

ARF MODEL

Super Chipmunk 20-30CC Manual

Instruction Manual



Dear Customer,

Thank you for purchasing this excellent almost-ready to fly R/C model. This plane is to be powered by 20-30CC gas engine. It can also be flid by electric motor. Its weight is about 12Lbs. It's a beautiful plane with amazing flight performance. It's covered with genuine monocote, and comes with good quality accessories. We hope you like this plane.

A QUICK WORD ABOUT SAFETY AND RADIO CONTROL

FLYING MODELS

With radio control aircraft, like any hobby or sport, there are certain risks. The operator of these models is responsible for these risks. If misused or abused, you may cause serious bodily injury and/or damage to property. With this in mind, you will want to be certain that you build your model carefully and correctly. If you are not an experienced flier, have your work checked and ask for help in learning to fly safely. **This model aircraft is not a toy** and must be operated and flown in a safe manner at all times. Always perform a pre-flight check of the model including all control surfaces, proper function of the radio gear, structure, radio range, and any other area relating to the safe operation of this aircraft.

Models are not insurable but operators are. You can obtain coverage through membership in the Academy of Model Aeronautics (AMA). For an AMA information package call 1-800-435-9262, ext. 292 or visit the AMA website at "www.modelaircraft.org".

By the act of using the final assembled model, the purchaser/operator accepts all resulting liability.

ARF MODELS WARRANTY AND RETURN POLICY

We guarantee that the plane is in perfect condition at purchase. The warranty will be voided after modifications and usages. If you have any questions or find any issues, please contact the distributors in your area.

SPECIFICATIONS

Wing Span: 80"(2035mm)

Length: 69"(1750mm)

Wing Area: 1073sq in(69.2sq .dm.)

Flying Weight: 11-13.5lbs(5000-6100g)

Engine: .70-.91 (2C) .91-.110 (4C) 20-30cc gas

Electric Power:

KUZA EXM4130-370KV with 8S 3700-4400 mAh 18x10 prop

KUZA EXM5420-310KV with 8S 3700-4400 mAh 18x10 prop

Hacker A50-16S with 6S 3800-4400mAh 18x8 prop

DUSKY XM5060EA-470KV with 6S 4000-5000 mAh 17x8 prop

DUSKY XM6350EA-280KV with 8S 3700-4400 mAh 18x8 prop

Or other 1500-2000Watt electric motor

ESC: 80-100A

RADIO:4CH/5-6S

Features:

New Fiberglass horn assembly



High quality 2.5mm ball links assemblies



High-quality 3in nylon spinner included.



High-quality durable rubber wheels



Flat nylon hinges for increased strength



Servo extension safety connector clips



High performance cap head screws



Honeycomb Board carton packing for safer transportation



Scheme A white/ red / blue



Scheme B white/ red /blue





Items Required to Complete This Model:

- 1500-2000Watt electric Motor or 20-30CC Gas
- Appropriate propeller for your Motor
- All required engine and exhaust mounting hardware
- Ignition battery and switch
- One quality throttle servo and appropriate servo arm
- 5-6Pcs high quality metal gear servos or better for the ailerons and elevators
- Appropriate servo arms for the above
- Servo wire extensions. Recommends four 24", two 12" extensions.
- Two switches with charging jacks for the Rx
- Two high quality Rx batteries of significant capacity to power your choice of servos.
- One Receiver of your choice

Shop Supplies/Tools

- Covering Iron and heat gun
- Assortment normal hobby tools such as screwdrivers, hobby knife, drill and drill bits, pliers, etc.
- Thick and Thin CA adhesives
- 30 minute Epoxy
- Isopropyl alcohol
- Ruler or tape measure
- Blue thread-lock or equivalent
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Note: As with all kits, it's a good idea to read all the instructions and study the parts before you begin construction. Handle the parts of this kit with care so you do not damage any of the structure or covering. Inspect all the parts for any shipping damage and report any issues to as soon as you can. Make sure you have a flat and sturdy workbench and follow all safety advice for the tools and adhesives you plan to use.

