At Precision Aerobatics, we developed the Ultimate AMR to deliver an aircraft unlike any other. Using advanced production techniques, including our revolutionary PA FiberFusion® construction, we created an airframe that is exceptionally light yet extremely strong.
Strategic carbon fiber reinforcement and meticulous weight reduction make **the Ultimate AMR the lightest bipe in its class**, with very low wing loading and outstanding flying characteristics.
Through extensive flight testing, we evaluated numerous equipment combinations and identified a direct link between the drive system and overall performance. To ensure the aircraft flies exactly as intended by our designer and test pilots, we developed our Integrated Performance Airframe-Drive Systems® (iPAs®).

iPAs Set up
when performance matter!

Each iPAs component has been selected based on extensive flight testing to ensure optimum performance, reliability, and handling, with many parts designed or modified specifically for the Ultimate AMR.

All demonstration videos found on our site feature aircraft equipped with an iPAs® setup.

Deviating from these recommendations may result in reduced performance and altered flight characteristics.

The Ultimate AMR is designed to deliver maximum performance without oversized, expensive power systems. Our recommended iPAs setup gives you strong, efficient power, long flight duration, and a perfectly balanced feel. It's lighter, more responsive, and easier on batteries and electronics than typical setups in this class. If you want the aircraft to fly exactly as intended — this is the system to run.

visit PrecisionAerobatics.com for more information

Specifications

Wing span - 40"/1014mm **Length -** 43.08"/1095mm **Wing loading** - approx 9.5oz sq ft!
Wing area - 582.4 sq inch **Flight weight (including battery) ~** 38.45oz / 1089gr

Motor	**PA Thrust 45 Revo,** 24-pole Outrunner with Rotorkool® Technology | 127 g brushless motor PA Item #AC-1888 with Carbon Fiber X mount. *Using a motor larger or more powerful than specified may damage the motor box or result in airframe failure.*
ESC	**PA Quantum 45A Evo** ESC PA Item #AC-2189Evo
Battery	**PA Gen2 LiPo 3S pack** 11.1v 2200mAh 30-60C PA Item #AC-1992
Servos	**4 of Nexatec NXT 70HV** servo PA Item #AC-2333-4
Propeller	**Vox 13×8 propeller** PA item # AC-2109 Ideal for extreme 3D and freestyle, tuned for both high-speed and slow, graceful maneuvers. The extra thrust gives solid traction in slow 3D (harrier rolls, KE), while excellent propwash adds stability in AOA harriers. Great punch for recovery from awkward positions, perfect for learning hovers or torque rolls. Delivers moderate-speed maneuvers with a "giant-scale" look. Note: Ensure proper motor and ESC cooling and manage throttle carefully. **Vox 13x7 propeller** PA item # AC-2108 Good lower range overall propeller for aerobatics and basic 3D flying. Lower flight speed with higher efficiency, longer flight duration and additional thrust. Lighter weight (faster spool up).
Radio	6 channel lightweight receiver
Carbon Fiber Spinner	**1.8" Ultimate Style CF Spinner** (CNC Machined) PA Item # AC-2048 Factory pre-cut, this ultra-lightweight carbon fiber spinner features a premium high-gloss finish. Each unit is individually tested in-house to guarantee it spins centered and true for vibration-free performance.
Carbon Fiber Servo Arms	**PA Carbon Fiber Servo Arms** (# AC-1918) These CNC-machined lightweight arms are essential for achieving the perfect geometry and full control throws required for 3D flight.

iPAs Integrated Performance Airframe-Drive System

Precision Aerobatics Ultimate AMR Version 3

What's new in this version?

• More completed at the factory than ever before

• Further refinements to our proven FiberFusion construction for even greater strength and lighter weight

• Optimized internal layout for improved balance and flight efficiency.

• Factory-glued motor box ready for fast motor installation.

• Clear canopy for a clean, modern look.

• Secure mechanical hatch latch system , no magnets

• Optimized linkage geometry to maximize servo efficiency and control authority for aggressive flight.

• Factory pre-installed and sealed aileron hinges.

• Elevator/stabilizer ready for installation (fully pre-hinged and hinge gap is sealed).

• Factory-glued rudder hinges for quick and easy tail installation.

Due to these updates, some steps outlined in the manual are no longer required.

Please refer to the first page of this document for the most up-to-date recommended electronics and propellers.

Congratulations on your purchase of Precision Aerobatics

ULTIMATE AMR V2

Specifications:
Wing span - 40 inch
Length - 43.08 inch
Wing area – 582.4 sq. inch
AUW Ready to fly including battery ~ 38.45oz
Wing loading - approx 9.5oz sq ft!!

Warning – This is not a toy!

Be sure you have read and understood this entire manual before you assemble this model

Do not overlook the warnings and instructions enclosed herewith or those provided by other manufacturers, and the official AMA (Academy of Model Aeronautics) Safety Code (see at the end of this manual). They were designed to assist you in preventing damage or injury.

The instructions below are our suggestions only on how to assemble this model. There are other ways and methods to do so.

Precision Aerobatics has no control over the final assembly, the materials and accessories you use when assembling this kit or the manner in which the assembled model and the installed radio system and electronic parts, are used and maintained. Thus, no liability is assumed or accepted for any damage resulting from the use of the assembled model aircraft or from this instruction manual including but not limited to direct, indirect, incidental, special, and consequential damages. In no event shall Precision Aerobatics' liability exceed the original purchase price of this kit.

BY THE ACT OF ASSEMBLING AND OPERATING THE ASSEMBLED MODEL YOU ASSUME AND ACCEPT FULL LIABILITY FOR YOUR ACTIONS.

Radio controlled model aircraft that are not properly assembled, operated and maintained can cause serious damage to body and property. If you are not an experienced pilot and airplane modeller you must use the help of an experienced pilot or preferably an authorized flight instructor who will assist you with the assembly and flying of this model.

SAFETY NOTES:

1. Before assembling and flying this model read carefully any instructions and warnings of other manufacturers for all the products you installed or used on your model (especially radio equipment and power source).
2. Check thoroughly before every flight that the airplanes components are in good shape and function correctly. If you find a fault do not fly the model until you have corrected it.
3. Radio interference caused by unknown sources can occur at any time without notice. In such a case, your model will be uncontrollable and completely unpredictable. Make sure to perform a range check before every flight. If you detect a control problem or interference during a flight, immediately land the model to prevent a potential accident
4. Youngsters should only be allowed to assemble and fly these models under the instruction and supervision of an experienced adult.
5. Do not operate this model in a confined area.
6. Do not stand in line with, or in front of a spinning propeller and never touch it with any object.

Precision Aerobatics quality control team checks each plane before it leaves the factory to ensure that each kit is in fine condition. We have no bearing on the condition of any component parts damaged by use, modification or assembly of this model. Inspect the components of this kit now. If you find any parts damaged or missing, contact the hobby shop who supplied this kit immediately. We do not accept the return or replacement of parts on which assembly work has already begun. Precision Aerobatics reserves the right to change this warranty at anytime without notice.

Enjoy your new model.

Precision Aerobatics Team

Equipment Selection

At Precision Aerobatics we have gone to great lengths developing the Ultimate AMR in order to provide you with an aircraft like no other. We have used many unique production techniques including our revolutionary PA FiberFusion® to create the lightest, strongest aircraft possible. The construction engineering and the extensive use of carbon fiber along with our never ending quest to reduce weight ensures the Ultimate AMR is one of the lightest aircraft in its class, with an incredibly low wing loading. These factors contribute to the amazing flying characteristics of the Ultimate AMR.

Throughout our extensive flight testing program we have trialed many different combinations of equipment in order to obtain the best possible performance from the airframe. We noticed a direct relationship between the drive system chosen and the aircraft performance and handling characteristics. It is our desire that your Ultimate AMR would have the same amazing capabilities as our designers envisaged and test pilots experienced. For this reason we have developed a number of our own **Integrated Performance Airframe-Drive Systems** or **iPAs**. All equipment within the iPAs has been thoroughly tested to ensure it is perfectly matched not only to the airframe, but to all other equipment and components. Indeed much of the equipment has been specifically designed or modified to our exact specifications. We have tailored a number of different iPAs levels to meet the specific requirements of each modeler, for further information on which iPAs fits you best please visit **www.ThrustMotors.com** or **www.UltimateAMR.com**

Each iPAs incorporates the following equipment, for those who wish to use their own equipment we have provided guidance, however **any deviations from these recommendations will result in degraded flight characteristics, CG problems or damage to the airframe.**

Motor- PA Thrust® 45 Revo with Rotorkool® technology (PA Item #AC-1888) brushless motor (using a motor that is larger or more powerful than that specified can result in damage to or failure of the airframe and will void warranty.
ESC - PA Quantum 45 Pro HV ESC with built in user-selectable (6V/7.4V /8V) Switching BEC (PA Item # AC-2189HV).
Battery - –PA 2200mAh V4 25-50c 3S (11.1V) Lithium Polymer (Item #AC-1992 or AC-2146 for 2pak special)
Servos – We recommend 4x NXT-70HV digital High Voltage servos (PA item # AC-2333) (AC-2333-4 for the 4 pack) or similar quality digital micro servos all around.
Micro Receiver – Four or more channels full 2.4Ghz (e.g. Spektrum AR6210 /610/620 receiver).
Propeller - Vox 13X7 and Vox 13X8 . For more data about the propellers' performance visit **www.ThrustMotors.com** ("propeller selection" section).
Propeller adapter – CNC machined precision prop adapter for the rear mounted Thrust 45 Revo (PA Item #AC-2360). Use only a good quality prop adapter that pins perfectly true otherwise thrust and efficiency will be lost and vibrations may damage the motor box.

Pre-Assembly

Many hours were put into this instruction manual keeping in mind all the possible queries you may have in regards to assembling, setting up and flying your Ultimate AMR. Please read through the entire manual without skipping any step.
Before you commence assembly of your Ultimate AMR please inspect the contents of the kit for any damage that may have occurred during transport. If you suspect any component is damaged please contact the shop from which you purchased the model immediately. We go to great lengths to ensure all components are manufactured free of warp or twist, however it is possible due to high temperatures on the long journey in a container, and changes in humidity, for small amounts of warp or twist to develop. It is important at this stage to inspect for warp.

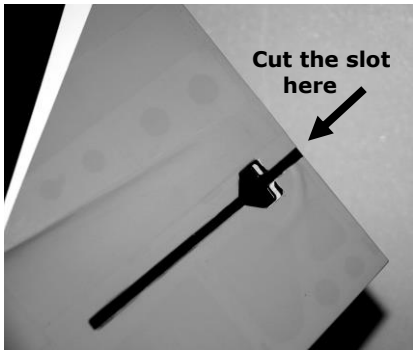
IMPORTANT NOTE: **Do not** attempt to remove any bubbles or wrinkles on the covering or any twist at this stage as you may run a risk of affecting the wing incidence. The wing incidence and alignment has already been precisely set at the factory and therefore needs the airframe to be completely assembled as a whole unit before attempting to iron down any wrinkles or bubbles. Failure to do so may alter the wing incidence and consequently affects the flight characteristics.

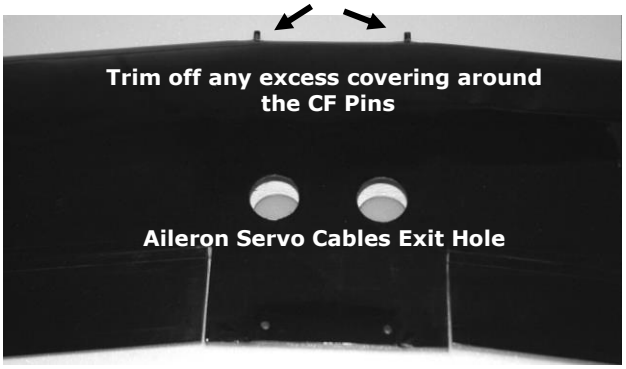
You may at this stage untwist or remove wrinkles from the horizontal stabilizer and elevator only leaving the rest to be done after completely assembling the airframe. The stabilizer and elevator are flat and can be easily fixed on a flat leveled surface if required.

When assembling the Ultimate AMR, it is especially important to follow the assembly sequence as shown in this manual and not attempt to skip this exact sequence. This is to ensure precise alignment is maintained to achieve the desired flight characteristics. Please note that the horizontal stabilizer and rudder for the Ultimate AMR assembly must be assembled at the last stage.

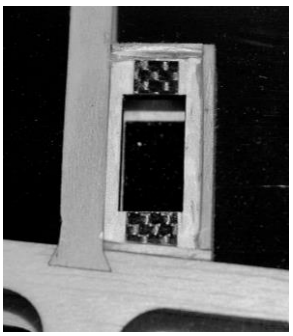
Assembly

Start by making the following openings in the covering film, as shown in the photos below:- rudder servo (cut one side only), elevator servo (cut one side only), horizontal stabilizer, landing gear bay, air cooling exit, ailerons servo bays and ailerons servo cable lead openings (on the bottom wing).





Elevator & Rudder Servo Openings



Aileron Servo Bay

Air Cooling Exit

With the exception of the aileron servo bay opening, the easiest way to make the openings is by 'cutting' the film with the heated end of a paperclip (to heat use a cigarette lighter or a candle) or with a very sharp modeling knife. You may also use a low powered soldering iron (18W) instead of the hot paper clip method. Save the covering you have cut out from the air cooling exit to be used later.

