



Perfect Appearance Excellent Performance
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ALPHA

OPERATING MANUAL



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WARNING!

 **WARNING:** Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product and NOT a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision.

This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in this manual prior to assembly, setup, or use, in order to operate correctly and avoid damage or serious injury.

Safety Precautions and Warnings

As the user of this product, you are solely responsible for operating in a manner that does not endanger yourself and others or result in damage to the product or the property of others. This model is controlled by a radio signal subject to interference from many sources outside your control. This interference can cause momentary loss of control so it is advisable to always keep a safe distance in all directions around your model, as this margin will help avoid collisions or injury.

Age Recommendation: Not for children under 14 years. This is not a toy.

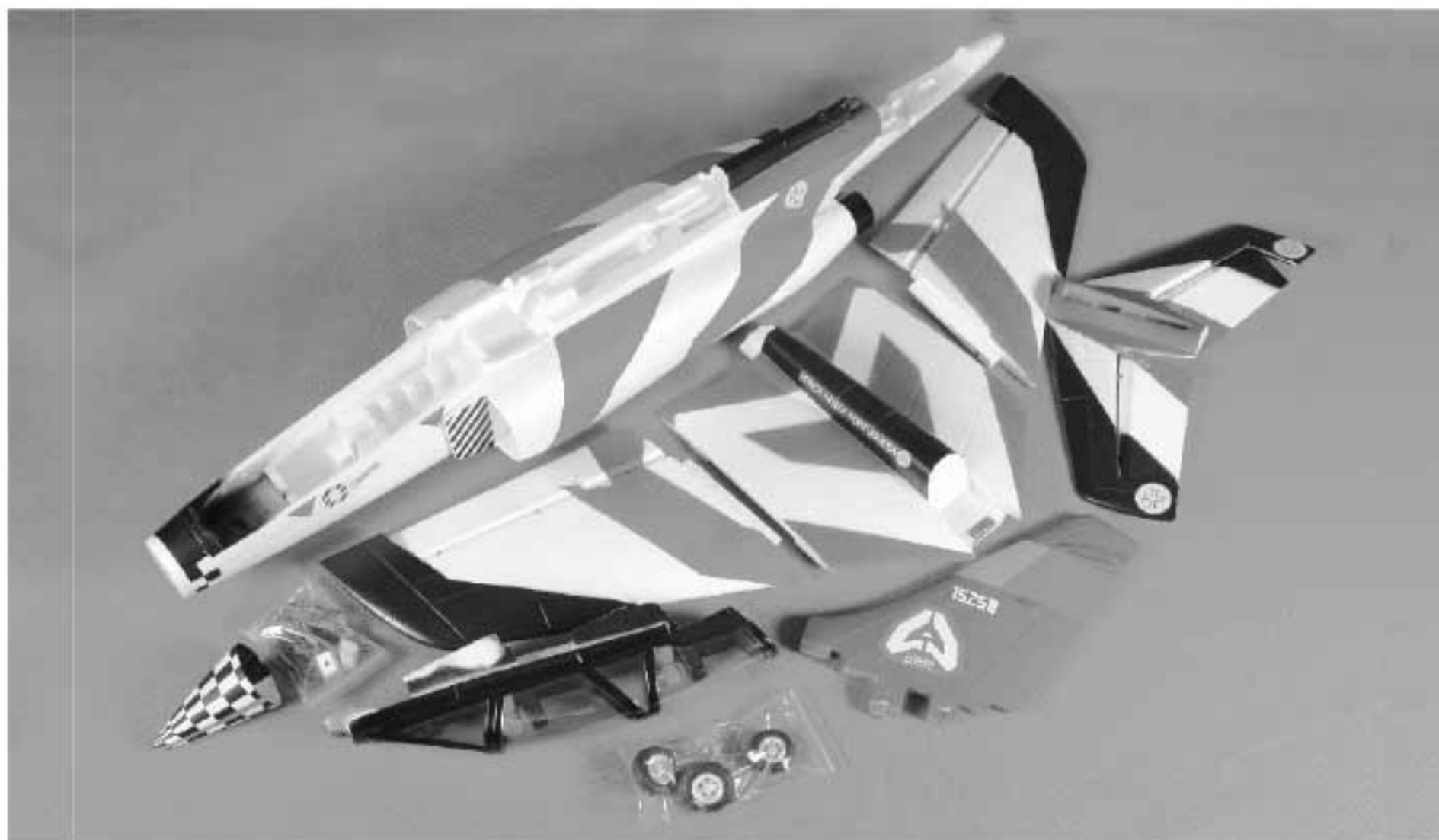
- Never operate your model with low transmitter batteries.
- Always operate your model in an open area away from cars, traffic or people.
- Avoid operating your model in the street where injury or damage can occur.
- Never operate the model in the street or in populated areas for any reason.
- Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) you use.
- Keep all chemicals, small parts and anything electrical out of the reach of children.
- Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose.
- Never lick or place any portion of your model in your mouth as it could cause serious injury or even death.