AIRCRAFT COVERING

1. With all ARFs, varying temperatures and storage delays can cause covering material to loosen over time and transportation. recommends lightly going over all the covering with a covering iron set at medium temperatures. Be sure to use a soft cover over your iron so you do not scratch the covering surface. Be sure you go over all seams and edges of the covering to assure it is secure to the airframe and other covering. Be careful not to apply too much heat or you may cause bubbles or damage to the covering. A heat gun may also be used along with a soft cotton cloth to shrink and adhere the covering. Again, be extremely careful when using a heat gun.
2. Be sure to seal any exposed wood with a thin coating of epoxy to prevent engine oil from soaking in. This is especially important around the engine compartment and servo openings with exposed areas.
3. Some modelers prefer to seal the hinge gaps using strips of appropriate covering or clear trim tape. We have found this to be helpful with models intended for higher speed flight or models with unusually large hinge gaps. aircraft utilize a very tight double beveled hinge line and do not normally require this step. Sealing the hinge gaps is therefore left as an option for the modeler.



Please verify the accessories before assemble:

Fiber glass servo horns: 4 single horns for ailerons and elevator. 1 dual horns for rudder.



There is a layer of protection film on the horns. Please remove the film as shown following picture.



Make sure to sand the horns so the surface is rough to glue correctly.



Pushrods: Two 2.5x60mm for aileron. Two 2.5x110mm for elevator.



Pull-pull setup for the rudder.



Ball links: 8 for aileron and elevator.



5 Servo extension safety connector clips



Main rubber wheels: 2PCS



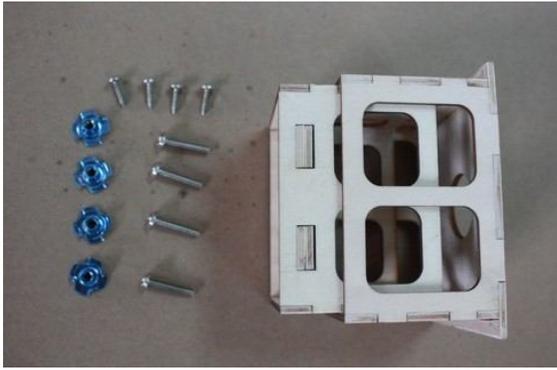
6061 Aluminum tail wheel assembly.



3in nylon spinner



Motor mount for brushless motor



Engine mount for nitro or 20CC gas engine



Screws for cowl: 4(3x12mm) tapping screws



Nylon bolts for wing: 2(6x40mm) bolts



Wing Assembly

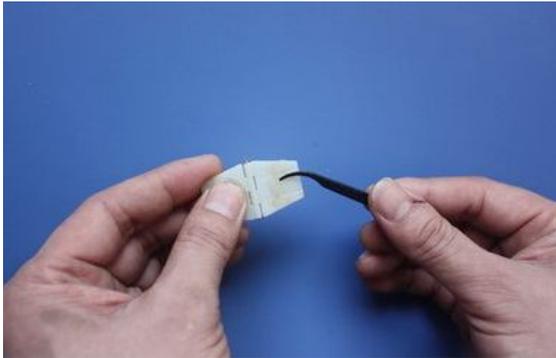
1. It is much easier to install the twin control horns before installing the wing. Locate the fiberglass aileron control horns, ball links, and associated bolts and nylon-insert lock nuts. Use some fine sandpaper to roughen up the center areas of the two control horns so that the glue adheres better. Using a sharp hobby knife cut the covering away from the slots in the rudder and trial fit the control horn.
2. Mix up some 30 minute epoxy and coat the inside of the slots and the center of the control horns. Hint: a scrap piece of 1/16" ply, tooth pick, or old hobby blade can be used to coat the inside of the aileron slots. Slide the control horns in place and make sure they are centered perfectly by using a ruler to measure between the pivot holes and the hinge line. Wipe any excess glue off with isopropyl alcohol and paper towels. Install the ball links, bolts and nuts into the holes to help assure alignment of both control horns while the glue cures. Set aside until cured.



3. The slots for the supplied hinges are pre cut. Locate the hinges and dry fit the hinges and aileron into place and test the operation. The hinges should seat fully into the slots so that the hinge line gap is minimal while still allowing full aileron deflection.
4. Before gluing the hinges in you must first clean the hinges of any mold release agent using isopropyl alcohol. We also recommend scuffing up the plastic with light sandpaper for maximum glue adhesion.
5. Mix up some 30 minute epoxy and using a toothpick or small wooden dowel coat the inside of each hinge slot with epoxy. Also put a thin layer of epoxy on one side of the hinges. Install this end into the slots of the rudder and make sure each hinge is properly aligned at exactly 90 degrees to the hinge line.