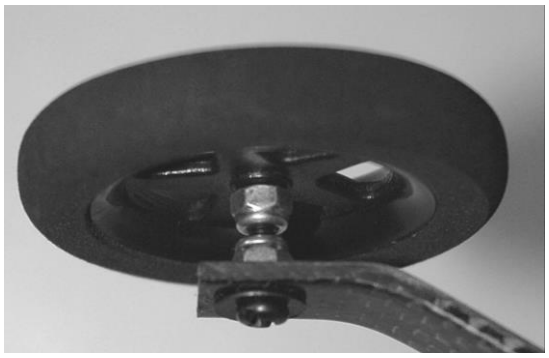
For the aileron servo bay, under cut the covering around the bay by leaving a 3mm overhang all round then carefully tuck the edges down and seal it with the iron. This will prevent the covering from pulling out and wrinkle in the future.

Proceed to make a cut at the rear of the horizontal stabilizer slot on the fuselage to prepare the fuselage for the insertion of the horizontal stabilizer later. Do not install the horizontal stabilizer at this stage.

Landing Gear (LG)

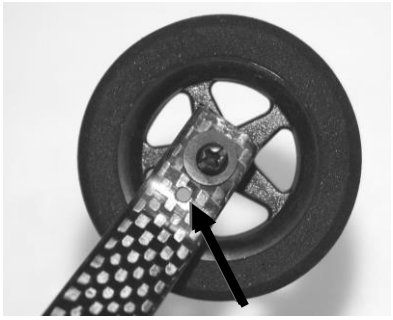
Install each wheel onto the CF landing gear strut using the black wheel axle (M3x20mm bolt) in the pre-drilled hole as shown in the photo. The order of hardware as shown in the photo is: Bolt/ Black Washer/CF gear strut/ Two lock nuts /Wheel /Lock Nut.

The wheel should be captured between the two lock nuts as tight enough to still allow free rotation of the wheel, if the nuts are too loose the wheel is likely to wobble and is more prone to damage or scuffing the wheel pants.

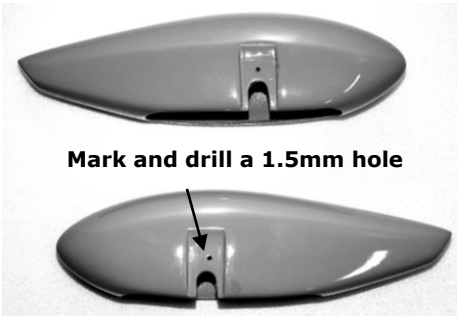


Wheel Pants

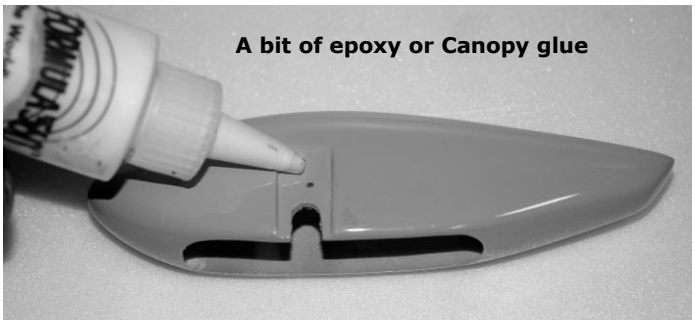
First, differentiate between the left hand side and right hand side of the LG struts by placing them on the fuselage LG plate mounting holes. Position the fiberglass wheel pant over the wheel at the height you desire. If flying on grass mount the pants higher leaving more of the wheel exposed, if flying on a sealed surface the pants can sit lower. Once satisfied with the position, mark the location for the self-tapping wheel pant retention screw (2x10mm screw with soldered washer). Drill the landing gear strut in the position marked using a 2mm (5/64”) drill bit.

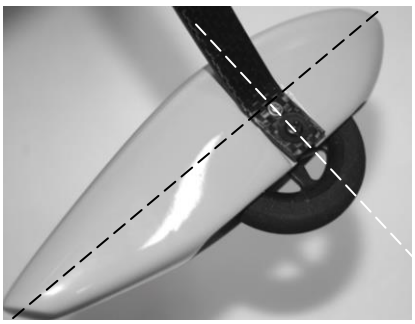


Drill a 2.0mm Hole



Mark the location of this hole onto the wheel pant and drill using a 1.3-1.5mm (1/16”) bit (DO NOT apply excessive force while screwing in the self tapping screws as this risks shearing the screw heads off. Rather “tap” the screw in gradually, if it becomes too tight remove it and enlarge the hole slightly). Verify that the wheel pants are both mounted at the same angle and height; this can be achieved by measuring the height each wheel pant rear sits off the ground while the plane sits on its wheels. Attach the wheel pant to the landing gear strut using the self-tapping screw; put a bit of epoxy or canopy glue between the pant and landing gear strut for added security.

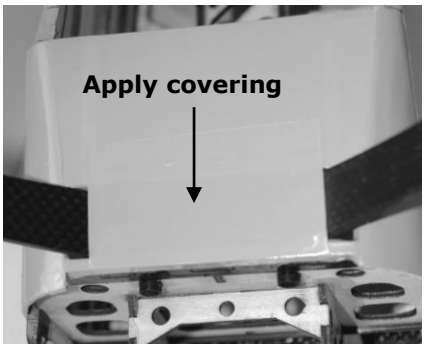




Installing the Landing Gear (LG)

The LG strut is attached to the fuselage using the M3x10mm bolt and black 9mm washer in the pre-installed blind nut, and one self-tapping screw (2.8 x 10mm screw with soldered washer) in the pre-drilled hole.

Gently "tap" the self tapping screw into the hole by repeatedly screwing one turn and unscrewing a quarter turn until the screw is finally secured. With the landing gear installed to the fuselage, apply the supplied covering film to cover the landing gear bay.



Motor Box

When assembling your AMR V2, please follow these few precaution steps to verify your motorbox will withstand the high torque of the Thrust 45 Revo setup.

I purposely designed the AMR V2 motorbox as a separate part to the fuselage. The main advantage is after a crash/mishap as the flyer only needs to replace the motorbox instead of the entire fuselage and tail section. That saves a lot of money. It does require a little extra work but it is certainly worth it in the long run.

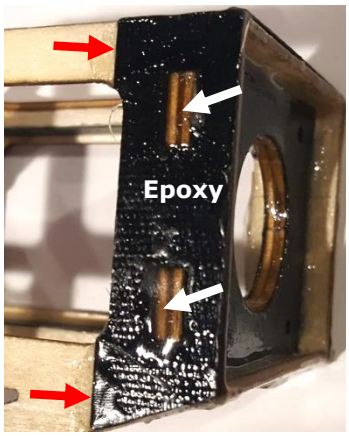
The motor box comes pre-glued, with the correct motor thrust angle built into the pre-drilled firewall.
CAUTION- The motor box has been designed, tested and drilled for the Thrust 45 Revo motor. Using a larger motor or using an improper propeller size or a prop adaptor which is out of true can lead to a motor box failure which will cause damage to your AMR. For technical data on the Thrust 45 Revo please visit **www.thrustmotors.com** and download the data sheet.

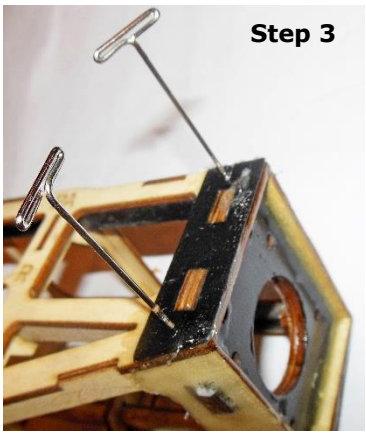
CAUTION- Once glued the motor box is extremely robust, however, following any crash, propeller ground strike or hard landing it is essential that the cowl be removed and all joints inspected for cracks and repaired as required. **Do NOT use any imbalanced, oversized, chipped propellers or with an off-centered hub hole as excessive vibrations can lead to premature motor box failure.**

If your motor box broke due to a crash we recommend that you don't attempt to repair it as it may fail in flight. Replacement motor box is available (see replacement parts list at the end of this manual). Instructions and video on how to replace it are available on our website (How To section).

1. Prior to installation **go over all pre-glued joints** with carpenter wood glue or epoxy **(except the mounting plate!)** to ensure they are properly bonded and no gap between the parts is present so it will be able to withstand the torque generated by the powerful Thrust 45 Revo motor.

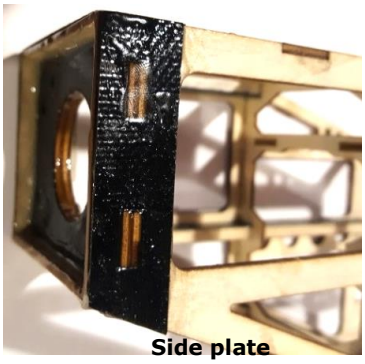
Go thoroughly over the entire motor box and verify that there are no cracks. If there is any, it must be fixed properly with epoxy.
NOTE- **DO NOT** modify the motor box or firewall. Any modification may lead to a motor box failure and will void warranty.

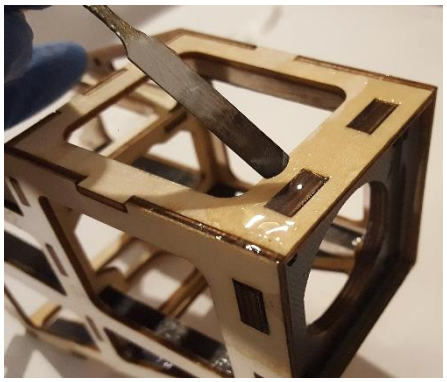
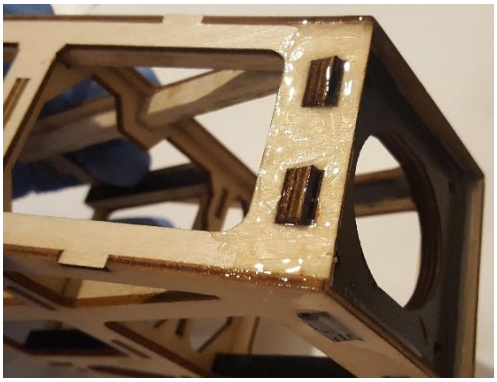




2. Verify with a ruler that the CF stringers do **NOT** protrude the rear of the motor box, otherwise the motor box will be mounted with an incorrect thrust angle which will impair the AMR flight performance, therefore, if needed, sand/file the rear ends of the stringers flush with the motor box ply.

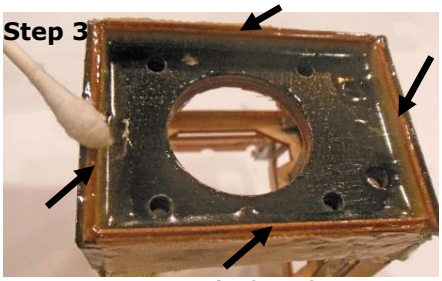
3. Take the two supplied composite plates and lightly sand/roughen one side of each plate to allow better gluing surface. Apply a medium layer of slow cure epoxy (with a stick, flat tool or a brush) over the entire surface of each plate and the motor box front perimeter (including top and bottom sides) then place the plates over the ply and align them properly. Use a few pins or modeling clamp to hold the plates tight onto the motor box with **no gap** until the glue cures. Apply some epoxy over the mounting plate tabs and along the rear seam of the plates, especially if there is some gap between the plates and ply. Continue by applying a bit of epoxy over the front frame.


Side plate

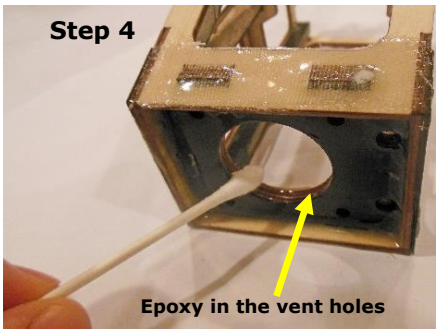
Apply epoxy over the motorbox front perimeter (including top and bottom sides)

4. Using a cotton swab apply a thin layer of epoxy in the mounting plate vent holes except the mounting bolts' holes.
wipe off any excess where the motor will be mounted.



Epoxy over the front frame

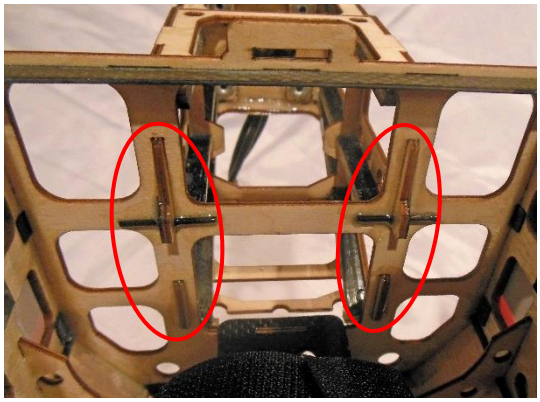
5. Next use a round needle file to pierce a hole in the covering at the sides of the fuselage as shown in the photo in order to accommodate the long carbon rod. The motor box is held in place by three carbon pins; two short pins behind the bulkhead, and one long rod in front of it. These carbon pins fit into the pre-drilled holes in the motor box mounting lugs.
Test fit the motor box and carbon pins in the bulkhead prior to applying 30 minute epoxy.



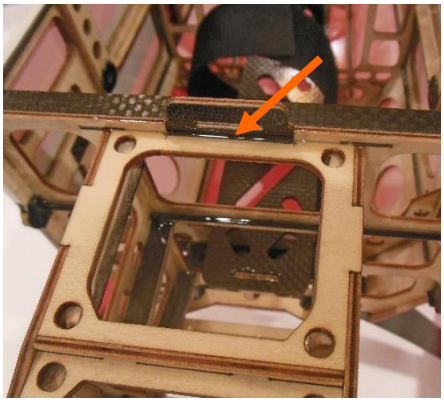
Epoxy in the vent holes

Do not force the motor box into the bulkhead slots. If it is too tight use a fine file to slightly enlarge the slots until a perfect fit is achieved. If the carbon pins are difficult to insert, use a round needle file to slightly enlarge the holes or taper the pins. The long rod in front of the bulkhead should not protrude out the sides of the fuselage as this will interfere with the cowl. Shorten this rod if required using a file. Next, gently work the motor box in until it sits **perfectly** flush with the fuselage front bulkhead **without any gap** present. A gap between the motor box and bulkhead will weaken the joints and change the pre-set motor thrust angle so take your time to do it right.