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Kit contents



Kit contents

1. The fuselage assembly (With the motor, the canopy, the electronic parts, ESC)
2. Rudder (With hinges installed)
3. Horizontal stabilizer
4. Landing gear set
5. Propeller and spinner
6. Spare parts bag
7. Main wing tube and the tail wing tube

The spare parts list

Replacement parts for the **FMS ALPHA** are available using the order numbers in the Spare parts list that follows. The fastest, most economical service can be provided by your hobby dealer or mail-order company.

Spare parts list content

Spare parts list content

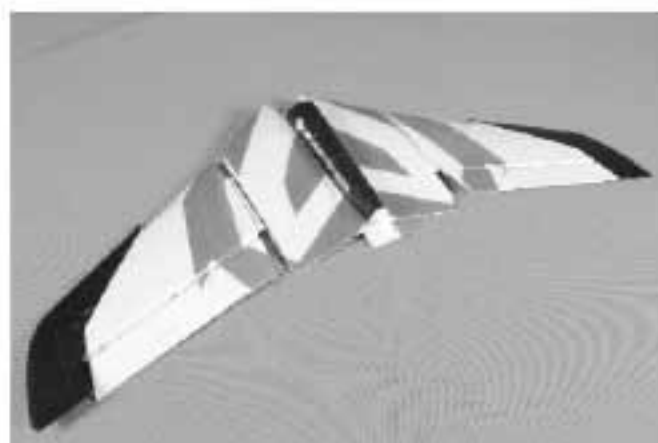
- FA 101 Fuselage (With all the plastic parts and rudder installed)
- FA 102 Main wing set (With the control horn in stored)
- FA 103 Vertical stabilizer
- FA 104 Horizontal stabilizer (With the elevator connector installed)
- FA 105 Fuel tanks
- FA 301 Landing gear set (The main and front landing gear)
- FA 302 Ducted fan (70mm:The fan tube and the rotor)
- FA 303 Decal sheet

FA 304 Nose cone
 FA 305 plastic Canopy cover
 FA 306 Foam canopy
 FMS-Motor (2848 Kv3000)
 FMS-ESC 70A with 5A SBEC
 FMS-Servo 9g