6. Now coat the other end of the hinges with epoxy and install the aileron into the trailing edge of the wing. Again, make sure the hinges remain in proper alignment. Using paper towels and some isopropyl alcohol clean off any excess epoxy from the hinges and surrounding areas.

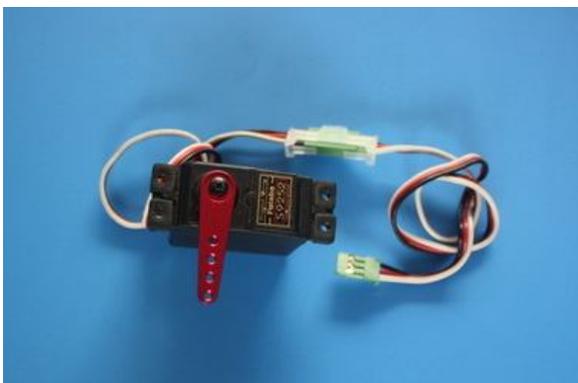
7. Make sure the aileron is fully seated so that the hinge gap is minimal while still allowing full deflection of the aileron. When satisfied, use some masking tape to hold the aileron in place along the bottom and counterbalance. After the epoxy has cured, remove the masking tape and check for proper operation. If the hinges are stiff some light oil carefully placed on each hinge will help greatly.



8. Cut the covering from the aileron servo openings from corner to corner and iron down inside the openings. Connect servo wire extensions to your servos and secure the connections with the supplied clips, your own clips, or tape. Feed the servo wires into the wing and out the root. Install the servos and screw firmly in place.

9. Use your radio to set the centers of each servo and then assemble and adjust the length of each control rod. The servo arm should be as close to perpendicular to the control rod as possible while the aileron is at neutral. Double check all screws, bolts and nuts to assure proper installation and operation without binding. Once satisfied, permanently attach the ball link to the servo arm with the supplied screw and nut.

10. Check the final radio operation of the ailerons and make sure there is no binding or servo fighting of each other. Also check to make sure all linkage bolts and nuts are secure.





Assemble Canopy

Assemble the PVC board to the fuselage. Fix the windshield with the 2X12mm self-tapping screws.



Elevator Assembly

1. Cut the covering over the hole for elevator on the fuselage. Glue the elevator to the fuselage. Making sure it's centered.



2, Glue the hinge for the elevator the same way as the main wings.



3. Glue the reinforcement plate for the horn to the elevator. Use your radio to set the servo center position and install the large control horn onto the servo. Assemble the control rod and ball links and adjust the control linkage for proper geometry. When satisfied, screw the ball link to the servo arm. The servo arm should be as close to perpendicular to the control rod as possible while the elevator is at neutral. Double check all screws, bolts and nuts to assure proper installation and operation without binding.



5. To install the horizontal stabilizers you first need to install two 24" servo wire extensions in the fuselage so that they extend from the radio compartment to the rear openings.

Tail Wheel Installation



1. Install the collars and wheel.



2. Install the wire through the hole on the fuselage. Drill three 2mm holes. Fix the Tail wheel bracket with three 3x12mm self-threading screws.



Rudder Assembly

1. Drill a 2.5mm hole on the rudder. Bend the tail wheel wire 90 degrees, and glue it to the 2.5mm hole on the rudder.



2. Fix the rudder to the fuselage with glue. Fix the hinges.



3. Install the fiberglass control horns in the same way as you did the elevator horns.



4. The Chipmunk is supplied with a high quality set of pull-pull cables and ball-links.



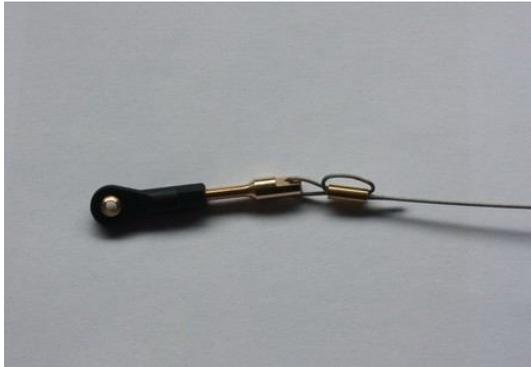
5. Locate the pull-pull cable set, threaded couplers, brass swaging tubes, and ball-links. If the cable is one long piece, cut it into two equal length pieces. Thread one end of the one cable through a brass tube and then through one of the threaded couplers. Run the cable back through the brass tube and then loop it back through a second time. Using a set of crimping pliers, place three crimps just tight enough not to cut the brass tube but enough to securely hold the wire in place. Cut off the excess cable with wire cutters. Wick thin CA into the brass tube to help hold the cable secure. Repeat for the other cable.