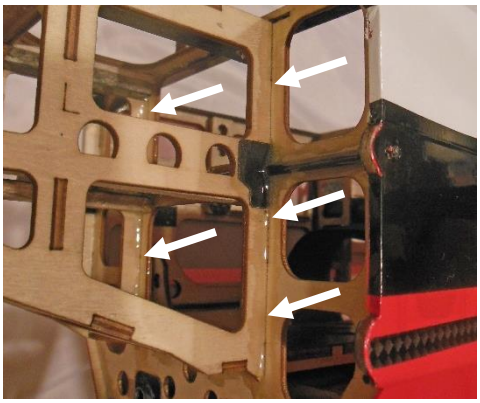
6. Once satisfied with the fit, insert the three CF pins in place.
Hold the motorbox firmly against the bulkhead to **eliminate any gap** and apply a few drops of CA to the center top and bottom spots (one at a time) to "tack" it in place (see photos). Alternatively, you may use a clamp or zip ties at the center top and omit the CA. That will fix the motorbox in place while applying the epoxy. Next, run a thin bead of epoxy along the **entire seam** between the motor box and bulkhead including the CF pins. Use **only epoxy** and make sure you cover the **entire** CF rods, especially the one at the front. Spot gluing will **NOT** work and will allow excessive flex of the front bulkhead which can cause the motorbox to fail under loads.



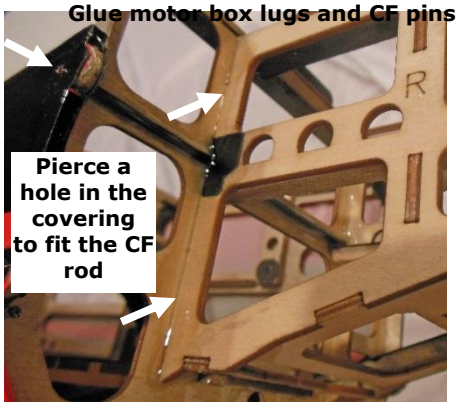
Glue motor box lugs and CF pins



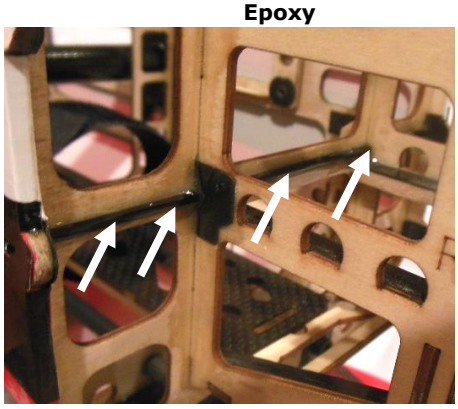
Epoxy



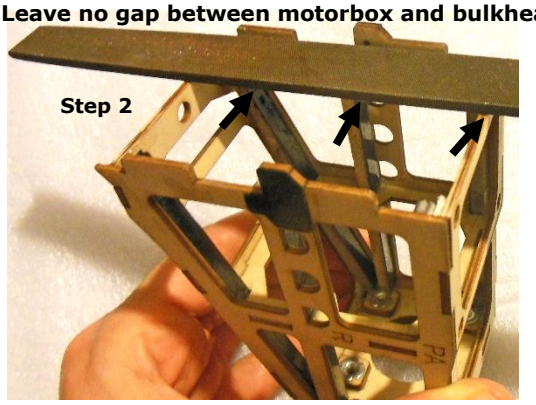
Leave no gap between motorbox and bulkhead



Epoxy ALL seams of the motor box with the bulkhead

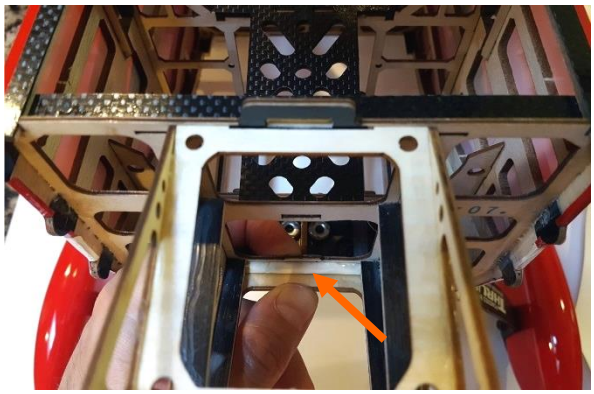


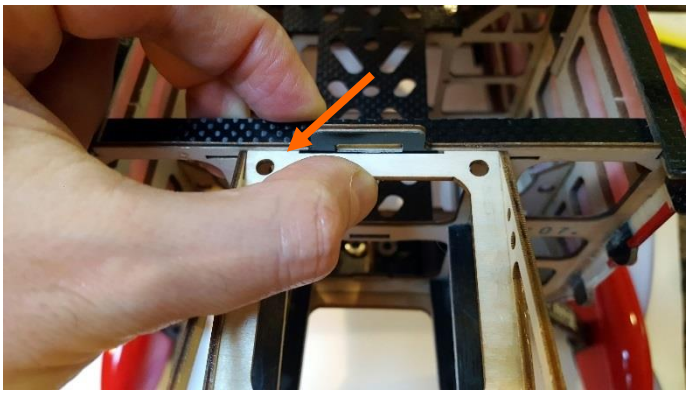
Cover the entire CF rod with epoxy



Verify CF corner stringers do not protrude

Some of the photos used in this step were taken from a different PA plane

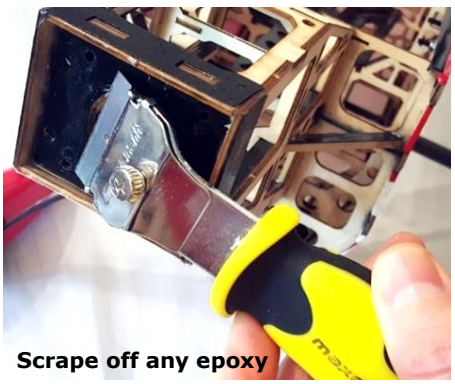




Hold the motorbox firmly with your fingers and apply a drop of CA (top and bottom) before applying epoxy

Motor and ESC Installation

Install the Thrust 45 Revo motor in front of the firewall using the supplied hardware. **DO NOT under any circumstances enlarge/modify the motor box opening or mounting holes of the motor mount**. The motorbox is pre-drilled to accommodate the Thrust 45 Revo motor, therefore, the installation is easy. Note: if there is any epoxy over the mounting plate that may prevent the X mount from sitting flush, scrape it off with a sharp blade as it may result in an incorrect motor thrust angle.



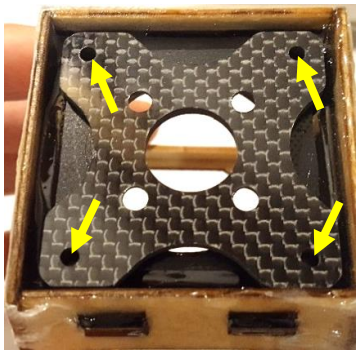
Scrape off any epoxy

Make sure your X mount bolts are at least 14mm long. Due to the thick laminated AMR V2 mounting plate, shorter bolts may strip the thread and cause the motor box to fail under the extreme thrust. We strongly advice to use temporary (blue color) Loctite on all mounting bolts.

Our new and powerful T45 Revo is supplied with a CNC machined solid CF X mount for extra rigidity and weight saving.

Start by unfastening the shaft's retaining bolt, apply Loctite and refasten it firmly. **Do NOT** over fasten as you may shear the bolt's head! Always use correctly sized quality tools so you don't strip the bolts.

Test fit the M3 mounting bolts into the laminated firewall to clear any debris. If the fit is excessively tight, do not use force. Use a 1/8" (3mm) drill bit to clear the holes in the firewall. **DO NOT** drill into the blind nut itself.



Now, you can test fit the same bolts in the CF X mount. If tight, use the same 1/8" (3mm) drill bit or a round file to slightly enlarge the holes.

Next, test fit the counter sink motor bolts into the X mount. The bolt heads should be level or better, slightly below the X mount surface. They must **NOT** protrude above the X mount surface. If they do, they will obstruct the X mount from a flush fit on the firewall, altering the thrust angle. Incorrect thrust angle will impair the AMR flight performance, therefore, if needed, use a 5/16" (8mm) drill bit to slightly enlarge the pre-drilled angle. Test fit during the process.

NOTE: X mount MUST sit flush with the firewall. **Do not** attempt to use washers between the X mount and the firewall as it can lead to a failure.
Apply a bit of Loctite to all the bolts and install the motor onto the motorbox.

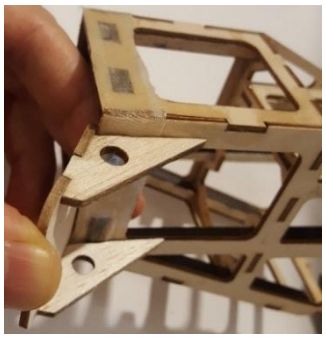
Caution: Over tightening the four motor mounting bolts may run a risk of crushing or cracking the motor mount plywood thereby weakening it. This increases the likelihood of an in-flight failure. Apply temporary Loctite to the bolts and fasten them to a point where the motor sits firmly on the motor mount. Then add a quarter turn clockwise on the bolts to secure them.

Warning: Our new Quantum 45 Pro ESC has a selectable SBEC voltage output. **Verify** that the voltage jumper position is set to fit your servo brand and specs! Use the ESC instruction manual to guide you with the jumper positions voltage. If using the NXT70-HV servos, set it at 7.4V. **Higher voltage will damage your servos!**

To achieve the correct Center of Gravity, the ESC should be mounted as forwards as possible underneath the motor and in front of the cowl air cooling intake. In order to do so an extension lead must be used on the ESC Rx cable. Properly solder a short extension lead to the existing cable as you previously did with the servos, or use a pre-made extension lead. Stick a thick foamed double sided sticky tape (a few layers) underneath the ESC to soft mount, then attach it **lightly** to the motor box using zip ties with the heatsink facing downward and into the airflow (see photos). NOTE: Do not over tighten the zip ties as it will increase vibrations to the ESC.

The ESC battery wires can be trimmed as needed and passed through the bulkhead next to the battery tray.
Connect the three motor cables to the ESC. The RX lead can be twisted to reduce RF noises.

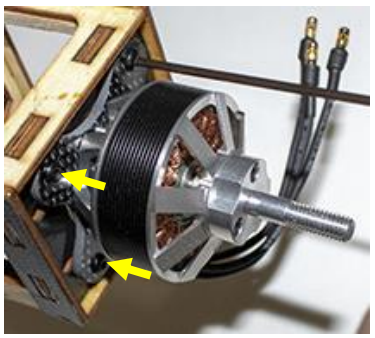
Verify the correct motor rotation direction (should spin clockwise from pilot view). If it doesn't, power down the ESC and swap the position of any two motor cables or reprogram your Quantum ESC for reversed rotation. We strongly recommend removing the propeller as a safety precaution before powering up the ESC.



Install air baffles

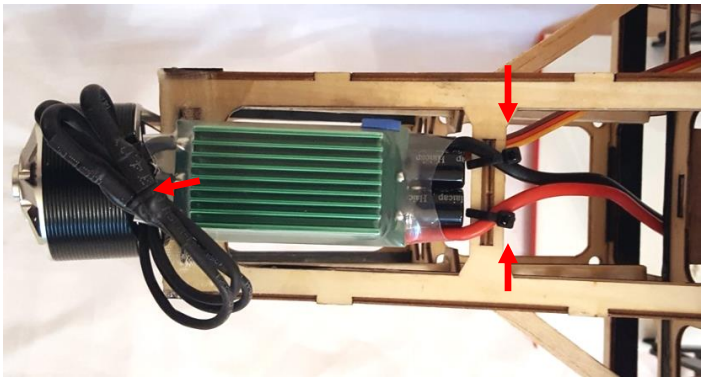
Apply Loctite to the retaining bolt

Bolts head must NOT protrude

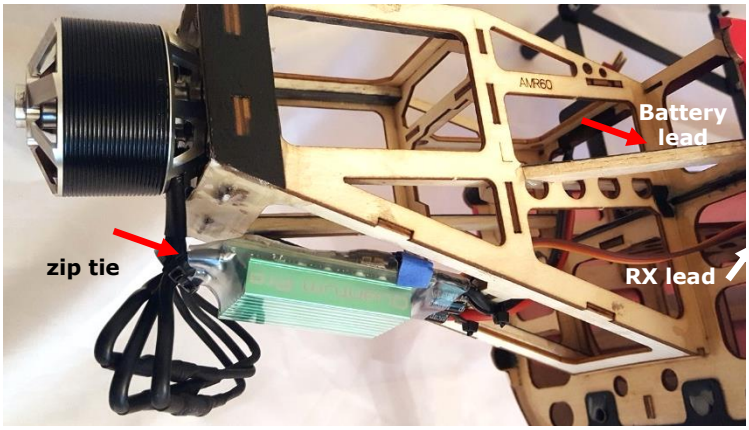


X mount bolts

Using CA, assemble the supplied balsa air baffles and glue them to the sides of the motor box to improve airflow to cool the motor/ESC/batteries.



