.



6. Install the servo arm facing toward the wing tip and adjust the push rod length to ensure the aileron and servo are in the neutral position.

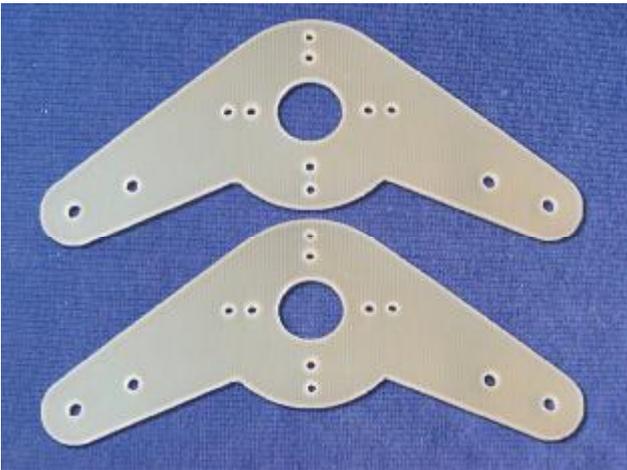


7. Repeat all the steps above for the other wing.

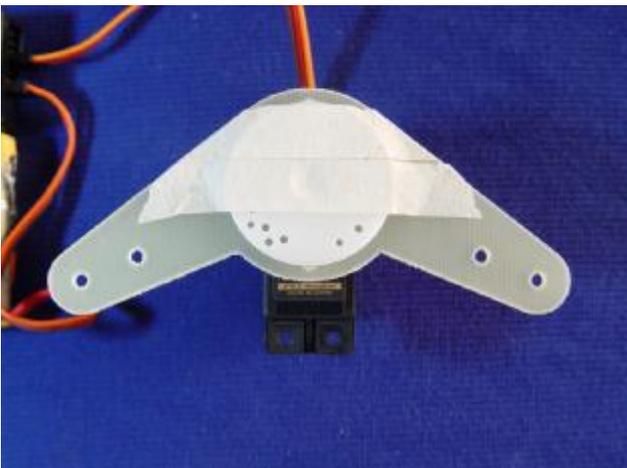
The carbon tube and wing bolts will be mounted in the final assembly.

Rudder servo Installation

Minimum Required Servos:
180 in.oz / Metal Gear / Digital



1. Turn on the transmitter (refer to wing servo installation) Align the servo arm with the servo as shown and temporarily tape in place.

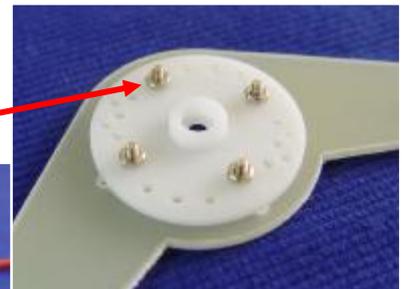


2. Drill 2mm holes.



3. Attach servo arm with mounting screws and nuts as shown.

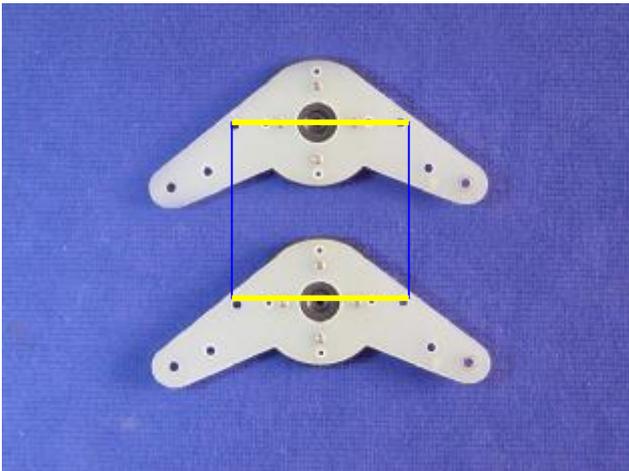
A drop of fast cured gule here



4. Repeat the previous steps for the second rudder servo. Locate the coupler rods



5. Drill 3mm holes in the servo arms. Ensure the same holes are drilled in each servo arm. Holes must be symmetrical on both sides (left and right) as shown.



6. Cut off the excess horn as shown.

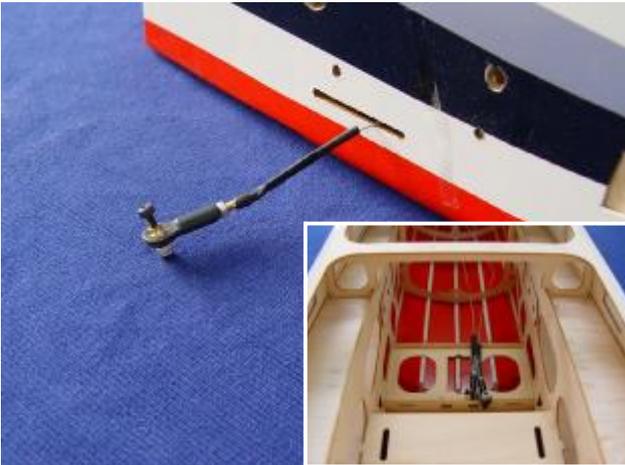


7. Attach the two rudder coupler rods to both rudder servo arms. Adjust the precise length of the rudder coupler rods at center position after the servos have been mounted. Secure with bolts and locking nuts.



Servo Installation

The rudder cables and couplers have been pre installed as shown



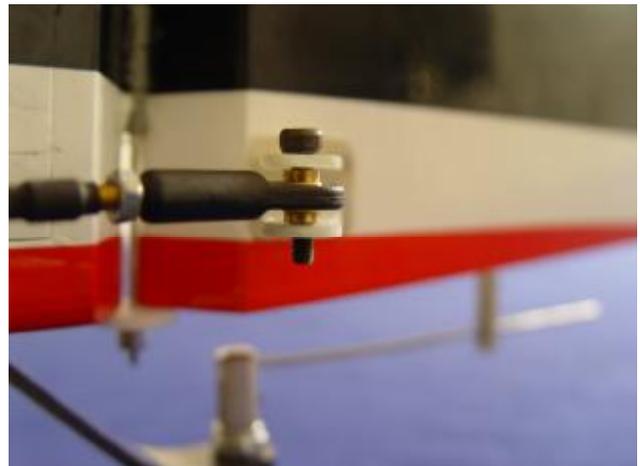
1. Drill 1mm holes for the mounting screws. Fit the servos as shown with the servo label facing the rudder.



2. Tape the rudder panel to the top of the vertical fin to ensure it remains in the neutral position.



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



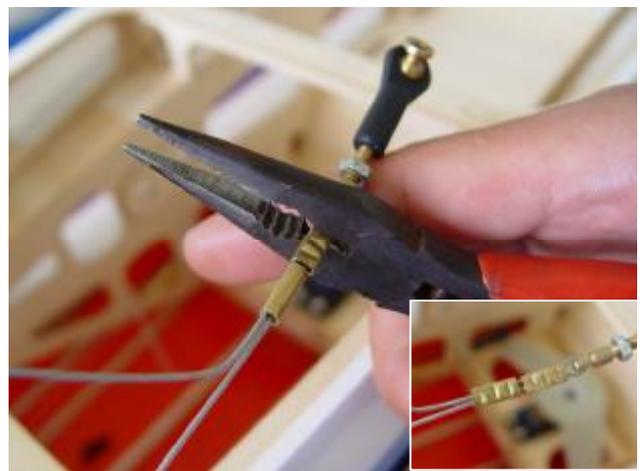
4. Turn on the transmitter. Make sure the servos are in the neutral position. Mount the pre-installed bolt link to the servo arm without the locking nut. Use two brass crimps on each cable and thread the cable through the end of the pull pull connector.



NOTE: The pull pull connector is only threaded half way into ball link to allow for final adjustment.