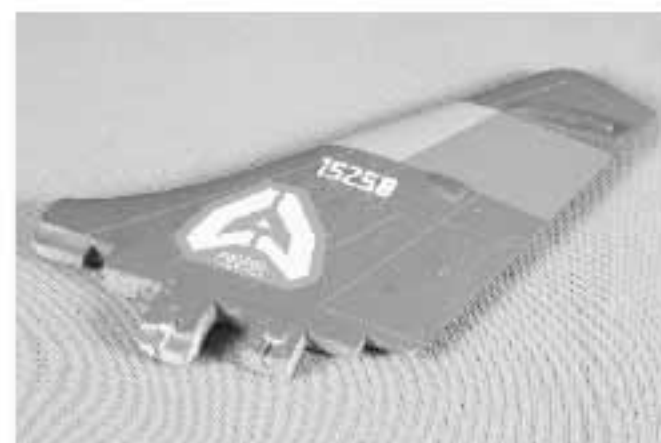
The illustration of the spare parts



FA 101



FA 102



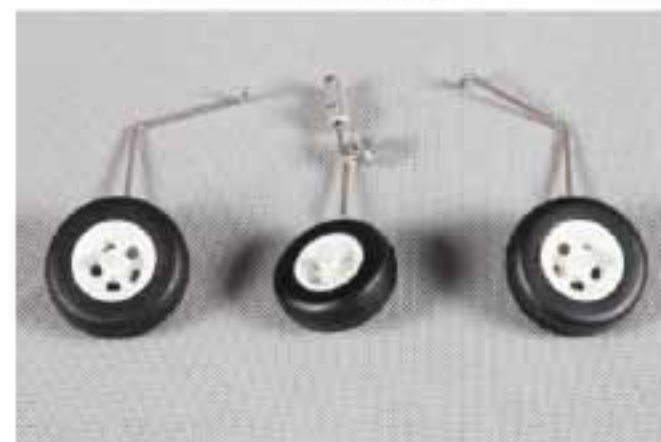
FA 103



FA 104



FA 105



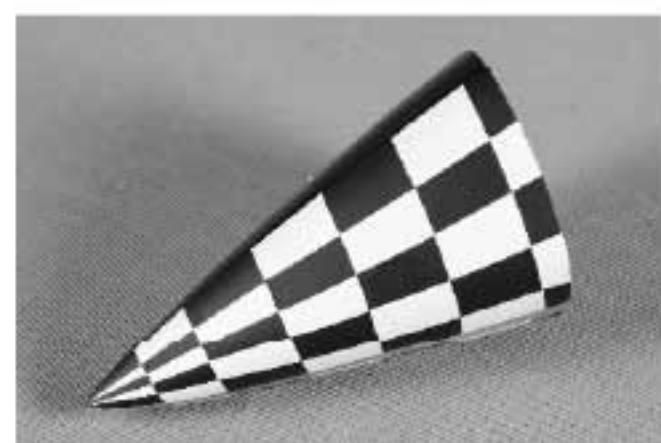
FA 301



FA 302



FA 303



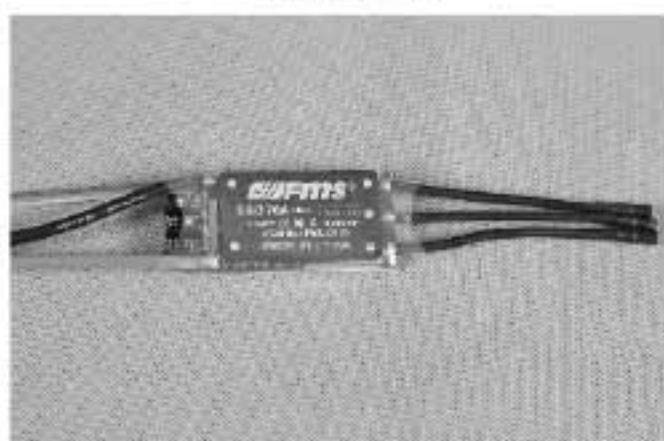
FA 304



FA 305



FA 306



Kit inspection

Before starting to build, inspect the parts to make sure they are acceptable quality. If any parts are missing or are not in good shape or acceptable quality, or if you need assistance with setup and assembly, please feel free to contact FMSteam. Please write down the name of the parts when you are reporting defective or missing of them.

FMSteam Product Support

ADDRESS: 3/F, Building B, 3rd Industry Zone, Matigang, Dalingshan Town, Dongguan City, P.R.C

Ph: 0086-769-86976655

Charging the Flight Battery

The Battery Charger is designed to safely charge the Li-Po battery,

Caution: All instructions and warnings must be followed exactly. Mishandling of Li-Po batteries can result in fire, personal injury, or property damage.