6. Thread the couplers about half way into the ball links of the rudder. Hint: remove the ball links from the rudder horn first to make this step easier and then re-install once the couplers are threaded on. Feed the loose end of each cable into the cable slots at the rear of the fuselage and feed them forward towards the servo mount location. A coat hanger with a hook on the end can be useful here if you can't reach the cable.

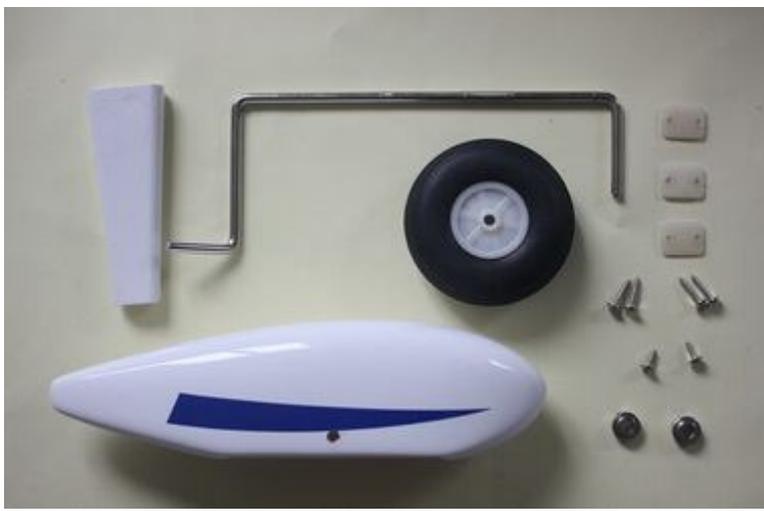
7. Use your radio system to center the rudder servo and attach either the supplied arm or an appropriate arm for your servo. Thread one of the ball links about half way onto one of the threaded couplers. Feed the loose end of one of the cables through a brass tube and then through the threaded coupler. Holding the rudder centered, adjust the cable length as tight as possible while checking the ball link position over the servo arm. When satisfied with the position, pinch the cable around the threaded coupler and then feed the loose end back through the brass tube. Loop the cable back through the brass tube as before and crimp the brass tube three times just tight enough not to cut the brass tube but enough to securely hold

the wire in place. Cut off the excess cable with wire cutters. Wick thin CA into the brass tube to help hold the cable secure. Repeat for the other cable. Hint: Once you have established the position of the threaded coupler on the cable, you can remove the ball link from the rudder horn to give you more working slack in the fuselage. Re-install the ball link prior to setting the other cable.

8. Check the operation of the rudder using your radio and make sure there is no binding and the cables are adjusted properly. You may have to tighten the cables after a few flights as they may stretch slightly from the initial installation.



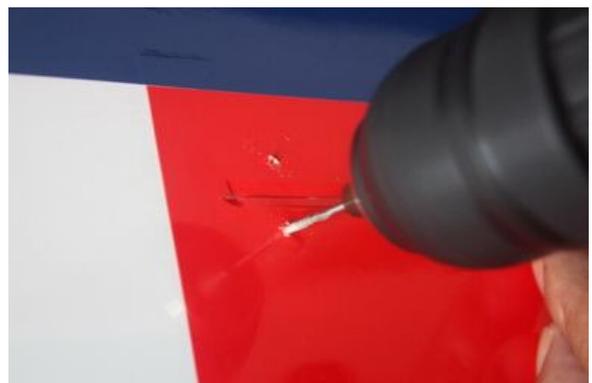
Main Landing Gear Installation



1. Drill a 6mm hole on the side of the wheel pants with the blue mark. Install the wheel pants, collar, wheel on the wire. Drill two 2mm holes. Fix the wire with the Nylon cover. Secure the Nylon cover with 3x12mm screws.