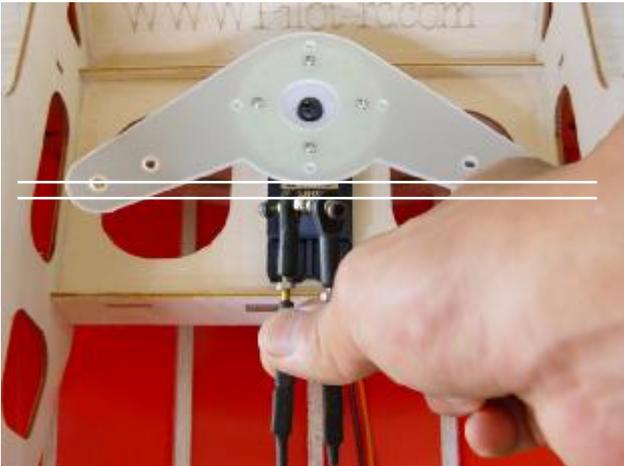
5. Remove any slack in the cables and crimp to secure as shown.



6. Cut away the excess cable



7. Thread the connector in 2 – 4 mm. Ensure the tension is the same for both cables.



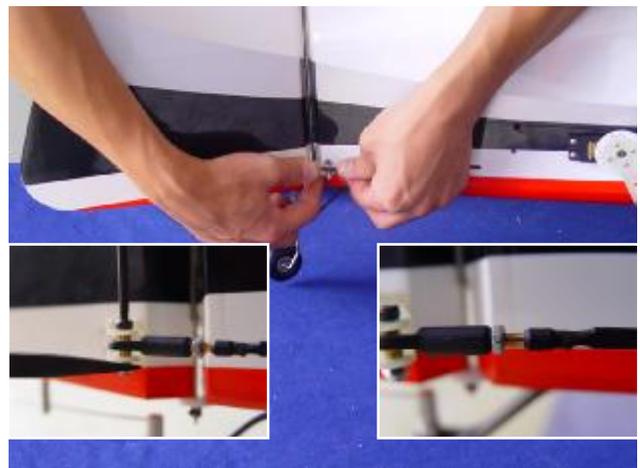
8. Shrink the heat shrinking tube over the brass crimps.



9. Remove the ball links from the rudder horn and secure the servo arm ball links with locking nuts.

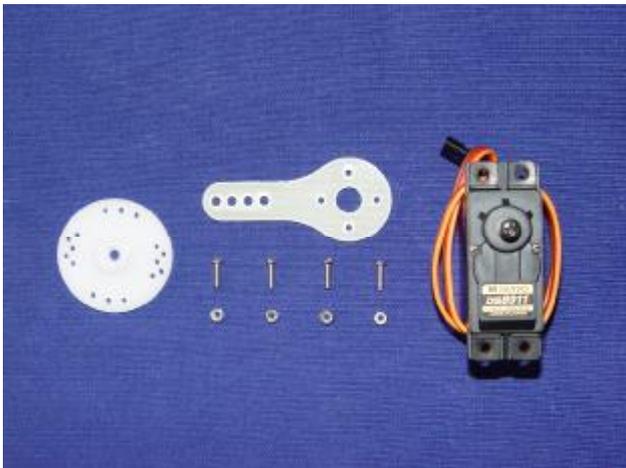


10. Turn off the transmitter. Reinstall the rudder ball links with bolts and locking nuts. Check the pull cables. Rudder and rudder servos should both be in the neutral position. Adjust by loosening or tightening the cable connectors.



Servo arm Installation

Minimum Required Servo:
180 in.oz / Metal Gear / Digital



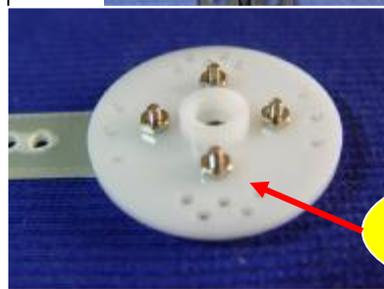
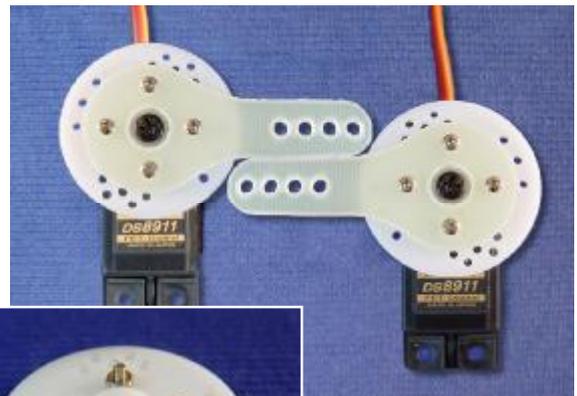
1. Turn on the transmitter and plug the servo into the receiver. Ensure every channel is neutral.



2. Ensure the servo arm is 90 degrees to the servo as shown. Mark and drill 2mm holes.

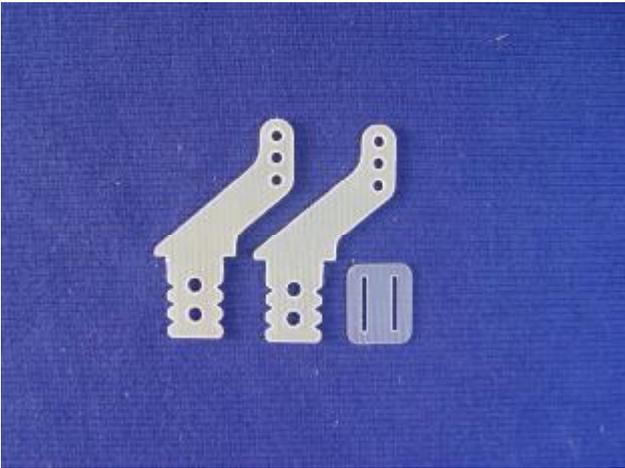


3. Attach mounting screws and nuts as shown.

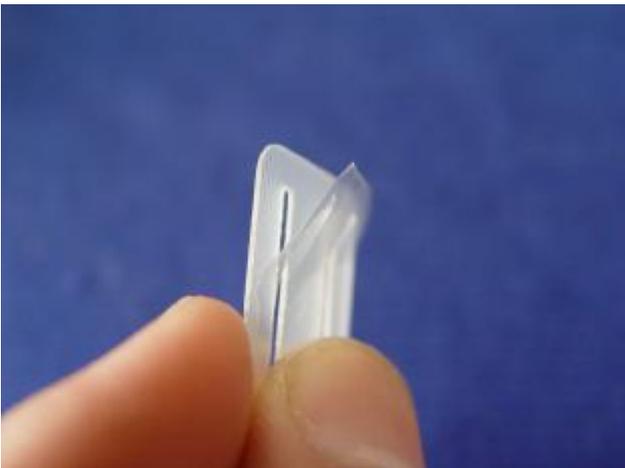


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Elevator Control Horns



1. Remove the protective covering from the horns and locking plates.



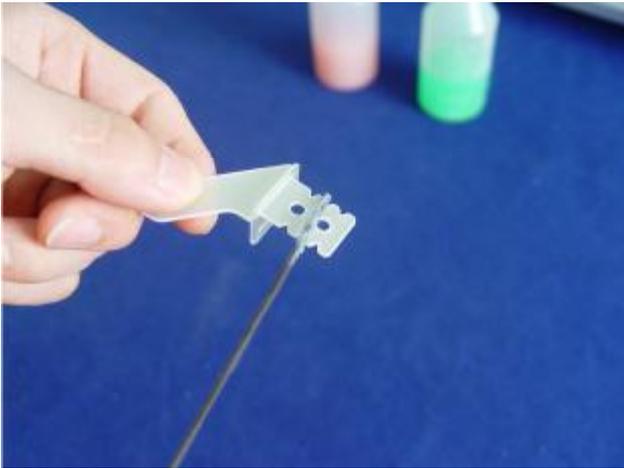
2. Trace around the locking plate with a knife and remove the covering below to expose the pre-cut slots.



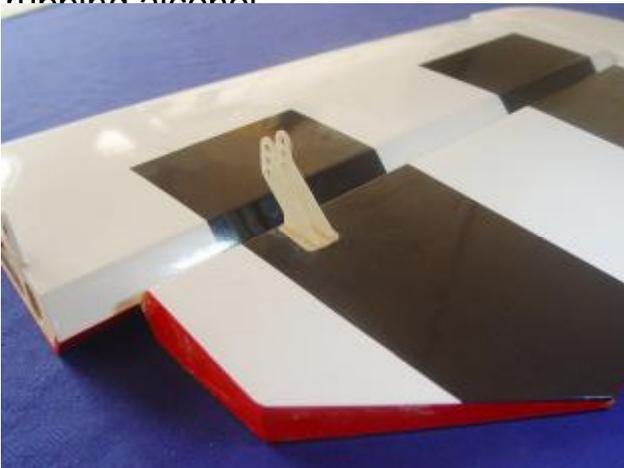
3. Scuff the horns with a piece of sand paper for a good glue bond.