Battery warning:

By handling, charging or using the included Li-Po battery you assume all risks associated with lithium batteries.

If at any time the batteries begin to swell, or balloon, discontinue use immediately!

Charging or discharging a swelling or ballooning battery can result in fire.

Always store the batteries at room temperature in a dry area to extend the life of the battery. Always transport or temporarily store the battery in a temperature range of 40-120°F. Do not store battery or model in a car or in direct sunlight. If stored in a hot car, the battery can be damaged or even catch fire.

Never use a Ni-Mh charger. Failure to charge the battery with a compatible charger may cause fire resulting in personal injury and property damage.

Never discharge Li-Po cells to below 3V.

Never leave charging batteries unattended.

Never charge damaged batteries.

Charging the flight battery

When charging the battery, make certain the battery is on a heat-resistant surface, charge the battery before assembly of the airplane. Install the fully charged battery to perform control tests and binding.

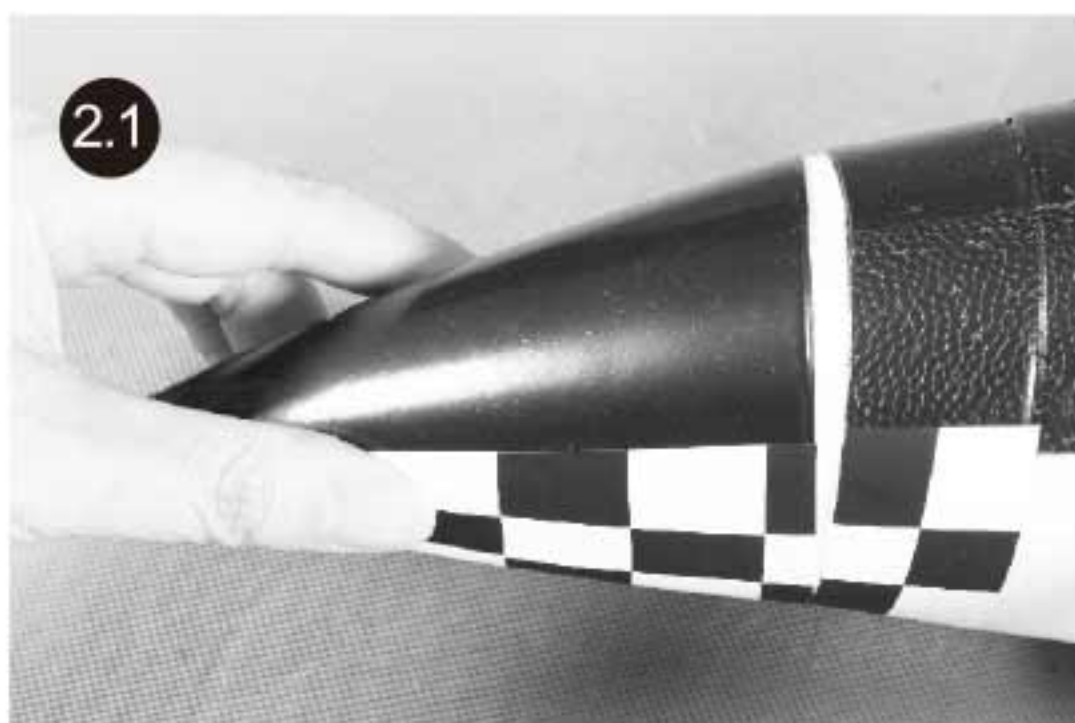
Assemble the plane

Install the nose cone

1. Apply glue on the nose cone.

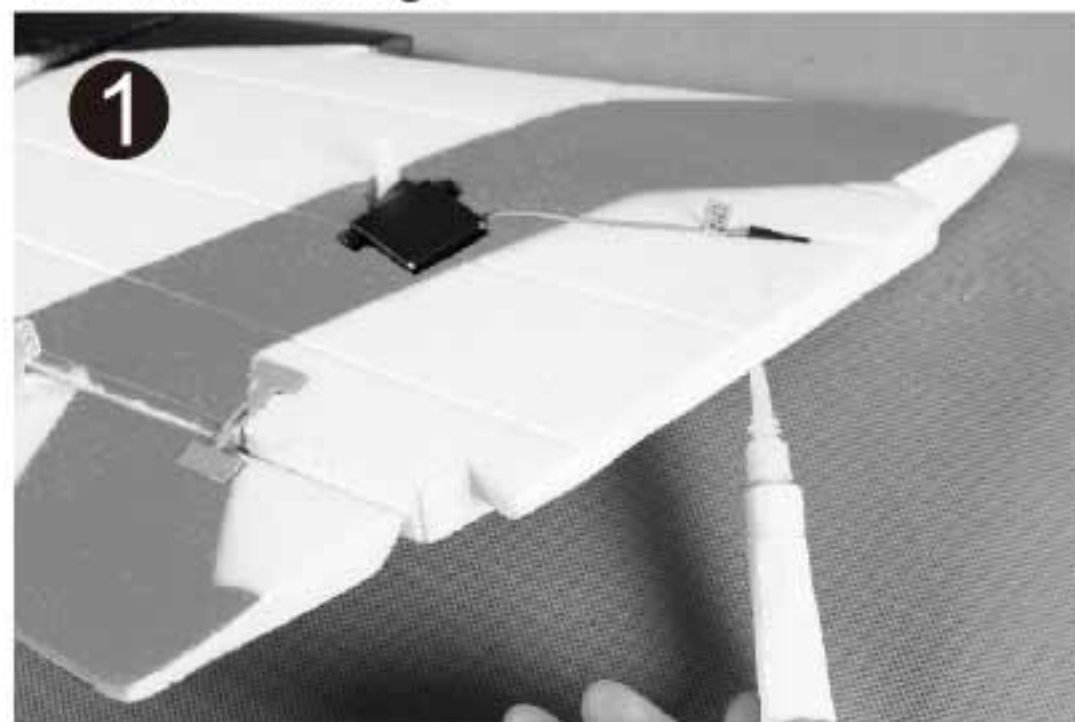


2. Install the nose cone, make sure the black & white damier decal can match the decal on fuselage.



Mount the main wing

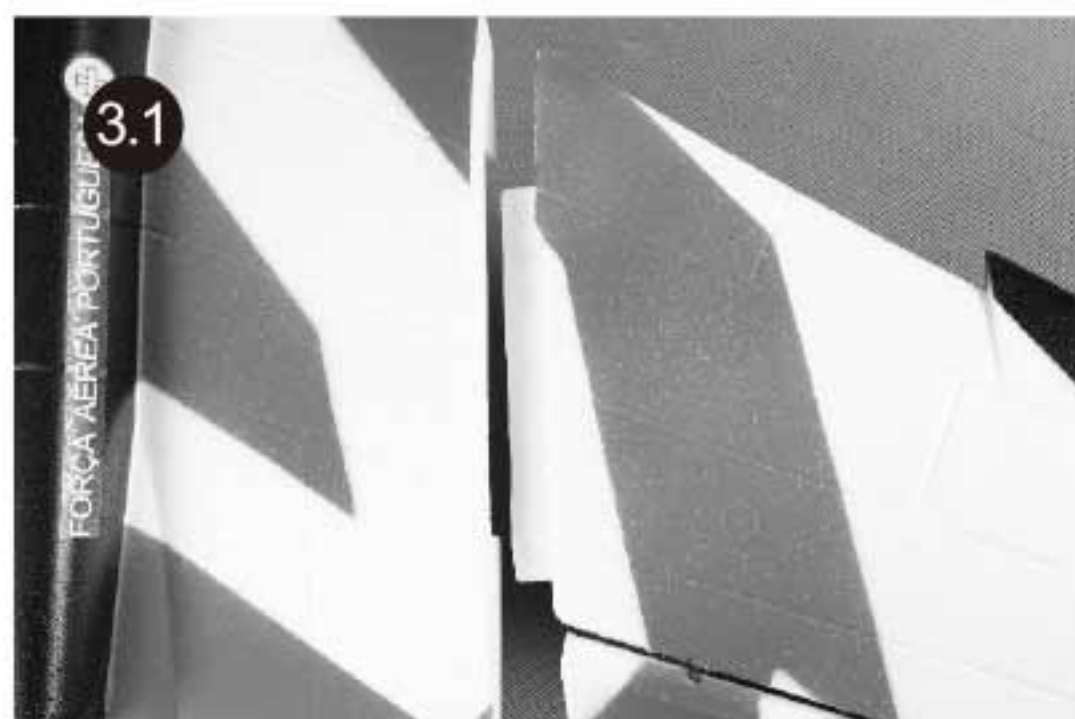
1. Apply glue on the combined side of each main wing.