2. Locate the place on the main wing to install landing gear. Cut the covering with knife. Drill four 2mm holes. Fix the landing gear wire with Nylon covers. Secure the Nylon cover with the 3x16mm screws.





3. Glue the balsa block to the wire with AB glue.



ENGINE (Motor) , EXHAUST, & FUEL SYSTEM

ENGINE Installation

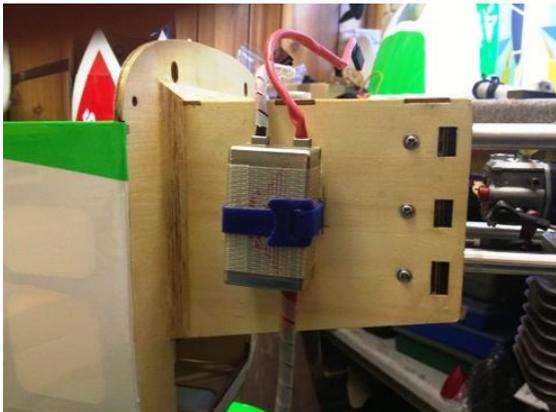
1. Select the proper guide for your engine and drill the holes and cut out the center as indicated. Notice that the engine center line is offset to the left to compensate for the right thrust built into the engine box.



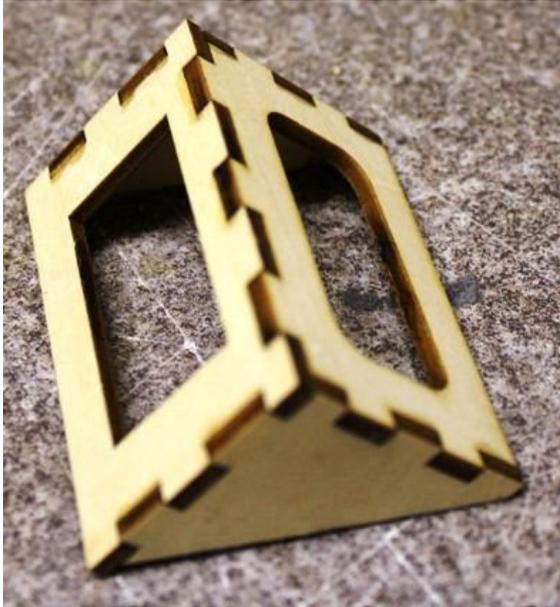
2. Fit the Cowl and measure the distance from the engine bulkhead to the front of the cowl, add approx 2-3mm for the back plate and this is the length that your engine should be set. Using the correct length stand offs, mount your engine securely using bolts, washers, and locknuts. The use of thread-lock is also highly essential for the engine bolts.



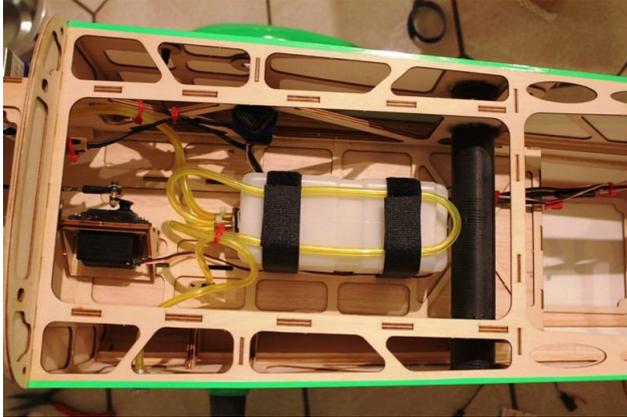
3. Mount the ignition module according to the manufacturer's instructions. The best place to mount it is on the side of the engine box. Secure the pickup lead and ignition wires with zip ties so that they do not vibrate or touch any hot part of the engine or exhaust.



4. Assemble the throttle servo mount using the supplied laser cut parts or there is a servo cutout in the bottom of the engine box for 20cc-30cc engines. Mount your throttle servo and complete your linkage setup. A hole will need to be drilled on the firewall to allow the pushrod to connect to the throttle arm on the carb.