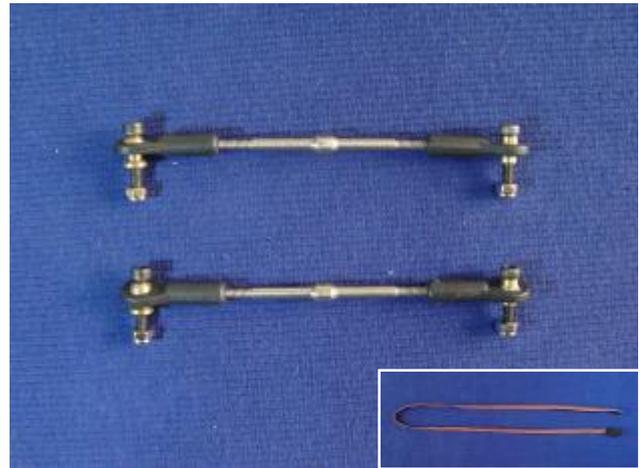
4. Apply the 30 minute epoxy inside the pre-cut slots, and coat the horn with epoxy as shown.



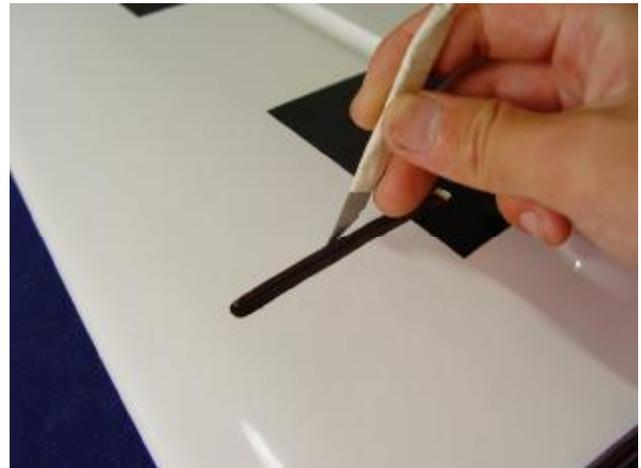
5. Fit the horns into the locking plate and then insert them into the pre cut slots. **Align the right and left sides** before the epoxy has cured. Wipe away excess epoxy with rubbing alcohol.



Servo Installation



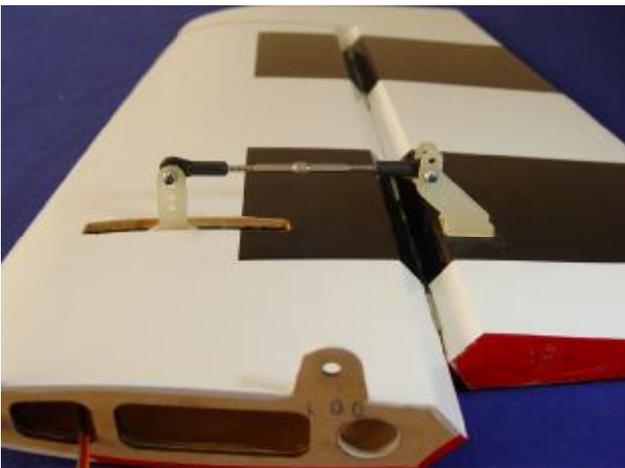
1. Carefully remove the covering from the pre cut servo arm slot.



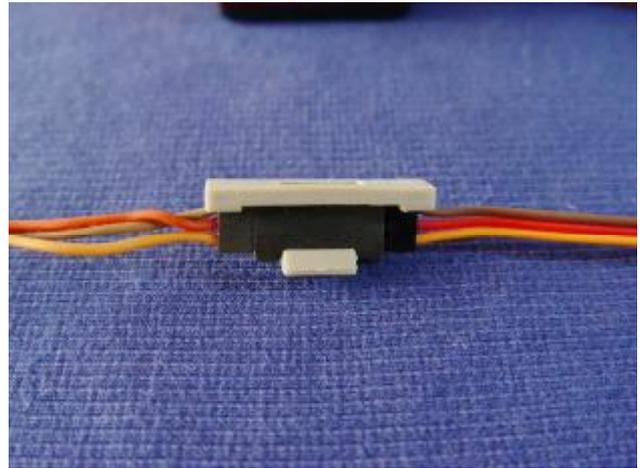
2. Install servos as shown with the servo label facing toward the rear of the fuselage.



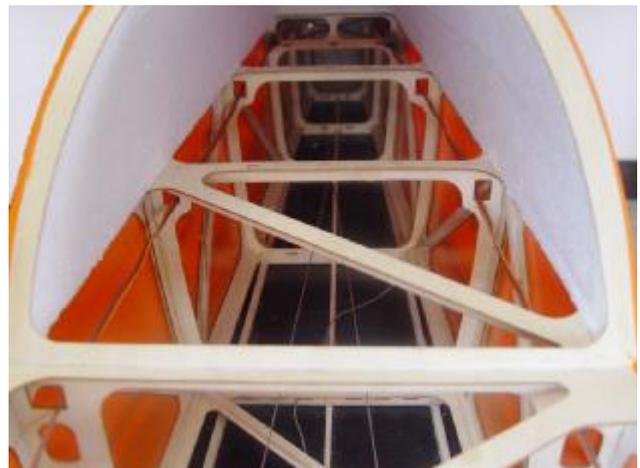
3. Install the servo arm in the vertical position. Adjust the pushrod length so that the servo and elevator are both in the neutral position.



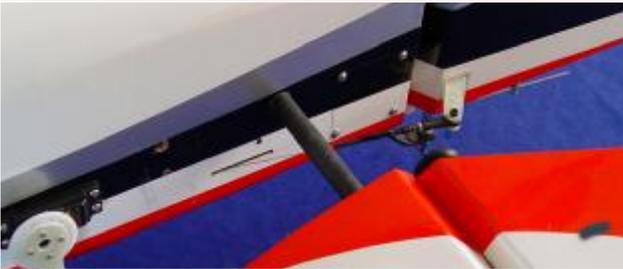
4. Use the provided safety clips to secure the servo and servo extension lead.



5. Run the servo extension lead through the fuselage to the receiver.



6. Install the stab with mounting bolts and washers



7. Repeat the previous steps for the remaining stabilizer.

Switch Installation



Note: The switch mounting hole have been pre-cut for standard size switches.

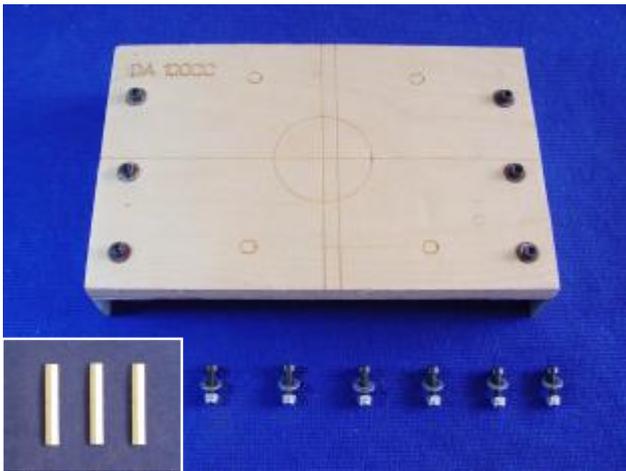
1. Carefully remove the covering over the switch cut out.