2. Connect the servo wire to the both wing parts. Make sure the wires into the servo wire groove and glue a little to fix it.



3. Install the main wings, make sure the glue is 100% attached on combined side and hold the wing around two mins until the glue is dry.



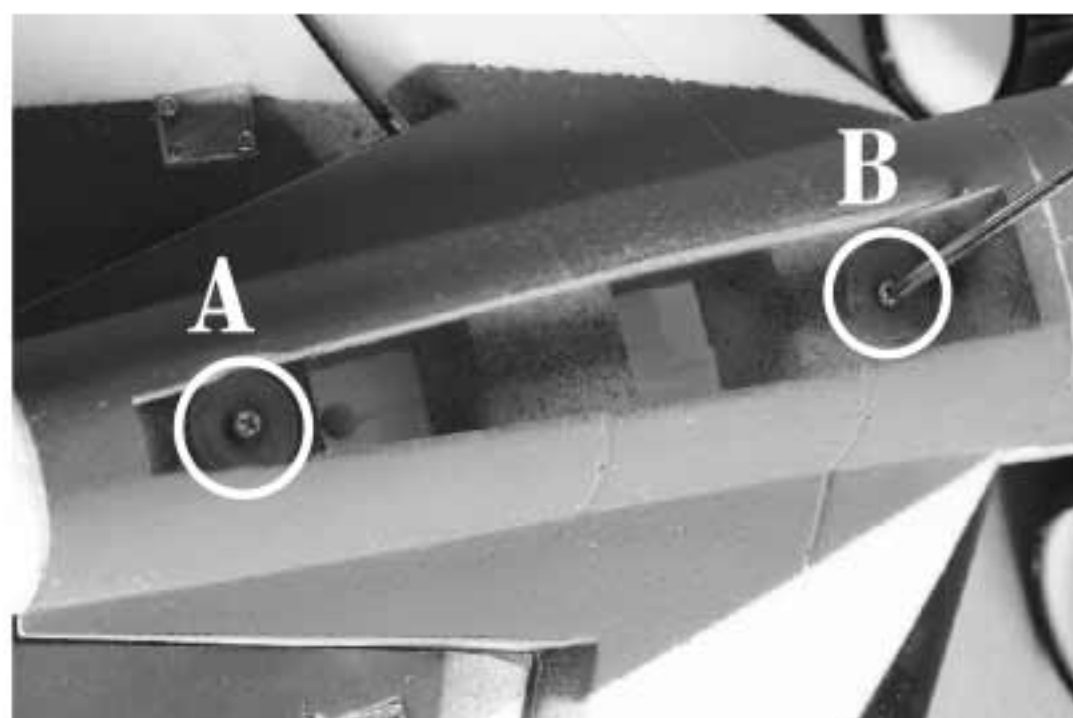
Assemble the plane

Install the control horn

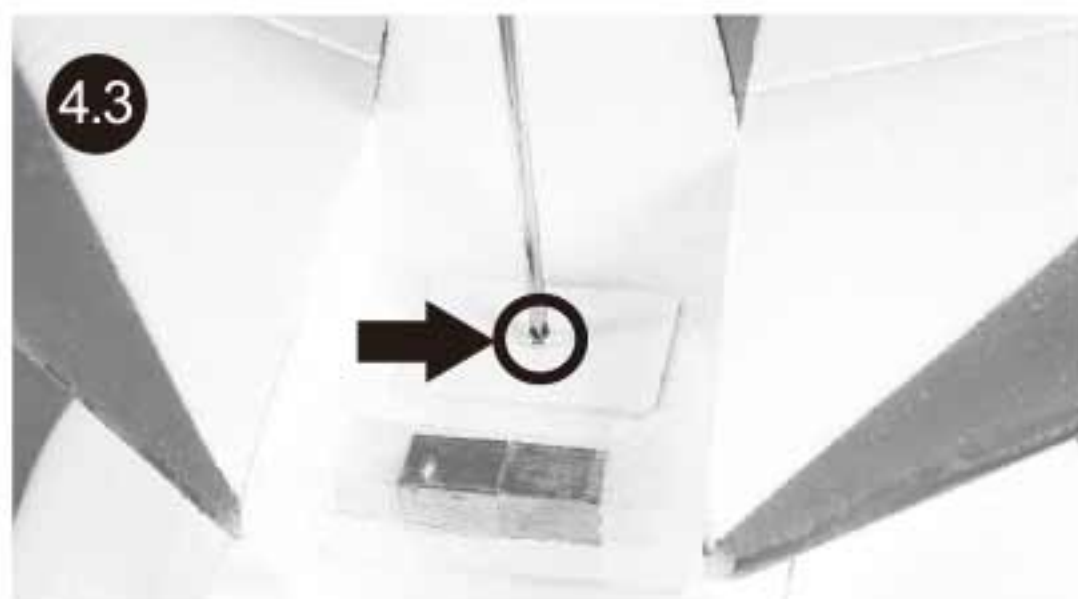
1. Attach the horizontal stabilizer first.
Mount the stabilizer into the pre-notched aft section of the fuselage with the top side face up.
Use two screws to secure it.
All of the measurements of the screws we have described in the manual has been tagged to the described spare parts bag.
Please refer to the measurements on the manual and the spare parts bag for the convenient usage.