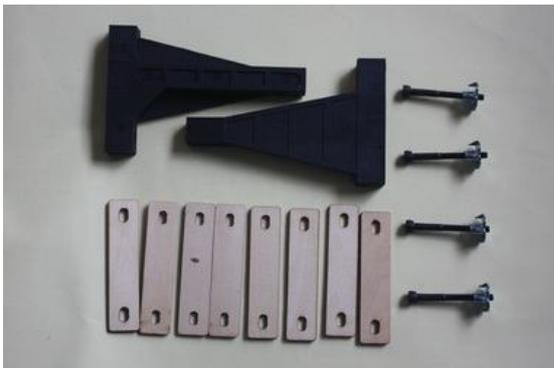


5. An extra servo can be fitted for choke or a mechanical linkage can be used.
6. The fuel tank is preassembled. Complete the installation in the fuselage using zip ties or velcro straps to hold the tank in position. Connect a fuel line between the tank and carb, a fuel line between the tank vent and the bottom of the fuselage, and a fill line to a fueling port which can be mounted on the fuselage side opposite your ignition switch. Make sure your vent line does not come close to any hot exhaust part such as the muffler or canister. recommends the use of small zip ties or fuel line clamps to secure the lines to the tank.



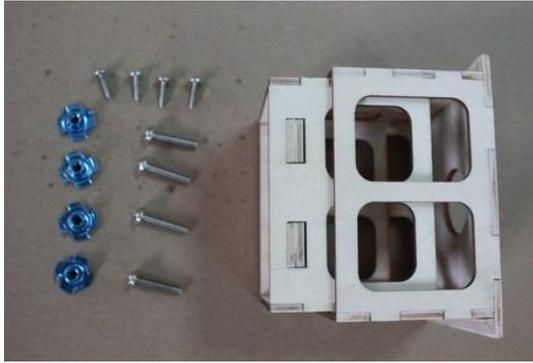
A barb on the bottom of the fuselage can be fitted for the vent.

If you use 20CC gas engine or glow engine, use the following engine mount.

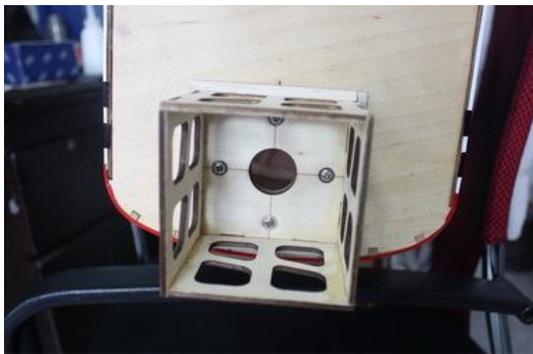


Motor Installation

1. The Chipmunk can also be flown with a brushless motor.
2. If you use brushless motor, there is an adjustable motor mount in the package.

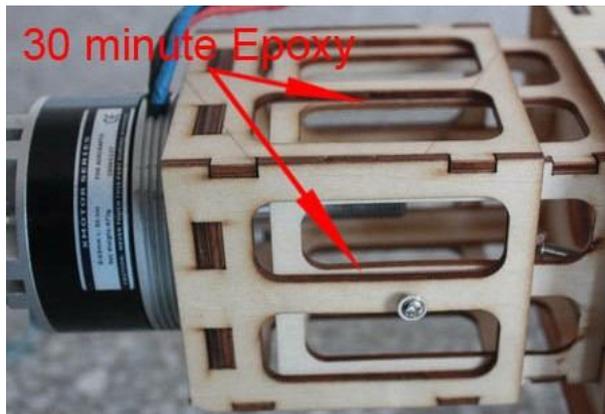


2. First install the motor mount on the firewall. Then install the motor. Adjust the motor mount to fit the cowl.

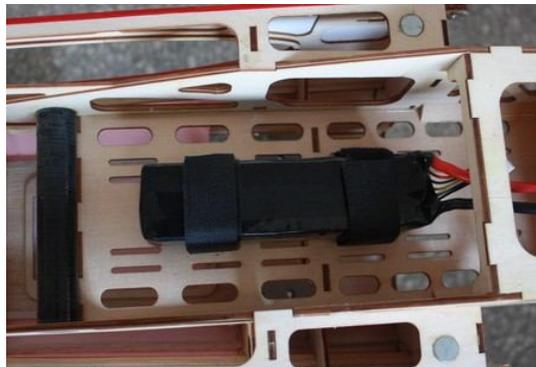


4. After adjusting the motor mount to the right position, lock the 4 screws, unscrew them, apply 30-minute epoxy, and tighten the screws to the previously-found position.