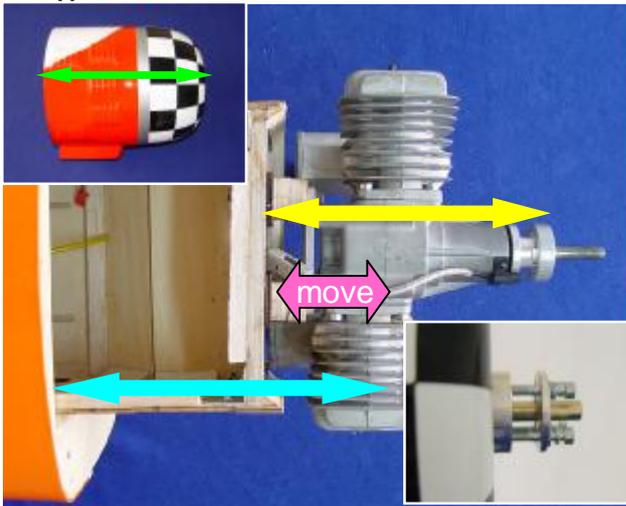
2. Mount the switch with the screws and nuts provided with the switch.



Firewall Assembly

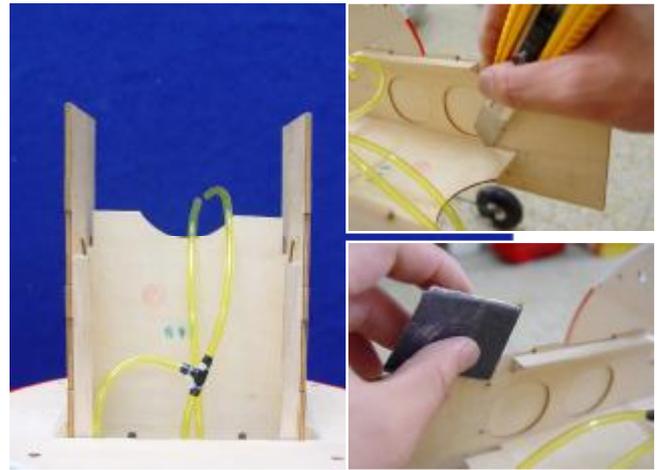


1. Measure the length of the engine from the firewall to the prop thrust washer. Measure the distance required for the prop thrust washer to clear the front of the cowl by $\frac{1}{4}$ " to $\frac{1}{2}$ " then mark the firewall position on the engine mount.

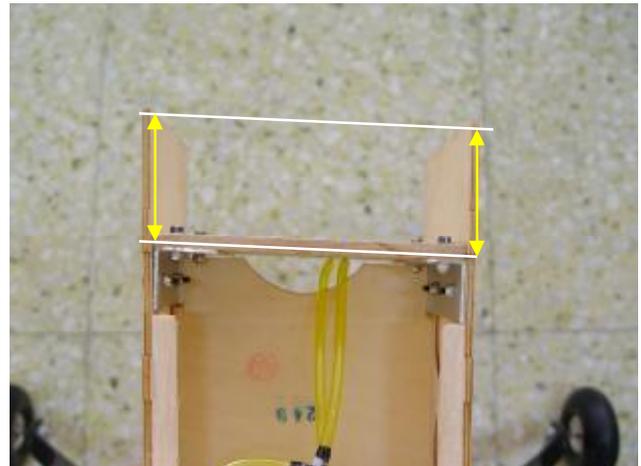


The excess plywood has been cut away

Firewall assembly steps are similar for both 50cc and 100cc engines.



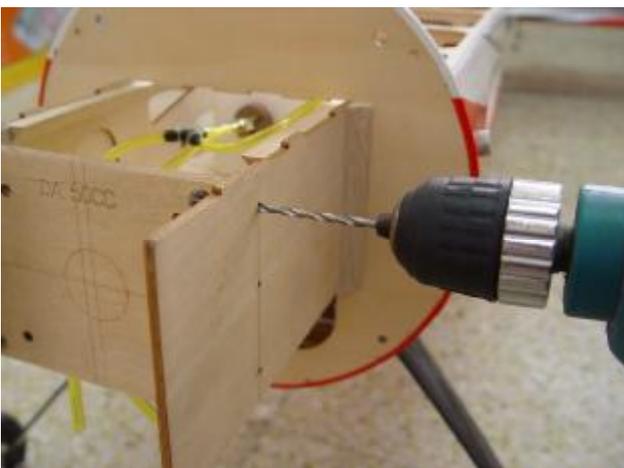
Note: The 2 degree right thrust have already been built in. Measure the same distance from the front of the engine mount when installing the firewall.



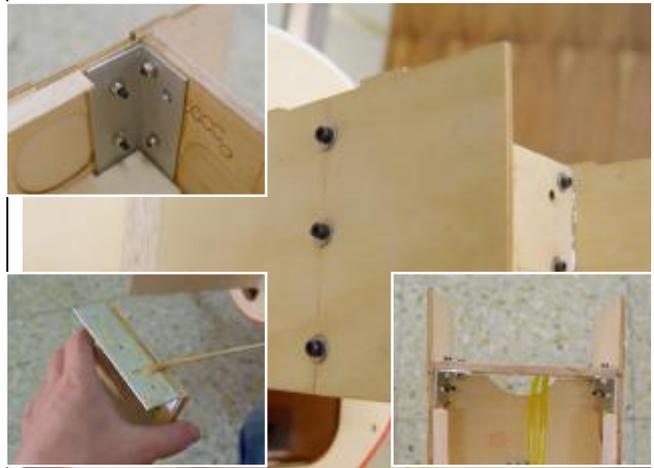
2. Drill the firewall according to the pre-set laser holes for DA engine installations. Otherwise measure your engine's firewall mounting location.



3. After marking the firewall position clamp or temporarily attach the firewall and drill 3mm mounting bolt holes as shown.



4. Epoxy the firewall with 30 minute epoxy and use the mounting bolts and lock nuts to fasten it immediately as shown.



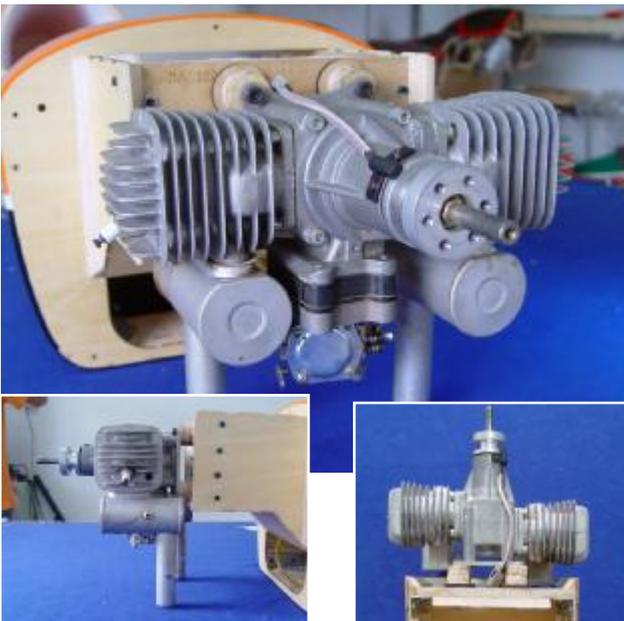
Note: Epoxy the triangular hardwood supports for reinforcement. For 100cc engines a hole will need to be cut in the firewall for air circulation.



Engine Installation



Remember: Use Blue Loctite on all engine mounting screws.



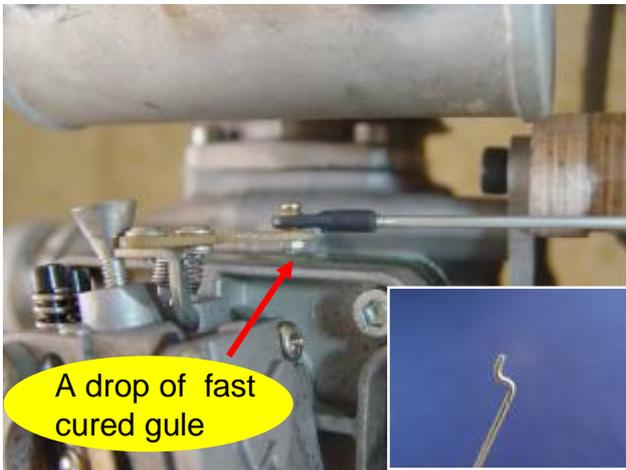
Throttle servo Installation



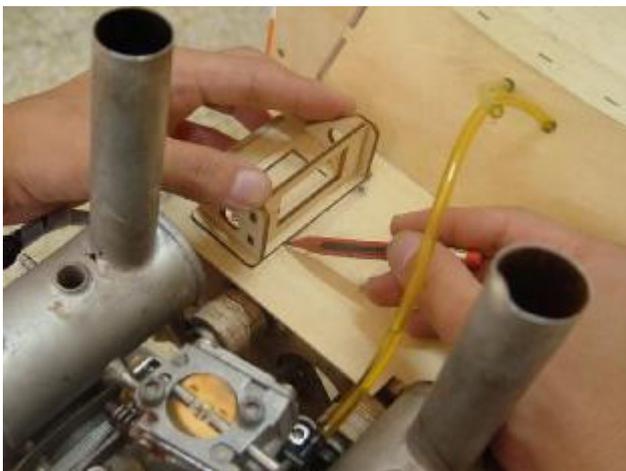
1. Install the engine throttle arm and secure the screws with Blue Loctite.