2. Make sure the horizontal stabilizer align with the fuselage.
A (PA 2.6*25 1PC)
B (PA 2.6*35 1PC)



4. Install the main wing.
(PM3.0*45 1PC)



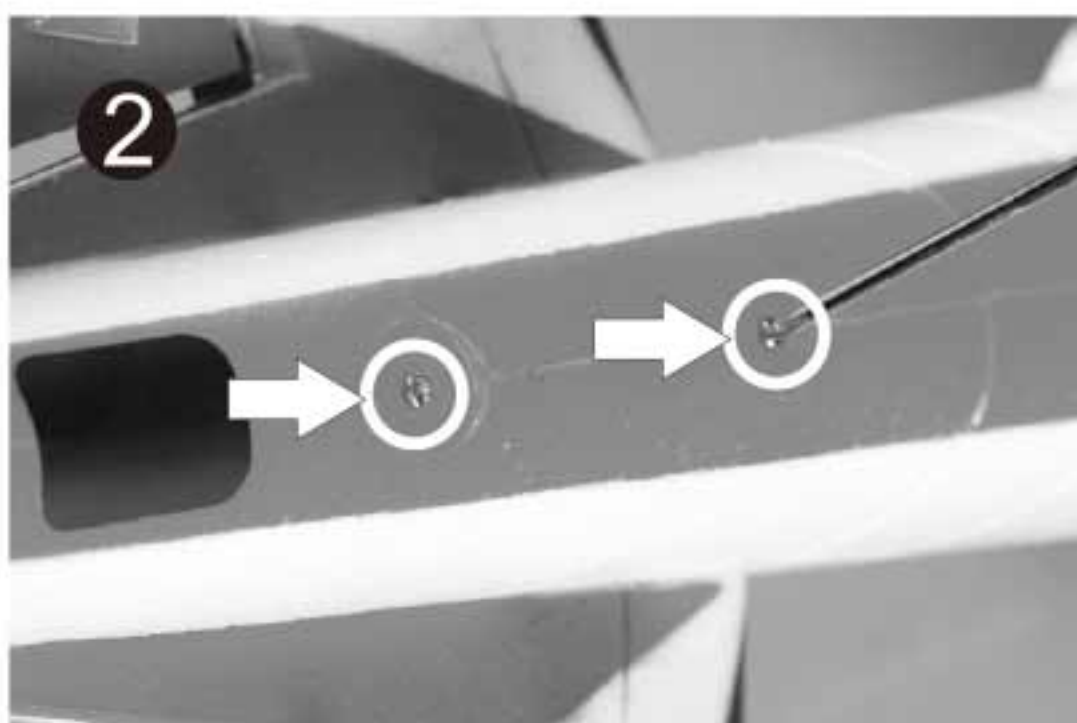
Assemble the plane

Install the vertical fin

1. Now the vertical stabilizer is ready to be mounted. gently push the stabilizer down until it is fully seated with on gaps between it and the fuselage, it fits perfectly when properly pushed down.