ESC installation (zip ties)

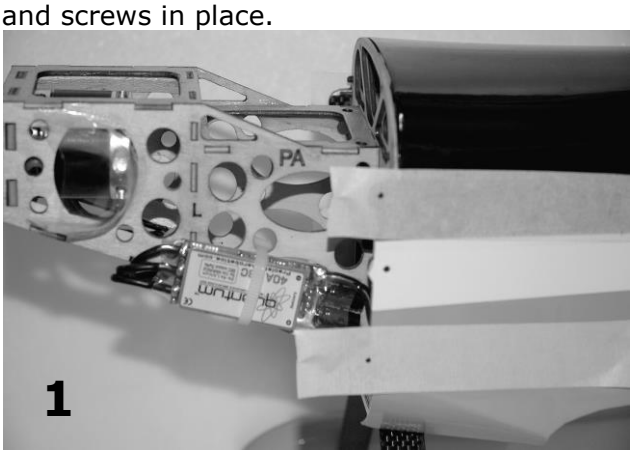


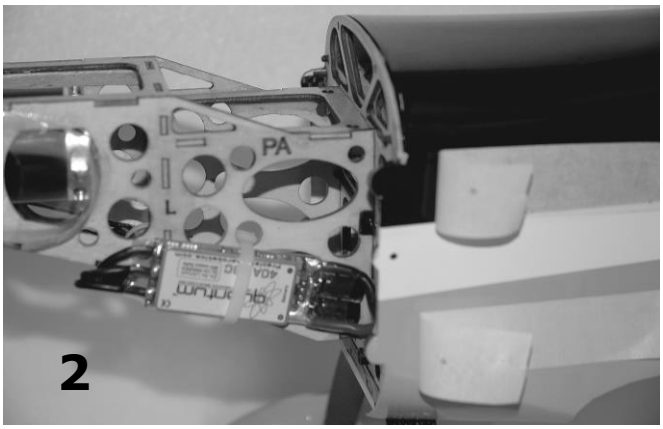
NOTE: Install the motor with the cables positioned downwards

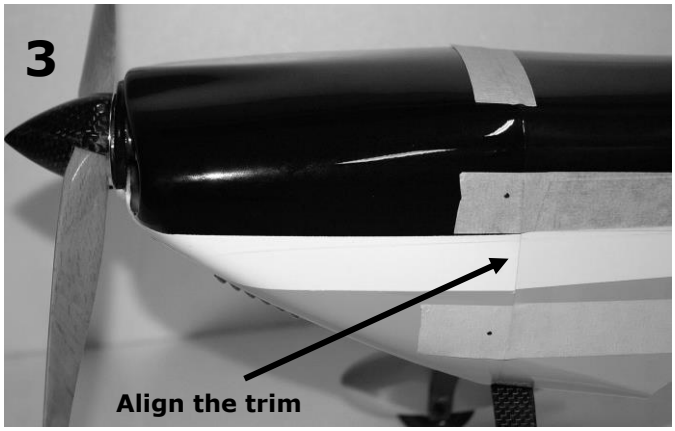
Cowling Attachment

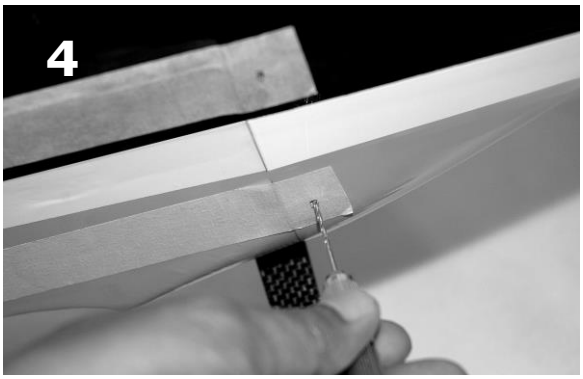
The fiberglass cowl is attached using 4 self-tapping screws (2x10mm with soldered washer) that attach into the carbon fiber mounting lugs. The cowl should fit with approximately 3-4mm of overlap past the fuselage main bulkhead. Due to the tight fit of the cowl to the fuselage, start from the bottom of the fuselage (with the hatch off) then use your finger to push it over the bulkhead. Adjust the front of the cowl so the motor shaft will protrude in the center of the cowl ring and then put the sticky tapes back on (with the marks where to drill) and fit the hatch carefully underneath.

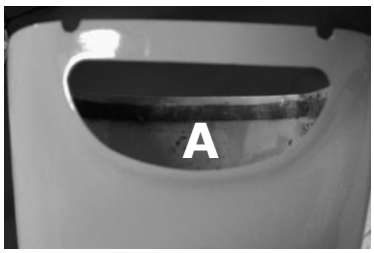
Prior to fitting the cowl it is required to install the motor, prop adapter, spinner backplate (if used) and have the hatch fitted to the fuselage so that the location of the cowl could be adjusted to a perfect fit. Mark the location of the center of the mounting tabs onto pieces of masking tape as shown in the photo, peel the tape partially back and fit the cowl. The cowl must be fitted so that when looking from the front, the motor shaft will protrude through the cowl exactly in the center of the opening/ring and a slight gap between the spinner backplate and the cowl. Press down on the top rear of the cowl to minimize the gap between the hatch and the cowl. Align the cowl's painted straps with those on the fuselage. When you are happy with the fit hold the cowl firmly in place using tape and lay the pieces of tape you marked previously back onto the cowl. These markings identify the location of the mounting tabs underneath the cowl, allowing you to drill using a sharp 1.3mm (3/64") drill bit through the cowl and into the mounting tabs. After drilling remove the cowl and insert the four self-tapping screws into the drilled holes (DO NOT apply excessive force while screwing the self tapping screws as this risks shearing the screw's head off. Rather "tap" the screw in gradually, if it becomes too tight remove it and enlarge the hole slightly), remove the screws then place a drop of thin CA into each of the holes to set the thread. Once the CA has dried you can reattach the cowl and screws in place.









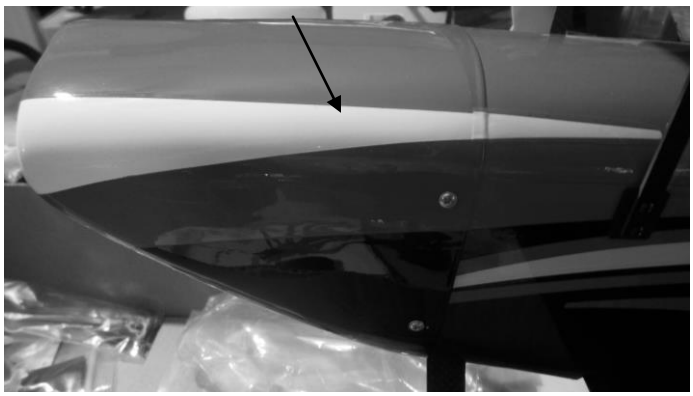


Note: If the LG struts obstruct the cowling fit you may need to use a round file to notch the cowling (bottom side) to allow the struts to fit in (photo #A).

At this stage mount the propeller and if you are using a spinner, mount the cone now as well. We recommend using the lightweight Ultimate style 1.8" PA Carbon Fiber spinner (PA code # AC-2048) that was specially designed for the AMR to retain optimum CG and avoid carrying unnecessary weight. It is important to accurately balance your propeller prior to installation as poorly balanced propellers are inefficient and cause vibrations which are detrimental to your model and motor.

COWLING DECALS:

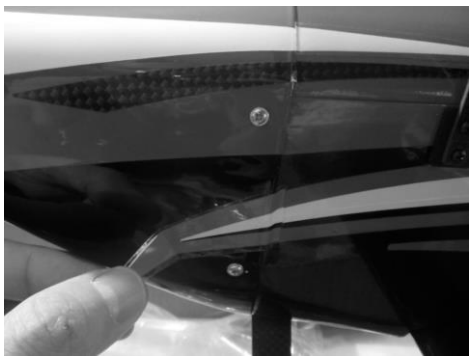
Start with the top white decal over the hatch.
Cut the sticker out of the sheet leaving some clear margin.
Stick it from the end of the cowl on to the hatch (start a bit over the cowl). Make sure it is nicely attached
Use a sharp modeling knife to cut the sticker exactly at the seam of the cowl with the fuselage.
Be very careful not to notch the balsa, then peel off the remaining sticker from the cowl.

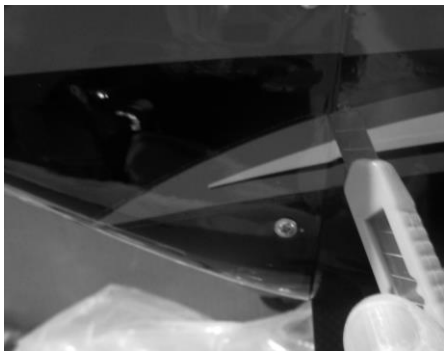


Apply the carbon decal below the white and continue its line with an even space (approx .14" / 3.5mm).

Cut the three-color decal, leaving some clear margin all around and stick it over the cowl making sure it completes the fuselage trim shape and width. Tuck it down and cut in the seem without notching the balsa, then peel off the remaining.

Do the same with the other side of the cowl. Lastly, cut and stick the wheel pants decals.

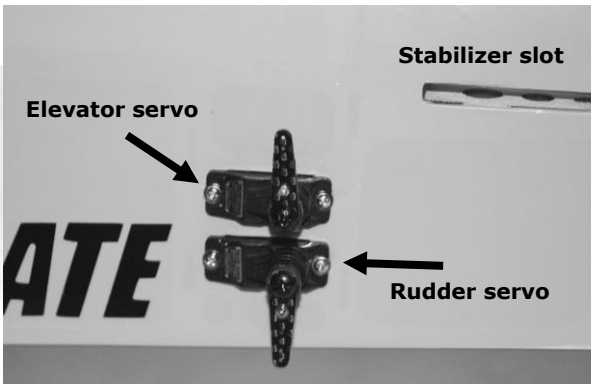


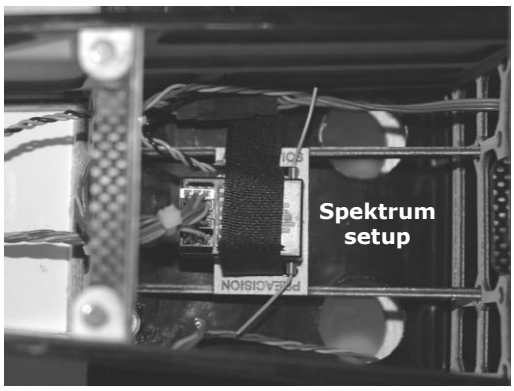


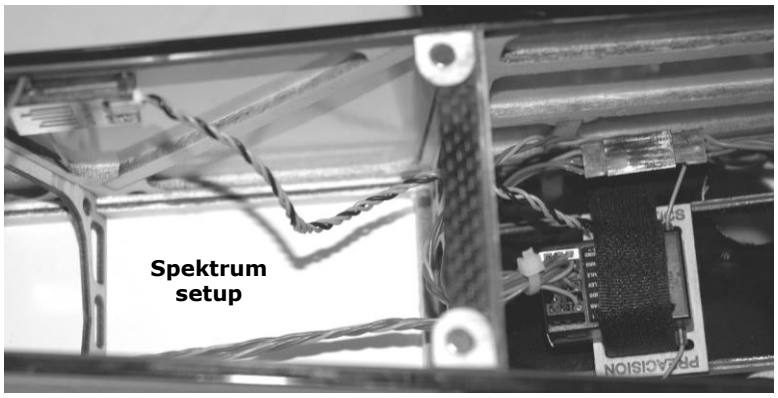
Tail servos (Elevator and Rudder) and RX installation

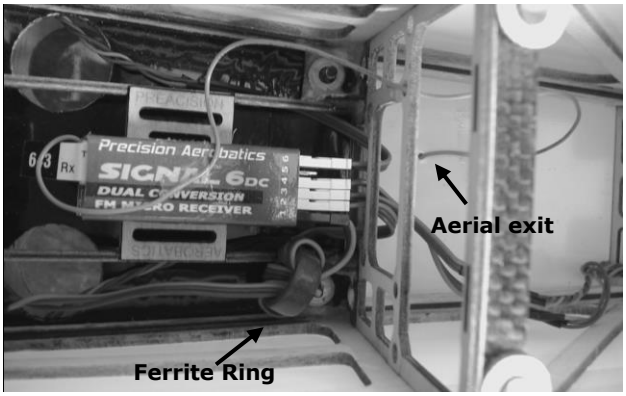
Prior to installing the servos, prepare the servo lead extensions. We recommend using a good quality lightweight servo extension to save on weight, avoid RF noises and voltage drop for all servos (PA Code AC-1713 is top quality German made low resistance flexible twisted Extension Lead).
Install the rudder and elevator servos at the rear of the fuselage in the openings you previously cut in the covering film with the servo output shaft closer to the rear as per the photo. The elevator servo mounts in the upper opening. Carefully drill using a 1mm (3/64") drill bit and self tap holes as required for the servo mounting screws. The servo mounts have ply doublers glued on the inside of the fuselage and so applying a drop of CA into each hole is not actually required (however this can be done if the screws become loose). Run the servo lead along the bottom of the fuselage and use a cable tie to hold it in place on the fuselage floor as shown in the photo.

Optional Lightweight servo extension









Due to the large amount of carbon used in the construction of this aircraft it is important the receiver aerial be properly routed to avoid any RF noises. If conventional FM receiver is used run the aerial a distance away from the servo leads and CF members along the outside bottom center of the fuselage towards the rear (you may use a ferrite ring to enhance the RX signal). Do not attempt to shorten your aerial or wind it in a coil as this reduces the effective range (keep it fully extended). Using the supplied Velcro or double sided sticky tape secure the RX on its tray. If you are using a 2.4GHz RX with satelite, mount the second RX away from the main RX at the inner side of the fuselage using rubberized or foam double sided sticky tape.