2. Determine where on the engine box the throttle servo tray is to be mounted. The throttle push rod requires a straight and direct connection to the throttle so be careful with the mounting position.



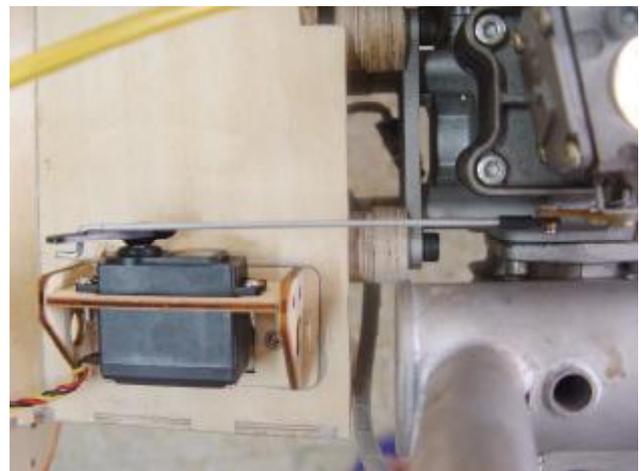
3. Epoxy the servo mounting tray in place and secure with self tapping screws.



4. Measure and cut the throttle push rod and attach to the throttle body as shown. Make a "Z" bend to connect the throttle pushrod to the servo arm.



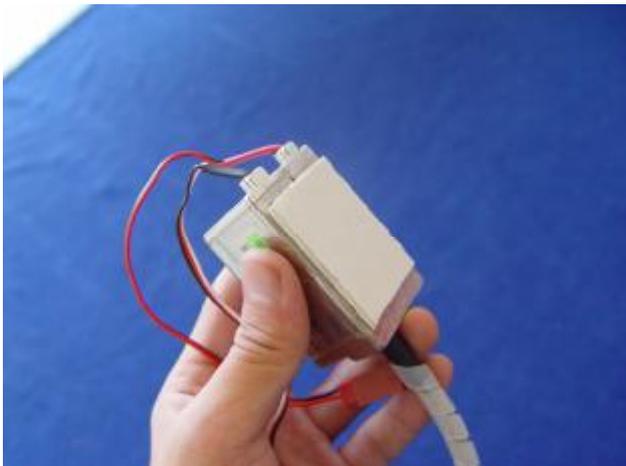
5. Mount the throttle servo and push rod as shown.



Ignition Module



1. Tape foam rubber to the bottom of the ignition safety cover as shown.



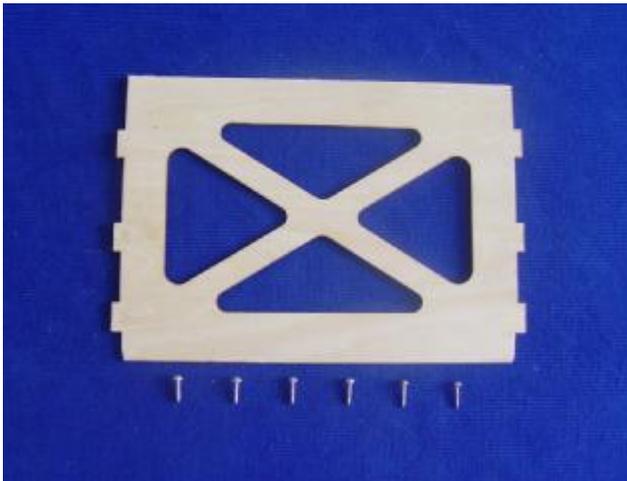
2. Position the ignition outside the engine box to allow the spark plug lead to connect to the engine without excess tension. Secure with Nylon zip ties.



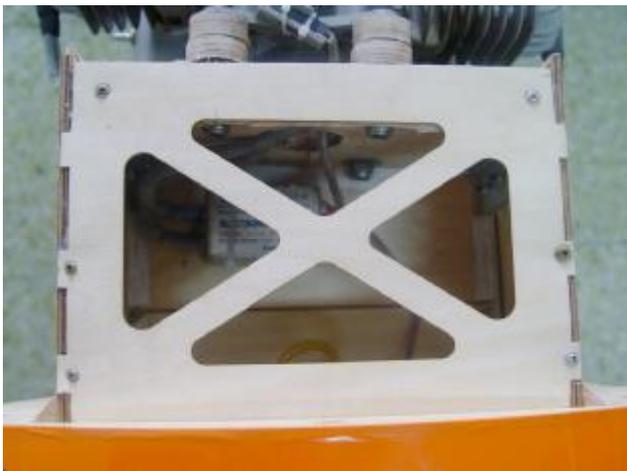
3. Lock the connector leads with the provided safety clip to ensure the leads do not vibrate loose.



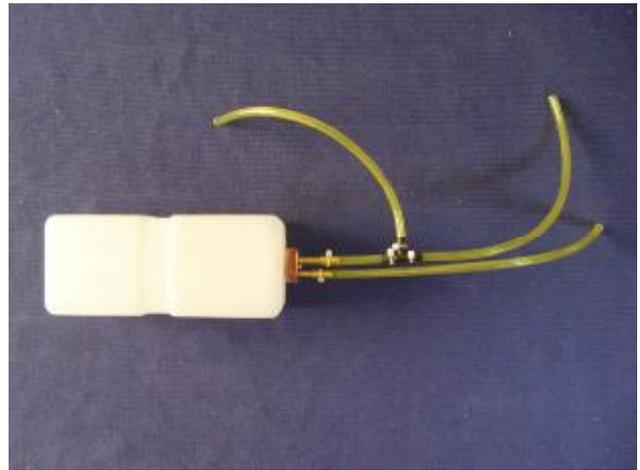
Engine Box Hatch



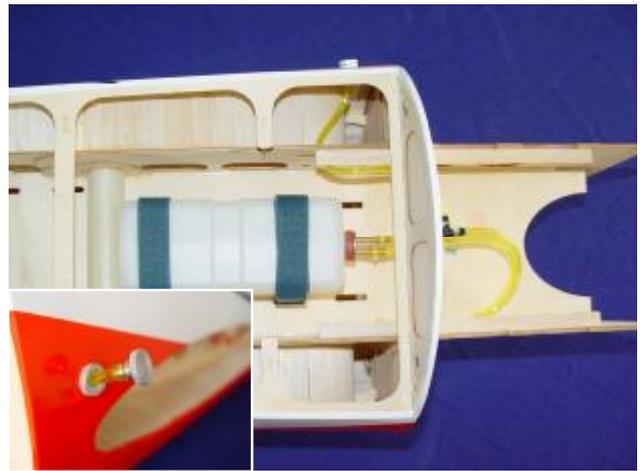
Epoxy the hatch in place and secure with self-tapping screws



Fuel Tank and Dot



The fuel tank and fuel dot have been pre installed. Just tighten the Velcro ties that secure the fuel tank.



Cowl Assembly



1. Use a paper template to measure where the cowl will need to be cut for the exhaust. Trial fit to make sure there is a minimum of 3/8" of clear space around the



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



3. Ensure all corners in any cowl cutouts are rounded. Sharp 90 degree corners will split and fracture with the engine vibration.