5. Fix the battery with Velcro.



Cowling Installation

NOTE: There are pictures of different planes in this manual, however, this plane's wings is assembled the same way.

1. Test fit the cowl first, make sure it fits well with fuselage.



2. Drill 2mm holes on cowl and fuselage.



3. Enlarge the holes on cowl with 3mm drill bit.



4. Secure the cowl with 3X12mm self-threading screws.



Install The Main Wings before flying

1. Glue the hardwood block to the 2 main wings.



2. Cut the covering on the wings at the location for the screws. Glue the reinforcement block with AB glue.



3. At each flight, fix the wing to the fuselage with the two 6x40mm Nylon screws.



FINAL RADIO SYSTEM INSTALLATION

1. Whether you 72 MHz systems or the newer 2.4 GHz systems, proper radio installation and care is vital to the safe and reliable operation of your aircraft. Follow the manufacturer's instruction for installation guidance of receivers and batteries paying attention to factors such as vibration isolation, adequate cooling, and clearances.
2. Mount your receiver(s) securely in a location which provides a clean and maintenance free solution to your setup. All servo wires should be neatly routed and secured in place so they will not come loose or flop around during flight.
3. The fuselage ply sides provide space to mount your switches just below the canopy. Mount your switches according to the manufacturer's instructions and route your wires safely and securely as above.
4. Your receiver battery(s) can be mounted in a variety of locations depending on your balance needs. Regardless of where you mount your batteries it is vital that they are very secure with no possibility of coming loose. Use double sided velcro to hold the batteries from sliding around and then use zip ties or velcro straps to secure them tightly in place.
5. Servo and battery leads are the life blood of your aircraft. Make sure all wires are top quality and connectors are tight and display no loose pins or frayed wires. Servo clips are provided in the kit for your convenience. These servo clips can even be glued to the wood structure using CA if desired.
6. Check all radio programming and control surface operations thoroughly before your initial flight. Check your radio range according to the radio manufacturer's instructions both with the engine off and running.

BALANCING and PRE-FLIGHT

1. Most state of the art aerobatic aircraft allow for a wide margin for balancing depending on what level of precision or freestyle the pilot prefers. To perform properly without being too pitch sensitive, you must not go too aft on the CG. **We recommends an initial CG setting of 110-120mm(4.3-4.7inches) behind the leading edge of the wing at the root.** More experienced pilots may want to set the CG further aft for more 3D

capability. Varying weights of engines and radio gear will dictate how you should install each. The batteries can easily be located pretty much anywhere in the fuselage.

Note: The best way to check your balance is to trim for level flight at about 1/2 to 3/4 throttle and then roll inverted. The aircraft should maintain level flight with very little to no down elevator input. If the aircraft climbs when inverted then you've probably got your CG too far aft. If the nose drops more than slightly, then you are most likely nose heavy.

Recommended control surface deflections:

	Low Rate	High Rate
Elevator	15 degrees	30-40 degrees
Rudder	20 degrees	30-40 degrees
Ailerons	15 degrees	30-40 degrees

FINAL ASSEMBLY AND PRE-FLIGHT INSPECTIONS

1. Before arriving at your flying field, be sure all your batteries are properly charged and all radio systems are in proper working order.
2. Install the wings onto the fuselage being careful to align the wing tube with the wings and not force it. The wing tube may be initially tight but will loosen some with use. Guide your servo wires into the fuselage openings and connect to the proper aileron channels. Servo clips are recommended. Once you have the wings fully seated in the fuselage tighten the wing bolts inside the fuselage.
3. Fill your fuel tank making sure your vent line is not plugged or capped. With the canopy off, this is a good time to check for any fuel leaks.
4. If you have removed your horizontal stabilizers, install them once again and check all bolts and connections.
5. Check all control surfaces for secure hinges by performed a slight tug on the control surfaces and observing if there is any give in the hinges. Check all control rods, ball links, servo screws, etc. for proper operation and installation.
6. Check your batteries and perform a proper range check once again with the engine off and running. Be sure all surfaces are moving in the correct direction and the proper amount for your flying setup.

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