Aileron servos installation

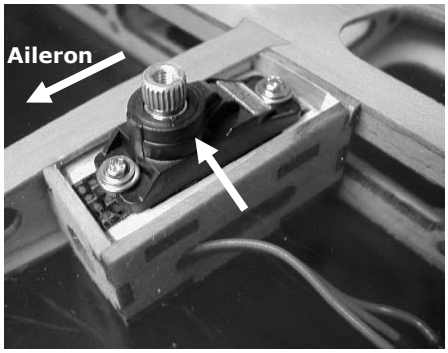
Install a servo extension lead or extend the leads of the aileron servos using the PA lightweight solder on servo leads. Insert the aileron servos with the output shaft closest to the aileron and thread the servo leads out through the opening at the middle of the wing (Use the pre-installed string in the wings to pull the servo cables through.)
Drill mounting holes as required for the screws supplied with your servos using a 1mm (3/64”) drill bit. Use a sharp drill bit and do not use excessive force as this may damage the mounting rails), screw and unscrew the mounting screws and then apply a drop of thin CA into each of the holes to set the thread. Once the CA has dried install the servo. Do not force the aileron servo into the bay; it can be slightly enlarged with a file if needed.

Find the 2 aileron CF control horns and sand or lightly file the bottom tabs. This allows the glue to better adhere to the horns. Please ensure to sand both sides of each horn. Do the same for the rudder, aileron ganging horns and elevator control horns which will be installed later on.

Test fit the aileron control horn in the slot; you should get a snug fit with the aileron, however, do not force the horn in (enlarge the slot slightly if required). Glue the aileron control horns in place using epoxy (epoxy allows time for adjustment after the horn has been inserted, CA is prone to setting too rapidly), the aileron horns are the identical pair of “L-shape” horns.

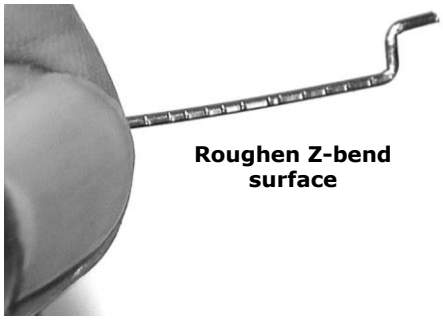
Ensure that the Carbon Fiber horns are installed perfectly perpendicular to the control surface, and fully inserted into their slots up to the stoppers. Ensure the base of the horn sits flushed with the control surfaces with no gaps present.

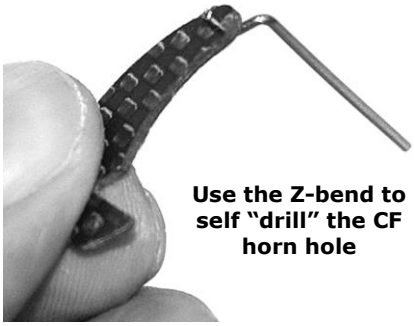
In order to achieve maximum control throws for 3D and to ensure proper linkage geometries we recommend using PA Carbon Fiber servo arms (PA item code #: AC-1913), which should be installed on aileron, rudder and elevator servos as per the supplied instructions. Install the arms now if you have procured them.



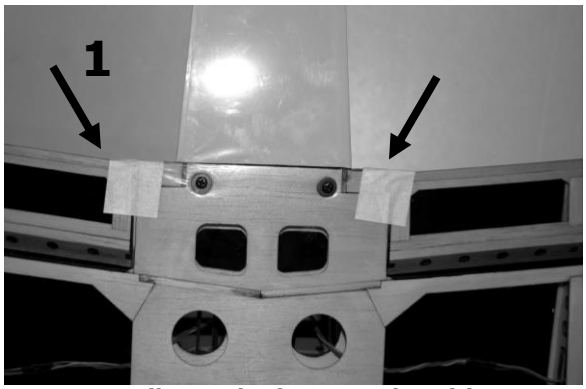
Output shaft closer to the Aileron

Sand the CF tab

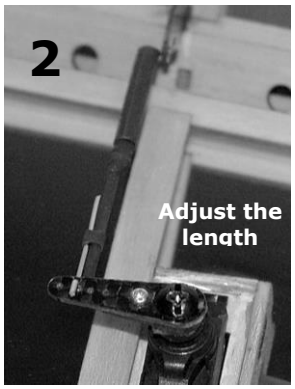




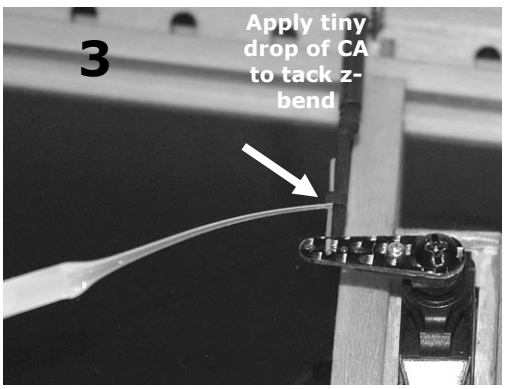
Once the epoxy is dry install the aileron servo pushrods first. The aileron ganging pushrods will need to be installed later after both the top and bottom wings are fitted and properly secured in order to ensure precise alignment. The carbon pushrods come with one pre-glued z-bend. Add one drop of thin CA to the pre-glued Z-bend for added integrity and install this end into the aileron control horn (refer to photo #7). The control horns come pre-drilled for the z-bend, however, this hole has been drilled slightly undersized. If needed simply 'drill' the hole larger by using the sharp end of the z-bend. This ensures a perfectly sized hole that will prevent any 'play' in the control surface. Do not force the Z-bend into the horn but instead gently work the Z-bend in by carefully rocking the Z-bend back and forth to "work" it through the CF horn. Prior to attaching the z-bend to the other end of the pushrod you must 'roughen' the surface of the z-bend to allow the glue to adhere well. The easiest way to do this is with a pair of wire cutters to make a series of indentations in the z-bends but being careful not to actually cut through the wire. Alternatively a file may be used to make the indentations. Be sure that the Z-bends are free from any oil residue that will affect the bonding strength of the glue. Clean with alcohol if necessary.



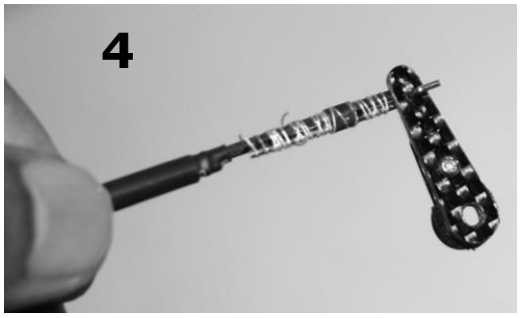
Tape ailerons in the neutral position



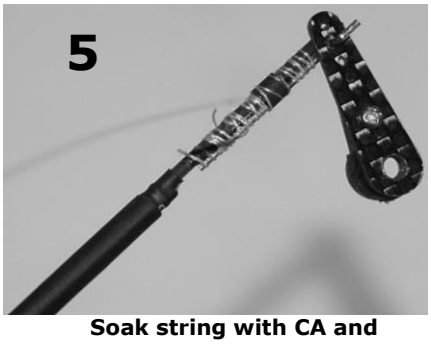
Servo arm at 90 Deg to the servo case



A drop of thin CA

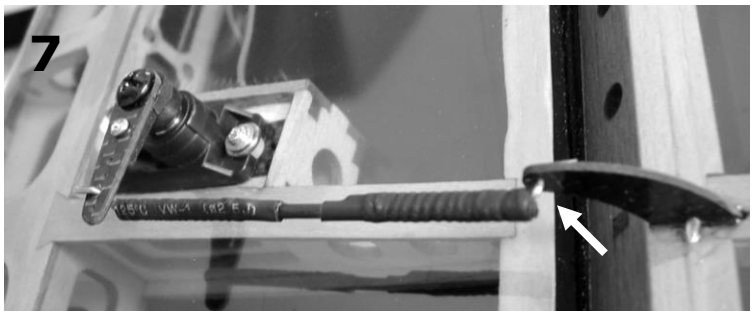


Wrap string as tight as possible



Soak string with CA and slide heat shrink tube in place

Immediately shrink the heat shrink tubing



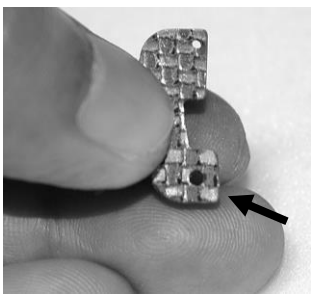
Note the Z-bends orientation

Tip: A "play" in the Z-bend may cause control inaccuracy during flight. To eliminate it you can make PVC washers using your servo or ESC packing material and install it on the inner side

Take one of the 6 pieces of heat shrink tubes and cut a small piece (2-3mm 1/8") off the end. Slide the longer followed by the shorter piece of tube onto the pushrod. Temporarily attach the z-bend to the pushrod using the smaller piece of heat shrink (use a heat gun or cigarette lighter to shrink the tube, NEVER apply heat to the heat shrink tube near the covering film, as this will cause the film to melt. This will require you to remove the servo arm whenever applying heat). Insert the z-bend into the servo arm (from the underside) and with the aileron taped in the neutral position and the servo arm at 90 degrees to the servo, adjust the length of the pushrod by sliding the z-bend along the CF rod as required and verify alignment. When the pushrod is the correct length, tack the assembly with a tiny drop of thin CA just enough to temporarily hold the assembly in place. Wait for a few minutes to dry and then carefully remove the entire assembly (being careful not put too much force to break the temporary tack). Then tightly bind the z-bend to the pushrod using the supplied string. Soak the string in thin CA and immediately slip the heat shrink tubing in and shrink it. Allow the CA to dry before re-installing it back on to the servo and aileron. (It is best to apply a tiny drop of CA to the end of the string in order to tack it in place allowing the rest to be tightly wound around the pushrod without unraveling.)

Check both z-bends for integrity prior to final installation (simply try to rotate and pull the z-bend off by carefully applying a reasonable force). These pushrods have been proven to be extremely reliable under extreme flight loads if made properly. We don't recommend changing to metal linkages which tend to flex and are heavier and thus affect the CG.

Install the CF aileron ganging horns using epoxy similarly to the aileron control horns. Note that CF aileron ganging horns with the **larger hole** is to be mounted on the **bottom wing** to accommodate the EZ-connector. Ensure that adequate epoxy is applied to fill the small hole at the bottom corner of the tab that inserts into the slot on the aileron. Keep a bit of the epoxy excess since it will create a solid base for the horn with better bonding.



Horn with larger mounting hole for bottom wing

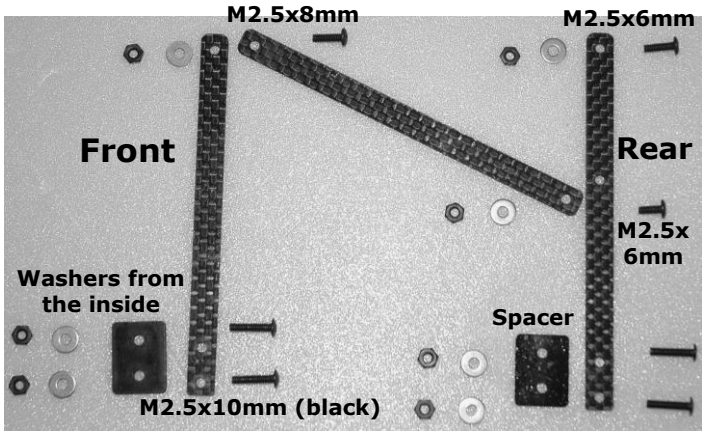
Glue with Epoxy

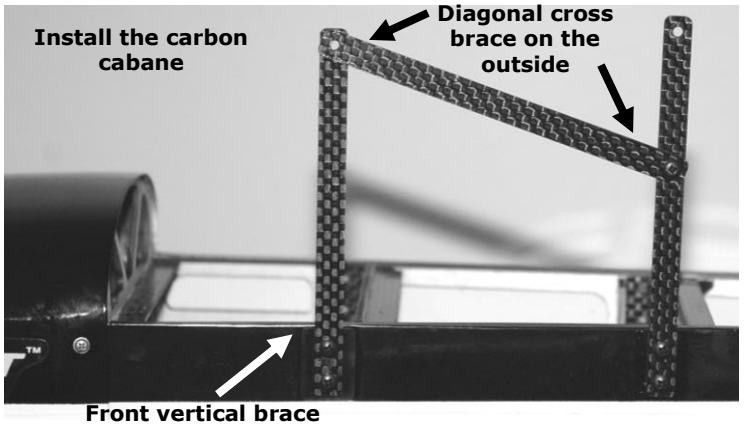
Keep a bit of the epoxy excess

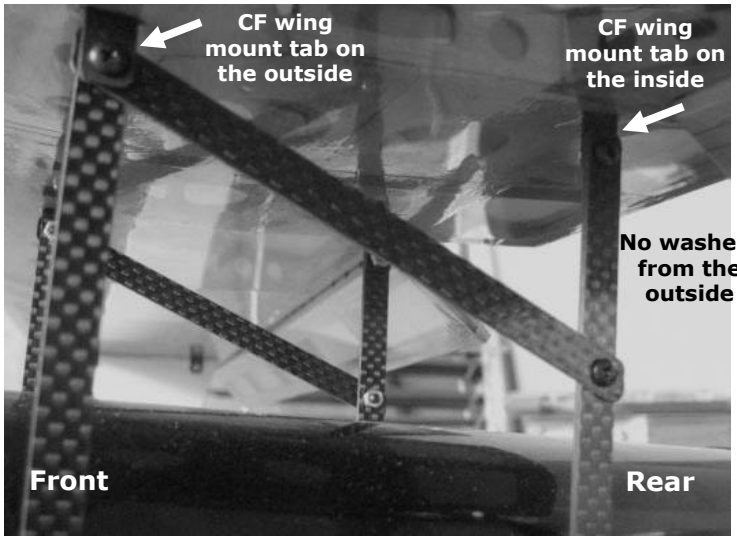
Wing, Cabane & Wing Struts Attachment

Install the four vertical Carbon Fiber braces of the cabane onto the fuselage as shown in the photo. Note that the longer vertical braces (with the additional hole in the middle) are to be installed at the rear position of the fuselage mount. The assembly sequence of the vertical brace is: black M2.5x10mm bolts, vertical brace, pre-painted spacer, thin washers & nuts. As the bolt holes on the fuselage are drilled slightly undersized to ensure precise alignment, there is a chance of too tight fit. In this case use a small round file to slightly enlarge the holes to allow insertion without any "play".