6. Install the cowl into position using the bolts provided. 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.



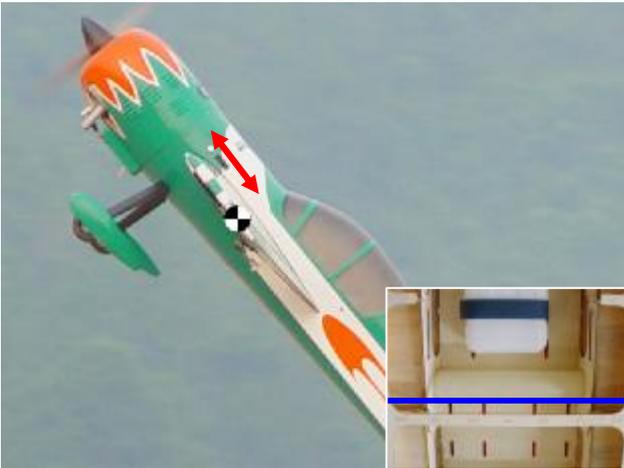
NOTICE:

Always check the engine temperature against the manufacturers recommendation. More cut outs may be required in the cowl if engine temperatures are too high.

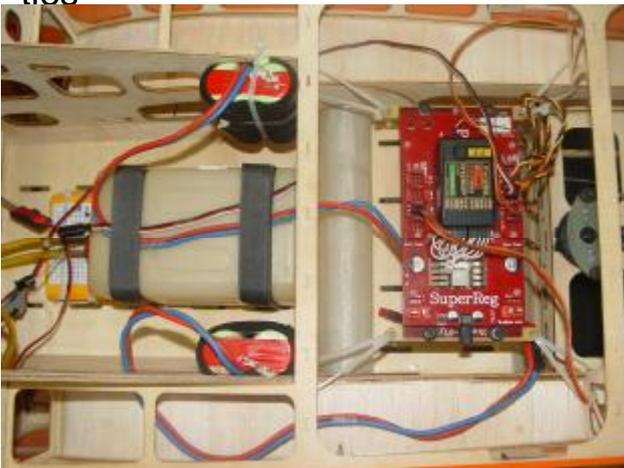
Pilot-RC does not accept responsibility for any damage from improper engine cooling.

Center Of Gravity

The center of gravity is on the rear of the wing tube as shown.



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



The First Flight set up

Throttle: Adjust idle –full

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

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

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

- After you set the recommended control throws and have a few flights under you belt, you can change the throws and experiment with moving the CG back at 1/4" intervals.

- Learn to use exponential of about 40 percent on your elevator to make great landings and so as not to over control a highly aerobatic airplane. Use 70 percent exponential on High Rates!

- Make sure you have the right model programmed into your transmitter
- Check the direction of each control surface during flight prep 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 flight and check for damage if you made a “bad” first landing.
- Have an experienced pilot fly the “first flight” 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 careful with 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 other modelers.

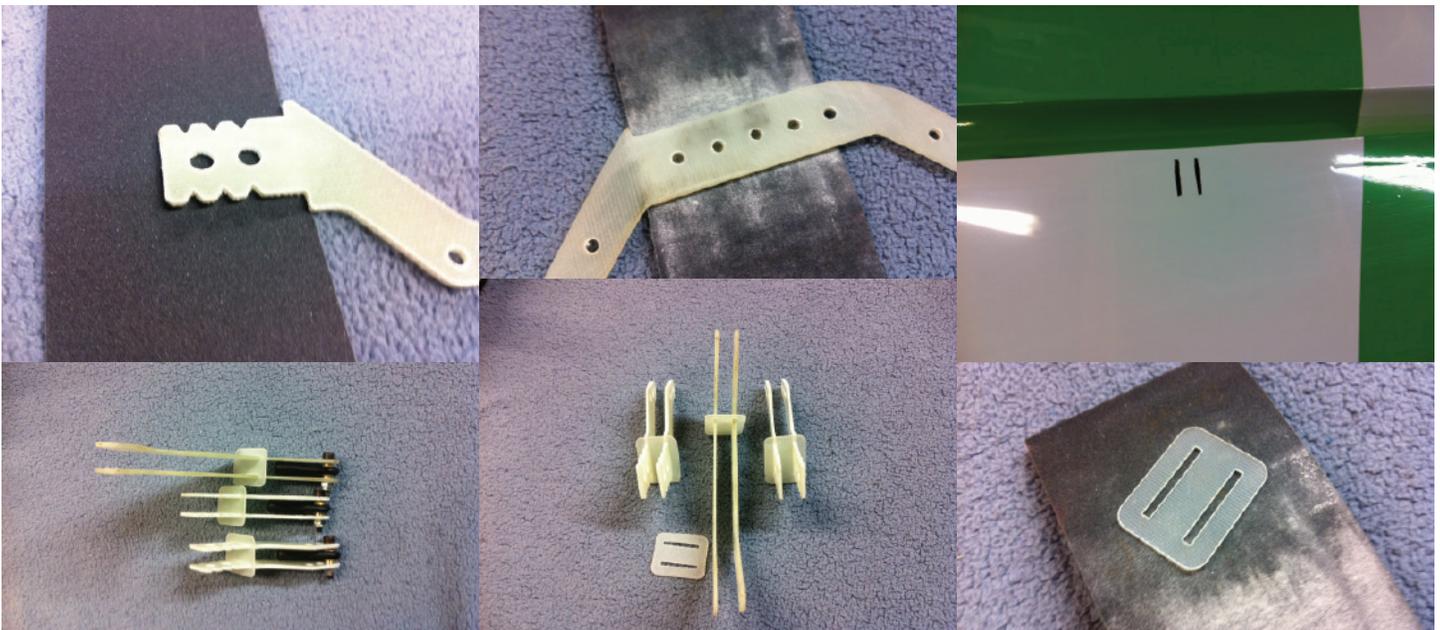
Pilot RC Control Horn Installation

(50cc and larger have dual control horns & 30cc Aircraft have a single control horn)

- Rubber/Latex Gloves.
- Epoxy (30 Minute or Stronger)
- Epoxy Mixing Cups
- Epoxy Mixing Sticks (Any mixing stick that will fit into the slot)
- Denatured Alcohol or Acetone.
- Paper Towels
- Sand Paper
- X-Acto Knife
- Dremel and Small Drill Bit (Optional and Not Always Needed)



Then Prepare your parts..



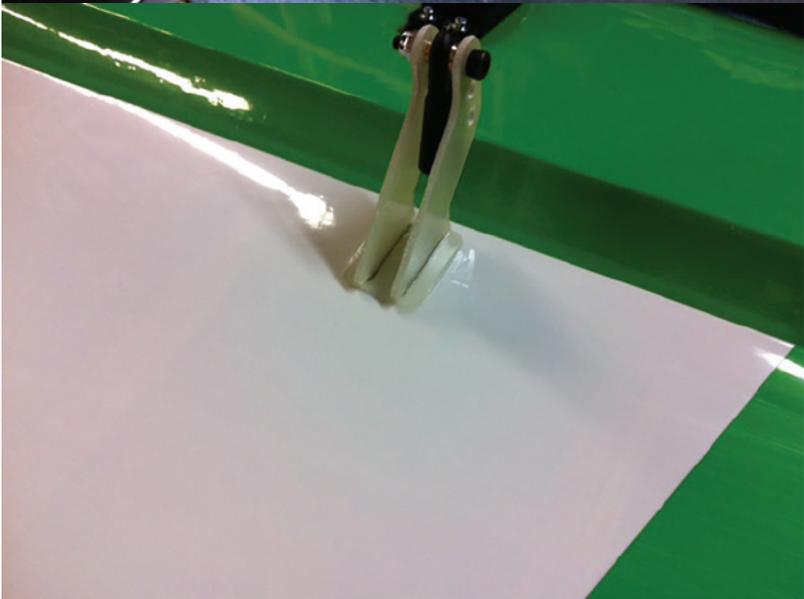
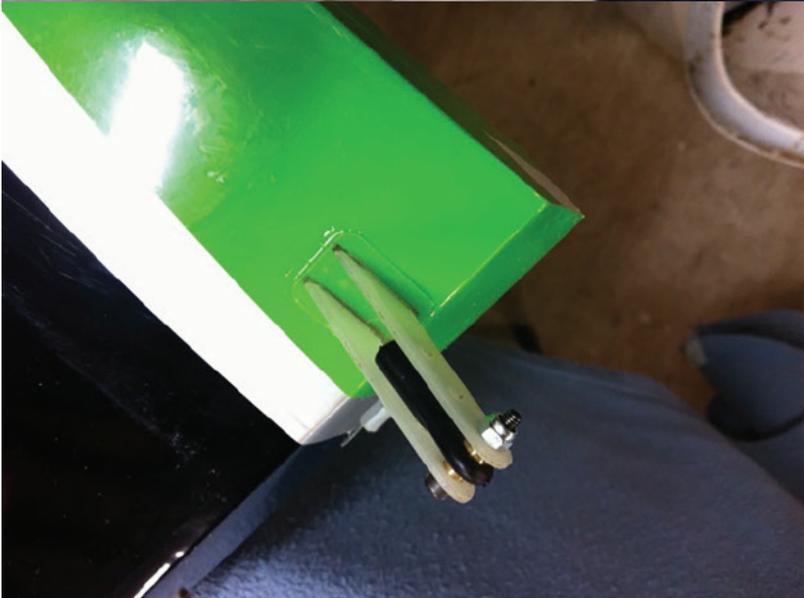
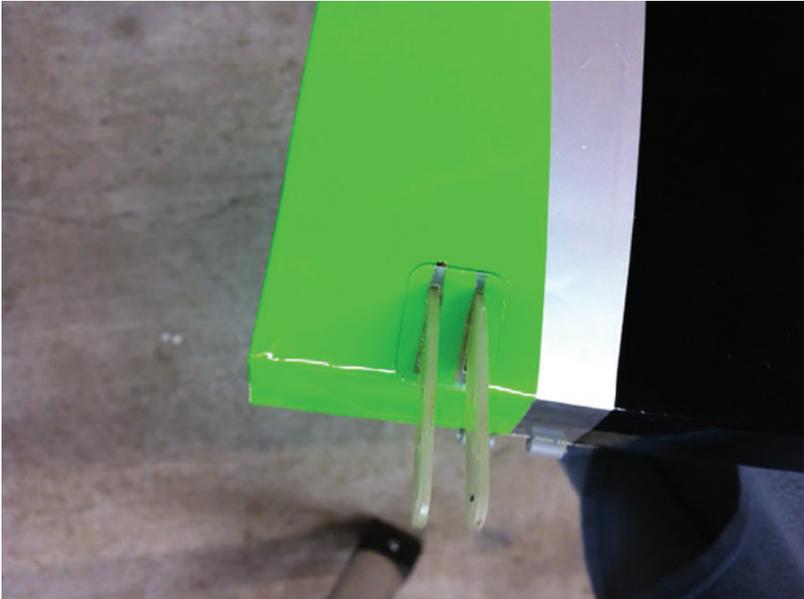
Then you will need to test fit your parts together before gluing in place. Please note that sometimes the slots need to be cleaned out a little bit and can be done with a dremel and a small drill bit or an x-acto knife.



Force your epoxy into the slots. Also apply a thin layer of epoxy on the control horn and bottom of the guide plate.



Install your horns. Make sure to clean off any epoxy that comes out from under the plate with a paper towel and alcohol.



Pilot RC

Wing & Elevator Servo Installation

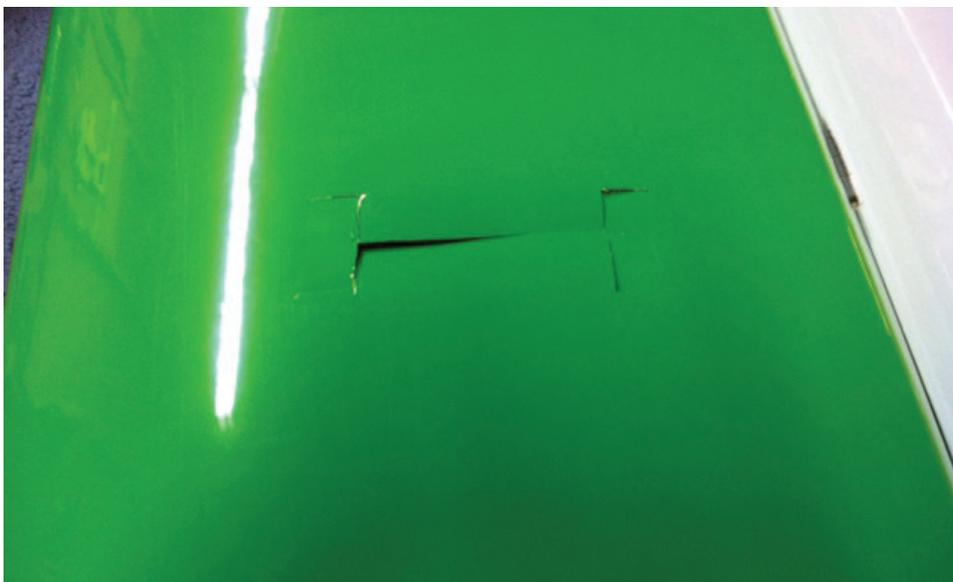
You will need:

- Hobby Iron
- X-Acto Knife
- Thin CA “Super Glue”
- Drill and Drill Bit

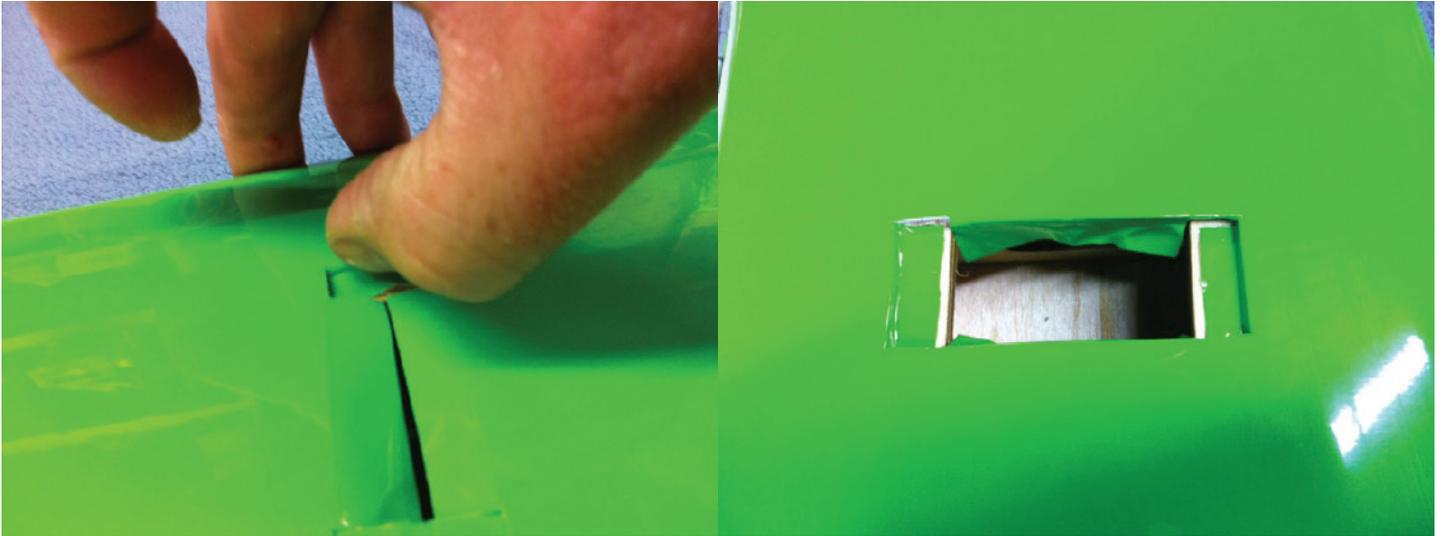
First find the servo mounting hole and iron around to assure that the covering is stuck to the surrounding wood.



Then cut like this or to your preference.