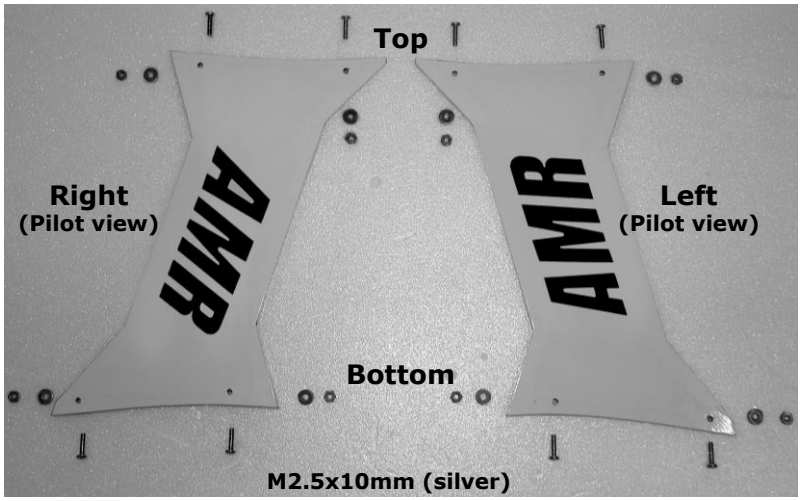
Proceed to install the diagonal brace as shown in the photo with the black M2.5X6mm bolt, nut and washer.



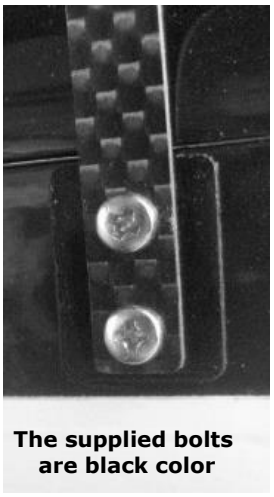


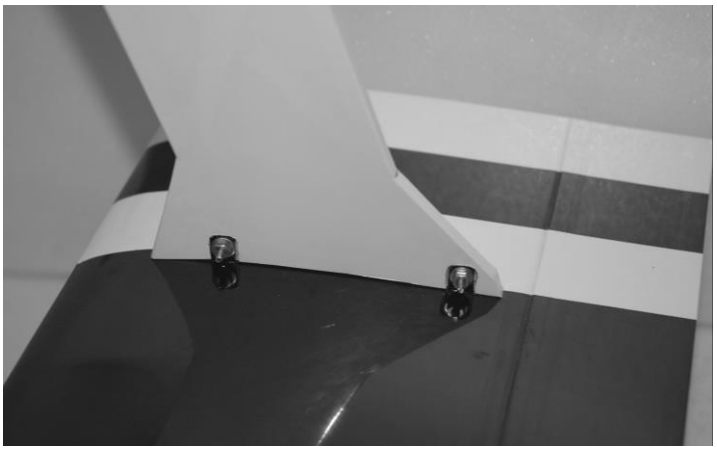


Use the black M3x16mm bolts and 3mm washers to now assemble the lower wing to the fuselage in preparation for the assembly of the upper wing. Next install the two wing struts to the lower wing with the supplied silver M2.5x10mm bolts, washers and nuts. Refer to the photo below to note the orientation of the wing struts before you install. The sequence of assembly is bolt, washer, wing strut, washer & nut.



Rear vertical brace

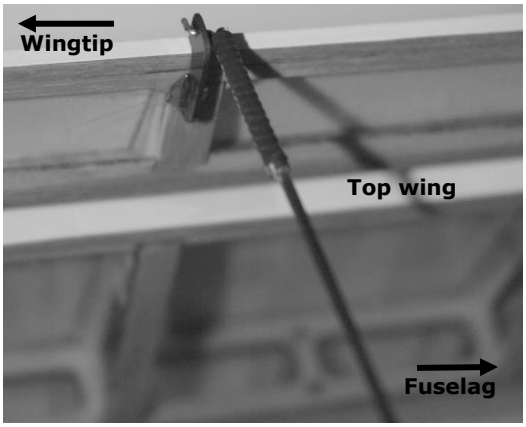

The supplied bolts are black color

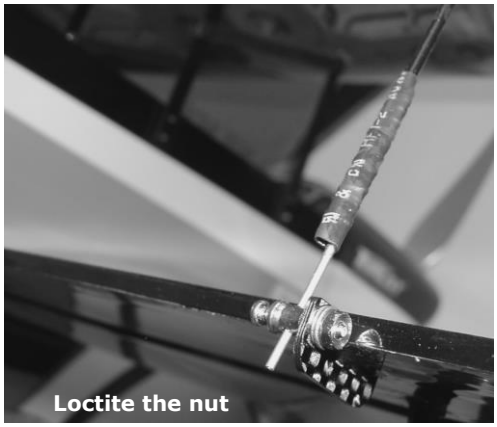


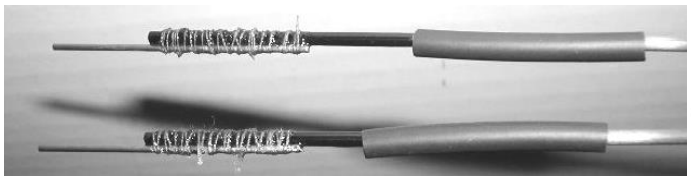
Bolt the top wing to the struts (minimize the gap between the wing and struts). As an option, you may also paint the washers white to match the wing struts.
Proceed to secure the top wing onto the CF cabane using the supplied black M2.5 bolts, washers and nuts (per the photo). Note that the CF wing mount tab that connects to rear vertical brace is to be on the inside of the brace while the front CF wing mount tab that attaches to the front vertical brace is to be positioned on the outside of the brace. This is especially important to install the wing mounts in this manner to ensure the correct wing incidence is retained. Verify your wing mounting against the photos above. As a final step, apply a drop of Loctite on all nuts on the cabane and wing struts.

Ganging the Ailerons

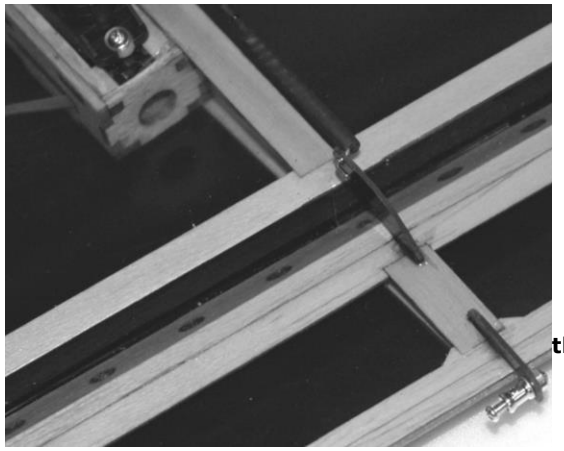
Install the two EZ connectors to the carbon fiber aileron ganging horns on the bottom wing (the holes are slightly undersize to allow perfect fit. Use a small round file to slightly enlarge the holes to allow insertion without any "play"). Ensure that the two small washers are installed to both sides of the aileron ganging horn. Tighten the nut on the EZ connector just tight enough to prevent any free-play or wobble (the washers act as spacers). The rotation of the EZ connector must be smooth. Apply a drop of Loctite to the EZ connector nuts and once dried, lubricate the assembly. Tape all the aileron roots in the neutral position. Install the ganging pushrod Z-bend to the CF ganging horn on the top wing. Slip the straight metal wire through the EZ connector. Install the straight metal wire to the CF ganging pushrod in the same manner as you have done with the aileron pushrod. Verify the top and bottom ailerons are perfectly parallel (neutral) to each other and proceed to secure them by locking the bolt on the EZ connector.
Note: we recommend setting up the ailerons throw of the bottom wing first and only then gang the top for a more accurate setup.







Soak string with CA and slide heat shrink tube in place



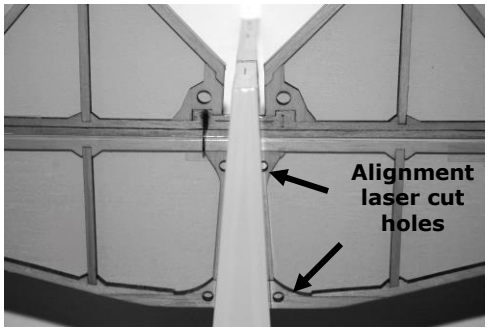
Note the orientation of the EZ connector and pushrod

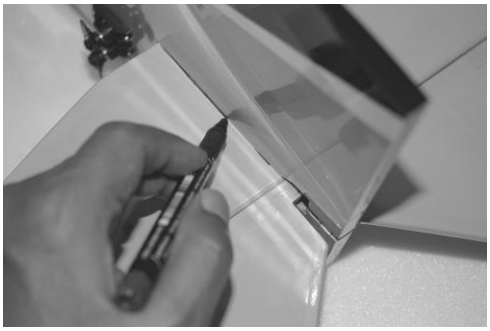
Elevator

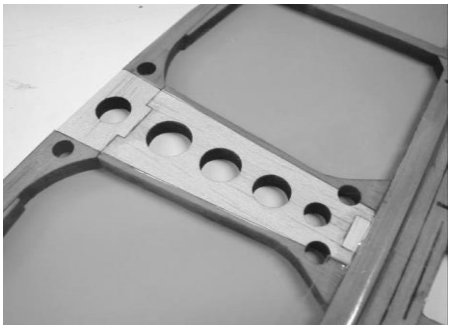
Ensure the elevator is not twisted by checking that both elevator counterbalances line up perfectly with the stabilizer leading edge by placing it on a flat solid surface (Glass or your kitchen marble bench).If one counterbalance is slightly deflected up or down while the other is neutral, the twist can be easily removed by gradually twisting in the opposite direction and applying heat to the covering film (ideally with a modeling iron) where it wrinkles (start at a very low temperature and gradually increase since different films respond to heat in different ways and excessive heat will damage the covering).It is important this step is completed prior to installing the stabilizer/elevator on the model. Do not use a heat gun.

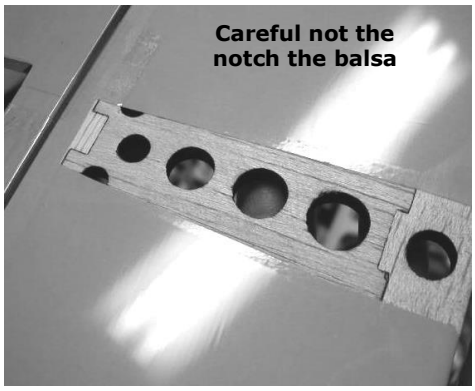
Lightly iron down the centre portion on both sides of the horizontal stabilizer to prevent the covering from peeling off when you slide it into the fuselage after cutting. Use a sharp blade to carefully cut the covering from the top and bottom center of the horizontal stabilizer along the laser marked lines (lines are visible from bottom of the stab only). If the lines are not visible enough you may temporarily slide the stabilizer into the fuselage slot, align it and Use a felt tip pen to temporarily mark the cut lines on the top side of the stabilizer, then remove it and cut it along those marks (the pen marks can be removed with a rag soaked in alcohol). **Note:** Apply just enough pressure to ONLY cut through the covering film and NOT the wood beneath as this can cause a failure of the stabilizer in flight.

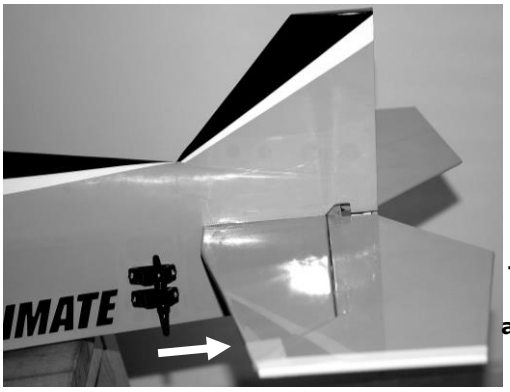
Tape the elevator in the neutral position and slide the horizontal stabilizer into the fuselage slot. View from the bottom side of the stabilizer to ensure that the stabilizer is perfectly aligned in the fuselage slot. Use the four laser-cut holes in the stabilizer as a reference (The distance of the holes from both sides of fuselage should be equal).