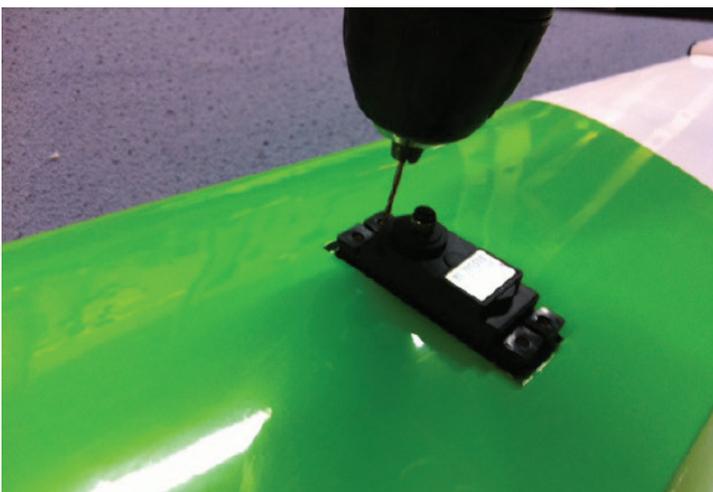
Then press and iron excess covering down into the servo slot.



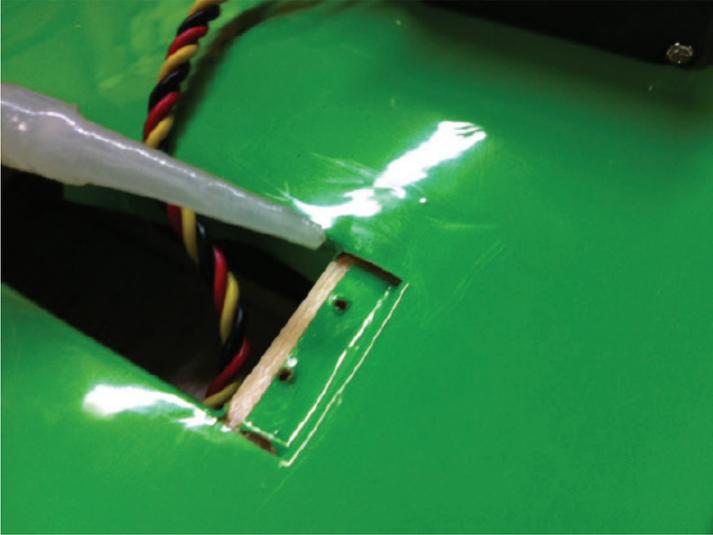
Now you can pre fit the servo.



Make sure your grommets are installed and drill the holes for the servo screws.



Now apply a small amount of the CA to the already drilled servo screw holes and if needed run your extension wire through. (Don't forget the safety clip!!)



Now you can install the servo with your choice of screws and attach the linkage.

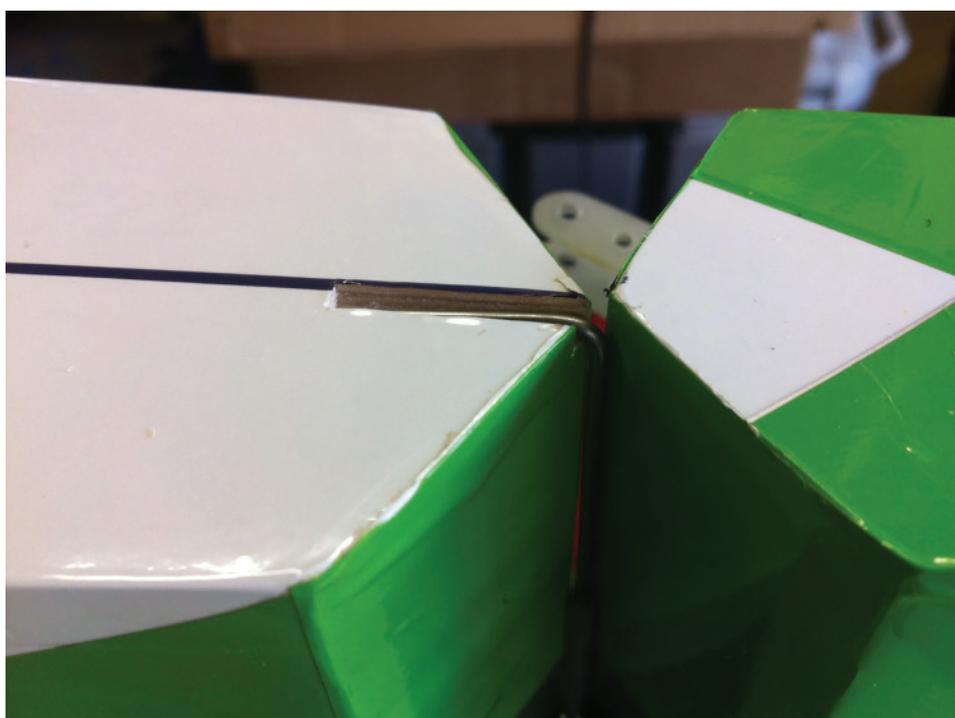


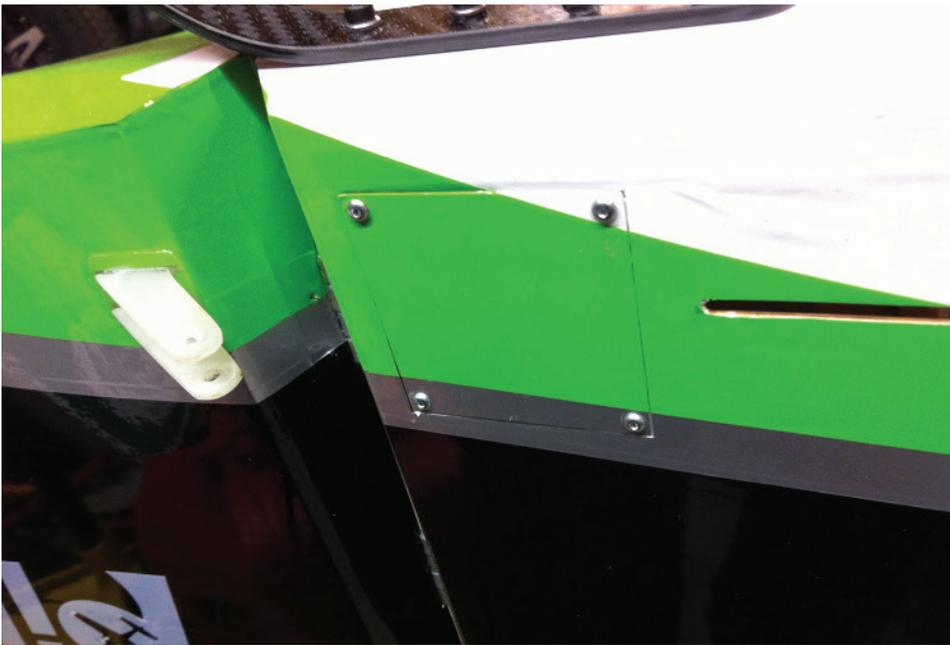
Final adjustment of turnbuckles and it ready for servo adjustment.

Pilot RC Optional Rudder

Installation for 50-150cc Aircraft

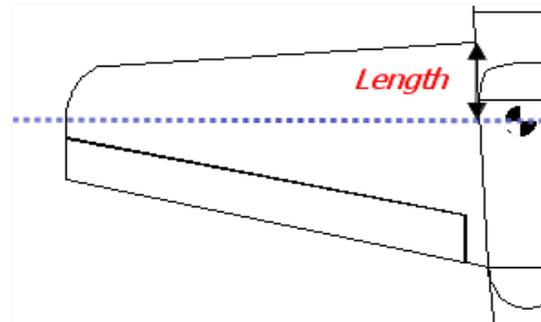
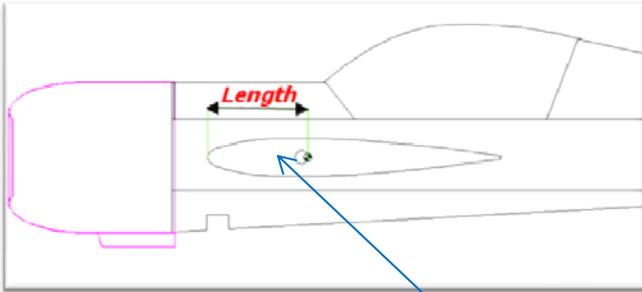
Shorten the rudder wire so that it will not pierce the covering at the top of the rudder and leave about 3/4" hanging out the bottom. Bend the bottom at a 90 degree angle, and then trace around the wire (See Photos). You then carve out a channel for the wire to fit into, it only needs to be as deep as the wire is thick.





The Tail wheel bracket will lock it in to place. Make sure it overhangs the slot when you install the TW bracket.

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.