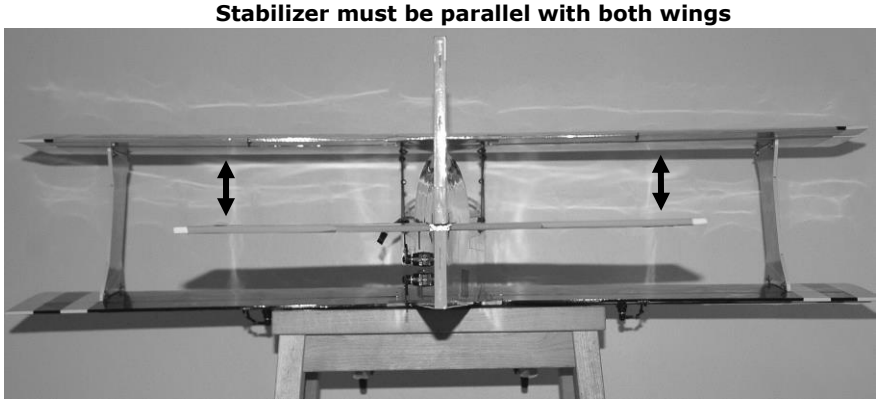




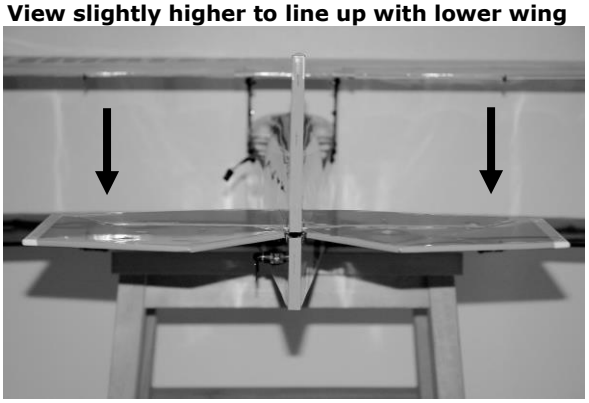
Tape the elevator at neutral

With both wings attached, look from the rear of the model to check that the stabilizer is <u>parallel</u> with both wings, if required remove the stabilizer and lightly file the fuselage slot to achieve perfect alignment.
Do not apply pressure to try and force the horizontal stabilizer level to the wing as you may risk inducing a permanent twist on the fuselage. Once satisfied that precise alignment is achieved, glue the stabilizer in place (both top and bottom) using CA or epoxy along the fuselage/stabilizer join, while ensuring it is parallel to the wings.

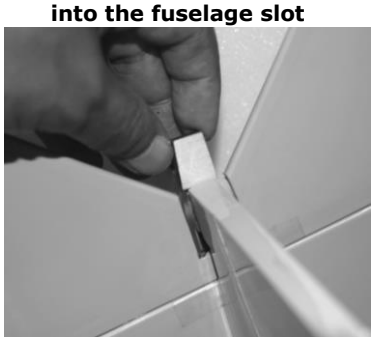
Stabilizer must be parallel with both wings



View slightly higher to line up with lower wing

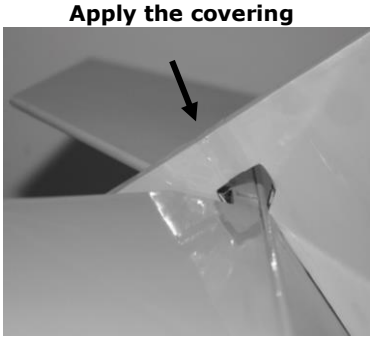


Insert balsa block into the fuselage slot

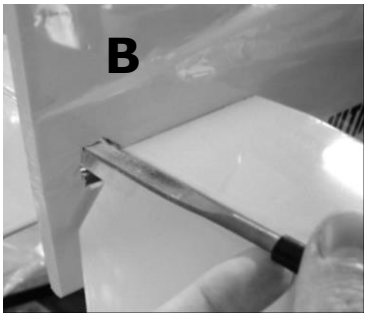


Sand balsa block if required

Apply the covering



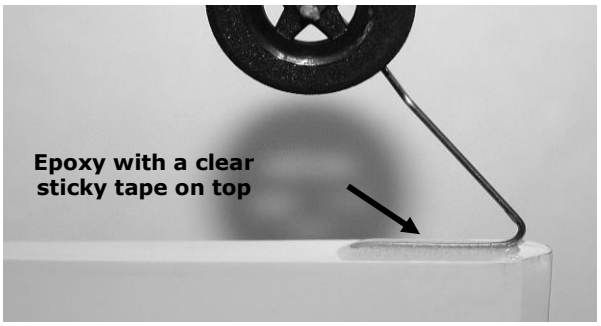
File the slot if needed

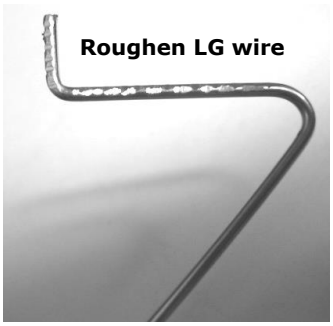


Insert the supplied laser cut balsa filler block into the slot you have previously cut at the rear of the fuselage to slip the horizontal stab in. Carefully sand the block to ensure a good fit. (Do not try and force the block in). Glue the block in with CA taking care not to apply any pressure to the fuselage to cause a permanent twist. Once the glue has dried, take the covering film saved when making the air cooling exit opening and trim it to size. Then apply the covering strip to match the finishing. Note: verify that the elevator can deflect 45 degrees. If it doesn't you may need to lightly file the fuselage opening (photo #B)

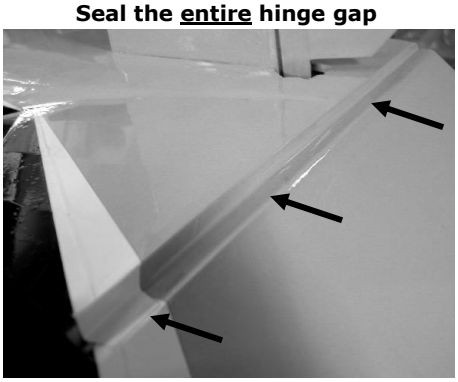
Rudder and Tail LG

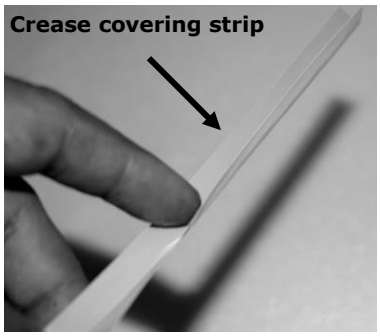
Align the tail landing gear against the rudder and using the tip of the wire mark the position where the wire will penetrate into the rudder (the correct location is shown in the photo). Create indentations in the surface of the tail LG wire (as you did with the aileron pushrod z-bends) to allow better gluing surface. Drill a hole in the marked position using a 1mm (3/64") drill bit and glue the tail wheel in place using epoxy in the hole and along the entire length of the wire contacting the bottom of the rudder and then cover with a piece of sticky tape. Let it dry without moving it.





The rudder comes with hinges pre-installed and hinge slots pre-cut in the fuselage. Test fit the rudder; if you find it hard to insert the hinges into the fin you can slightly enlarge the slots with a hobby knife. Insert hinges as far as possible and then deflect the rudder left and right until it hits the elevator; this sets the correct hinge gap. Ensure the fin and rudder counterbalance are as close together as possible without rubbing, this should result in the bottom of the rudder being flush with the bottom of the fuselage. With the rudder at full deflection apply a few drops of CA on both sides of the hinges.

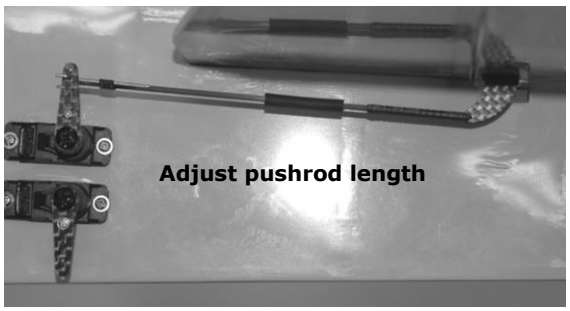




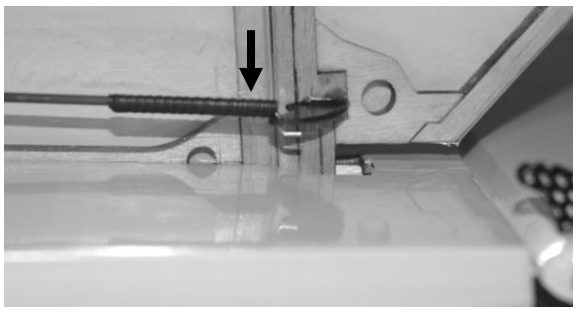
Seal the hinge gap with the supplied covering strips (2 colors supplied) as shown in the photos above. The strips can be applied from either side of the rudder. This step is important for the rudder as it is for the elevator. Once the rudder is installed it must be checked for warp. Due to the lightweight construction of the rudder it is normal for it to have some small amount of warp; there is no need for concern as this can be easily removed. To be able to guarantee a warp free rudder would have resulted in an unacceptable weight penalty which would detract from the excellent flying characteristics of the Ultimate AMR. Tape the rudder in the neutral position and look from the rear to check that the trailing edge of the rudder is perfectly vertical. If it twists to one side carefully counter twist it to the other direction and apply heat where it wrinkles using an iron as you did with the ailerons and elevator. Continue until the trailing edge of the rudder forms a perfect vertical line. Avoid over shrinking the film.

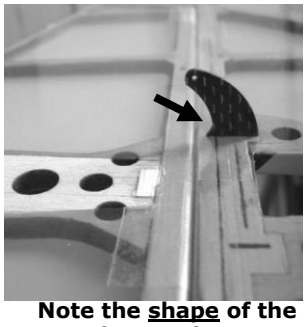
Elevator servo pushrod

Glue the elevator control horn in place using epoxy in the same way as you did with the aileron horns ensuring the mounting hole is directly above the hinge line. Remember to fully insert the horn (however do not force it in) and ensure it is perpendicular to the elevator (looking from the rear).
Once the epoxy is dry install the pushrod. The pushrod installation uses the same method used with the ailerons, however, pay careful attention to the orientation of the z-bends, which need to be glued on opposite sides of the pushrod (the z-bends install from the underside of the servo arm, and the outside of the elevator control horn). Prior to installing the pushrod test it for strength in the same manner as the aileron pushrods.



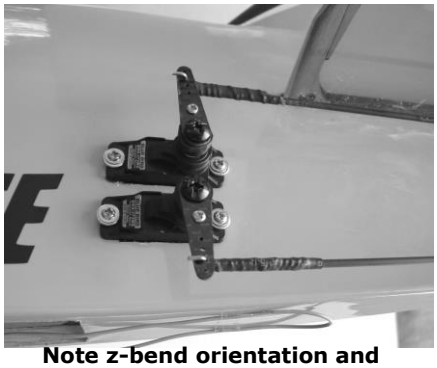
Tape elevator at neutral


Note z-bend orientation

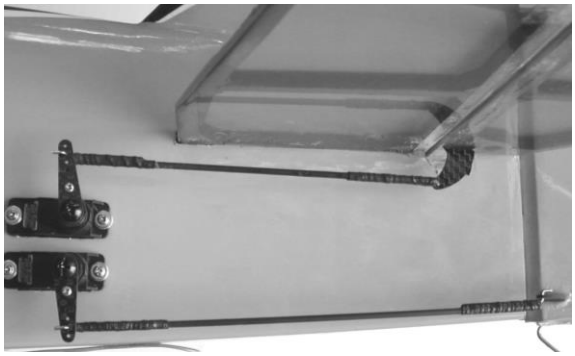

Note the shape of the elevator horn

Rudder servo pushrod installation

Glue the rudder control horn in place using epoxy in the same way as you did with the elevator horn. Tape the rudder in the neutral position and assemble the Carbon Fiber pushrod and z-bends in the same manner as the elevator.


Note z-bend orientation and position on servo arm


Note z-bend orientation



Warp and Wrinkle Removal

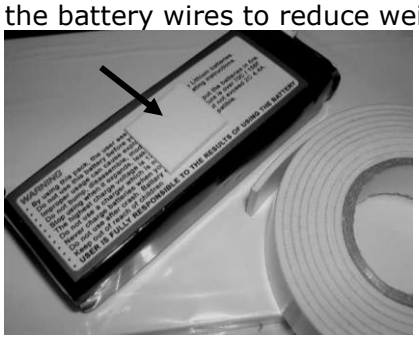
The wings and ailerons have been built using accurate jigs and glass tables to ensure precise alignment. In the unlikely event that you suspect that there is a warp or twist present, start by taping the ailerons in the neutral position at the wing root, look down the length of the ailerons to ensure they are perfectly straight. The ailerons should be neutral at the wing tip as they are at the wing root. Do not under any circumstances dismantle the wing while trying to remove twist or winkles.

If the aileron is "deflected" up or down at the tip (known as wash-out or wash-in) this must be removed by gradually counter twisting it in the opposite direction and apply heat to the covering film (with a modeling iron and not a heat gun!) where it wrinkles. Start at a very low temperature and gradually increase. Different films respond to heat in different ways and excessive heat will damage the covering. Repeat this process until the aileron is straight with no twist visible. Don't skip this step.

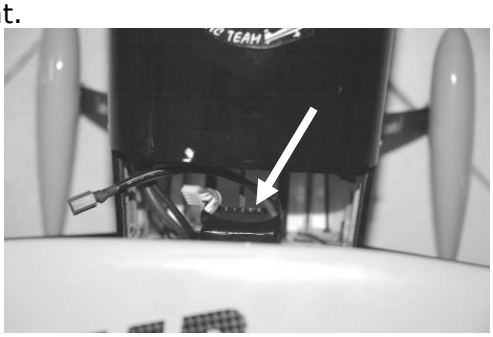
Any small bubbles or wrinkles in the covering film can also be removed by the careful application of heat (iron only) if absolutely necessary, however, extreme care must be taken, as it is possible to introduce warp to an otherwise straight part while removing wrinkles therefore we suggest to avoid it.

Battery Placement

The battery is held in place on the battery tray using the supplied Velcro. There are small protrusions on the underside of the battery tray to prevent the Velcro from sliding back and forward. To prevent the battery from sliding on the CF tray you can stick a small piece of thick double sided sticky tape underneath the battery and place a piece of rubber foam on the top of the battery, then wrapped and fixed with the Velcro. To avoid the battery from sticking to the CF tray, "weaken" the glue by sticking some dust to it. Another way to prevent the pack from sliding is to wrap a thick rubber band over your battery. You may wish to trim the battery wires to reduce weight.



Thick double sided sticky tape



Battery aligned with the front CF tray

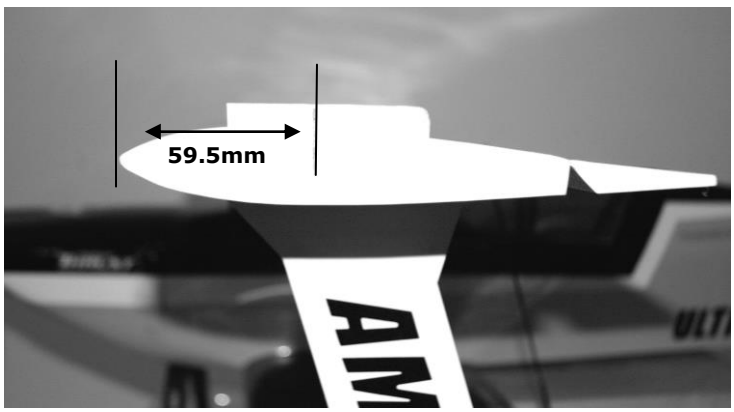
Center of Gravity (CG)

We designed the Ultimate AMR with a narrow CG range to attain the best freestyle flying performance. Using the setup we have listed you should end up with a center of gravity very close to the ideal position. Small adjustments can be made by sliding the battery fore and aft on the battery tray to suit your flying style and condition. It is very important, regardless of chosen setup, to check your model's center of gravity as accurately as possible since even 0.5mm made a big change during our intensive test flights!

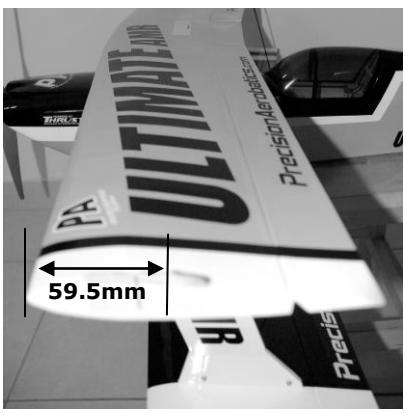
The center of gravity range is 57-62mm measured from the leading edge at the top wing tip.
We suggest you start at the forward limit and move the center of gravity rearward as you become more comfortable with the aircraft handling, however, this plane performs at its best with a CG of 59.5mm from the leading edge of the top wing tip where just a small amount of "down" elevator trim is required to hold a level flight (see "Flight trimming" section). This is the **"sweet-spot"** of the Ultimate AMR.

Note: If you are using the recommended iPAs gear and PA 2200mah Lipo packs, merely align the front end of the battery pack with the front edge of the CF battery tray to get a quick close approximation to the "sweet-spot" of 59.5mm CG. It is extremely important to dedicate a few first flights to CG adjustments to achieve the best performance out of this model. A CG position of 57mm-58mm is good for precision aerobatics IMAC flying or in windy conditions.

Refer to the photo below on how to establish an accurate CG of your model. Start by attaching pieces of masking tape on the upper wing tips and then measure off the desired CG from the leading edge of the top wing tip and mark a line on the masking tape. Do the same for the opposite wing tip. We strongly recommend taking the time to build a CG device per photo #A for more accurate setup.



CG measured at the top wing (Tip leading edge)



Make yourself a CG device with a small plank mounted to a table and a bolt (one for each wing side)

Control Setup

Using the supplied deflection gauge we suggest setting up your control surface deflections in accordance with the following table. Use these as a starting point and adjust them to suit your personal flying preferences.

All the figures in this table are approximated		
Control surface	**High rates**	**Low rates**
Ailerons	40° Up and 35° Down (5° differential) Expo: 70%	15° Up and Down Expo: 35%
Rudder	45°+ Left and Right (maximum) Expo: 70%	25° Left and Right Expo: 35%
Elevator	45° Up and Down Expo: 70%	20° Up and Down Expo: 30%

Use the supplied deflection gauge

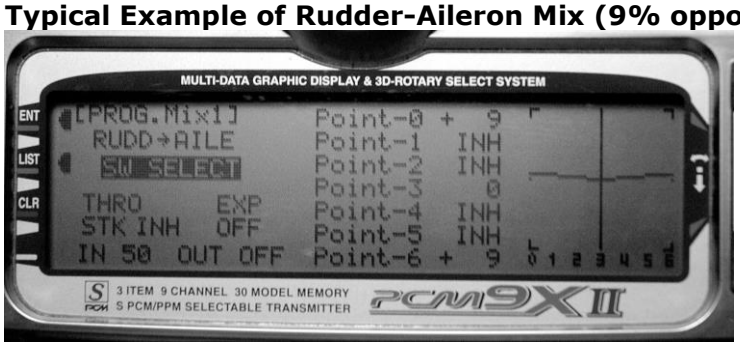
Control Mixes

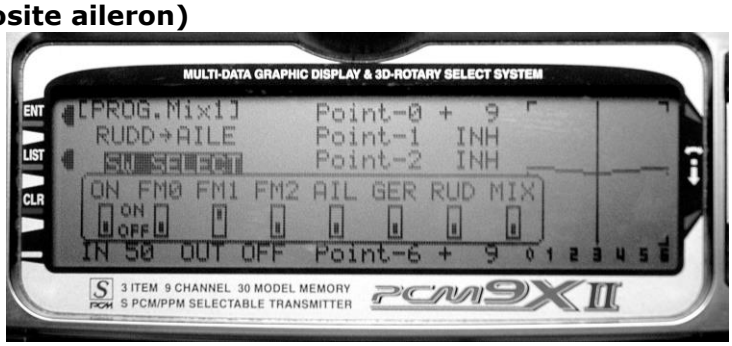
The Ultimate AMR due to the nature of biplanes will require some control input mixing. This is due to the aerodynamic effects generated by the upper wing. In the Knife Edge maneuver, without mixing, it exhibits a slight tendency to roll in the opposite direction of the rudder input (i.e. to level itself) and simultaneously tucks towards the belly due to the slight "down" trim required for level flight (read "Flight Trimming" section). As such it requires 2 simple mixes (KE Mix) to be programmed and activated during high rates to compensate for this natural tendency.

In order to understand the degree of mixing required, please refer to the photos below intended to serve as an example programmed into a JR PCM 9X transmitter. The display on your transmitter may differ from the example shown below. As such please refer to your transmitter's instruction manual in order to access the programming mode and to program the required mixes in. In principal, the mix requires a little opposite aileron and "up" elevator to work in conjunction with the rudder inputs.

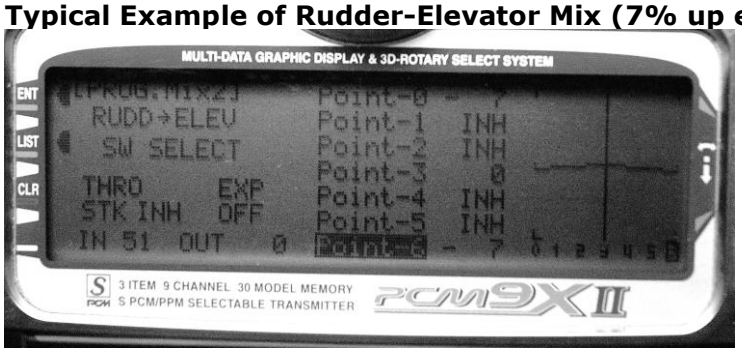
Mixing values may possibly vary from different transmitter brands; however, the mix percentage should be quite close if you set the CG correctly. As such, it is recommended to initially input tiny amounts of mixing and subsequently change the mixing values in small increments in order to avoid over mixing at the start.

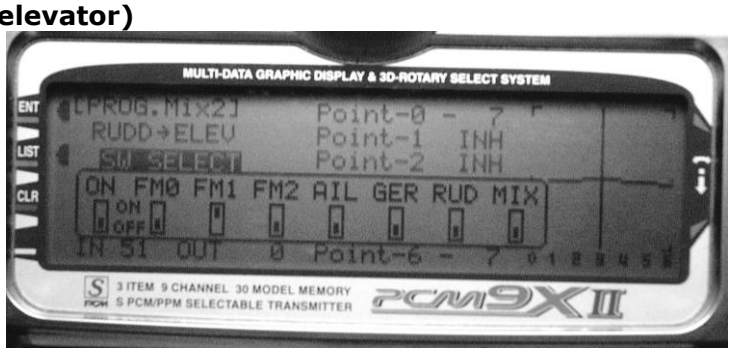
Typical Example of Rudder-Aileron Mix (9% opposite aileron)





Typical Example of Rudder-Elevator Mix (7% up elevator)





Flight Trimming

On takeoffs The Ultimate AMR will be airborne after a very short run therefore let it gain some air speed to allow airflow over the wings before trimming. After a few second of straight and leveled flight on ¾ throttle it will balance itself and then you may adjust the TX trims. You will find the need to trim "down" elevator for level flight. This is normal due to the aerodynamic drag generated by the upper wing, however, CG is a critical point and make sure to set it up exactly as we suggested otherwise you will get into lots of experiments. BE AWARE that during the consecutive flights after you trimmed the model the plane will tend to slightly dive immediately after the takeoff, this is normal due to the "down trim"! So don't re-trim it afterwards. Just let the plane fly straight and level for a few seconds after take off and it will balance again (it is the upper wing aerodynamic drag effect at low and high speeds).
Please note that the Ultimate AMR is a very accurate plane and will keep its heading wherever you point its nose. In this regards it behaves a little different than other monoplanes you may be use to, therefore you should avoid re-trimming during each flight. Trim the plane at ¾ of throttle and not full power.

On a windy day set the CG a little fore (57-58mm) and on calm days at the "sweet spot" (59.5mm).
The Ultimate AMR exhibit no KE coupling, however, due to the "down" trim, set previously, it requires a low percentage of mixes.
Note that if you setup the CG differently to our instruction the plane performance will highly vary!

Finish

Apply stickers to your liking and have some fun!! See below where we chose to apply the supplied stickers

Ultimate AMR Replacement parts list

We believe that you will enjoy your Ultimate AMR for a very long time to come. In the event of inevitable mishaps and broken parts, all you need to do is to order replacement spare parts to restore your AMR and be back in the air as opposed to being forced to buy a complete airframe.

AC-2049	Ultimate AMR Replacement Fuselage
AC-2050	Ultimate AMR Replacement bottom wing
AC-2051	Ultimate AMR Replacement top wing
AC-2052	Ultimate AMR Replacement wings set
AC-2053	Ultimate AMR Replacement Fiberglass cowl
AC-2054	Ultimate AMR Replacement CF landing gear
AC-2055	Ultimate AMR Replacement tail feathers set
AC-2056	Ultimate AMR Replacement canopy /Hatch
AC-2057	Ultimate AMR Pre-assembled Motor mount
AC-2058	Ultimate AMR Fiberglass wheel pants set
AC-2059	Ultimate AMR CF control horns set of 4pc
AC-1911	Medium size carbon fiber wheel pants set

AC-2017	PA Lightweight Main Wheels
AC-2019	PA Light weight tail wheel assembly
AC-1654	Solid White covering film 60x200cm roll
AC-2021	Solid Black covering 60x200cm roll
AC-2023	Solid Yellow covering 60x200cm roll
AC-2024	Solid Red covering 60x200cm roll
AC-2025	Solid Green covering 60x200cm roll
AC-1652	Translucent yellow covering 60x200cm roll
AC-1651	Translucent red covering 60x200cm roll
AC-1915	Translucent Green covering 60x200cm roll
AC-1660	Translucent Blue covering 60x200cm roll

Optional Extras

PA Carbon Fiber 1.8" Ultimate Style CNC machined spinner (PA Item # AC-2048)

The PA 1.8" Carbon Fiber spinner is a perfect match to your Ultimate AMR. The combination of precision CNC machined Aluminum back plate and our German made precision prop adapter allows true spinning without motor's performance deterioration.

The new CF spinner is incredibly lightweight (only 9.5gr/0.335oz!!) and has a beautiful shiny finish.

Note that the prop adapter is not included with the spinner. We DO NOT recommend using a poor quality prop adapter, such as those supplied with most motors available on the market. Poor machining results in un-centered spinning and excessive vibrations which will affect the motor efficiency and performance, and may in the long run cause damage to the spinner cone and wear out your motor's ball bearings.

All spinners are tested in our facility (using our German made prop adaptor) to verify they spin centered and true before shipped.

Carbon fiber micro long servo arms for perfect linkage geometry. (PA Item #AC-1913)
Set of 4 Carbon Fiber servo arms specifically designed to achieve full control surface movement required for 3D flights with the correct linkage geometry to fit the Ultimate AMR.

- Set of 4 servo arms
- Snap installation
- No glue required
- Total weight including hardware 0.4g only!
- Best solution for maximum throw in 3D funfly models.
- CF woven awesome look!
- Can be used on sub micro and micro servos.
- Hardware and instruction are included.
- Accurately CNC machined in our facility

MD CF Wheel Pants Set - (PA Item #AC-1911)

Stiffer than fiberglass these carbon fiber wheel pants gives your model the final touch of PA **FiberFusion® and last longer.**

High polished finish.