2. Secure the rudder using screws.
(PA 2.6*40 2PCS)
Note: Keep the bolts straight into the hole and then into the nuts.



Install the front landing gear

1. Inset the front landing gear into the aluminum socket with the machined flat toward the grub screw side. Secure the front landing gear by tightening the grub screw against the flat with the provided screw.

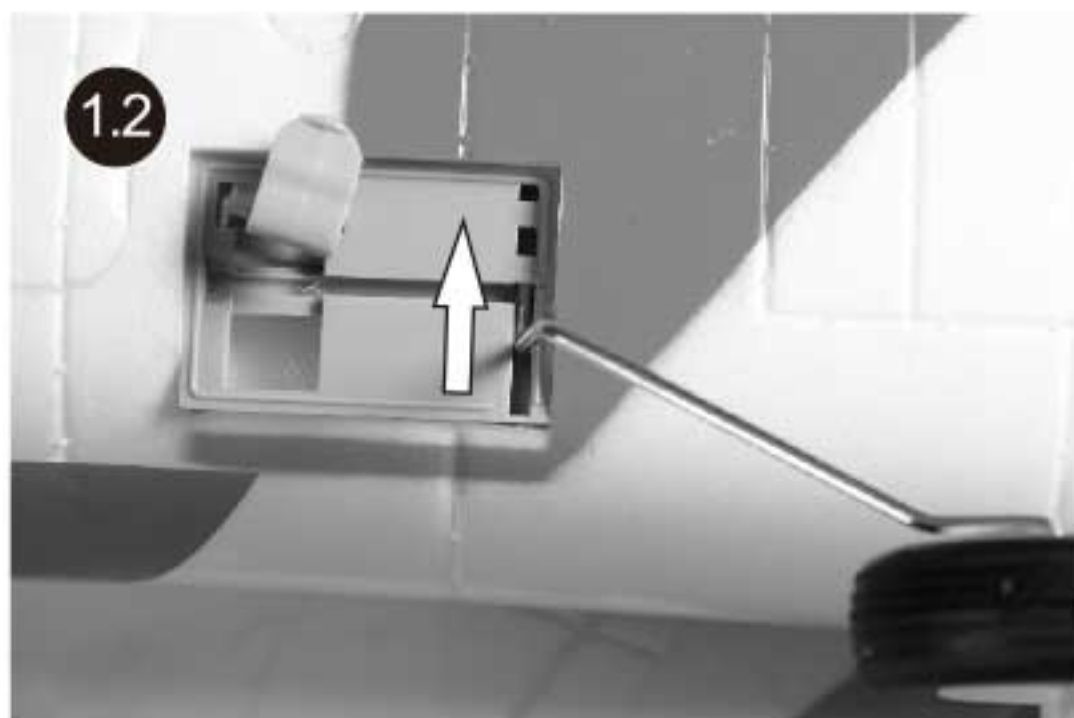


Install the main landing gear

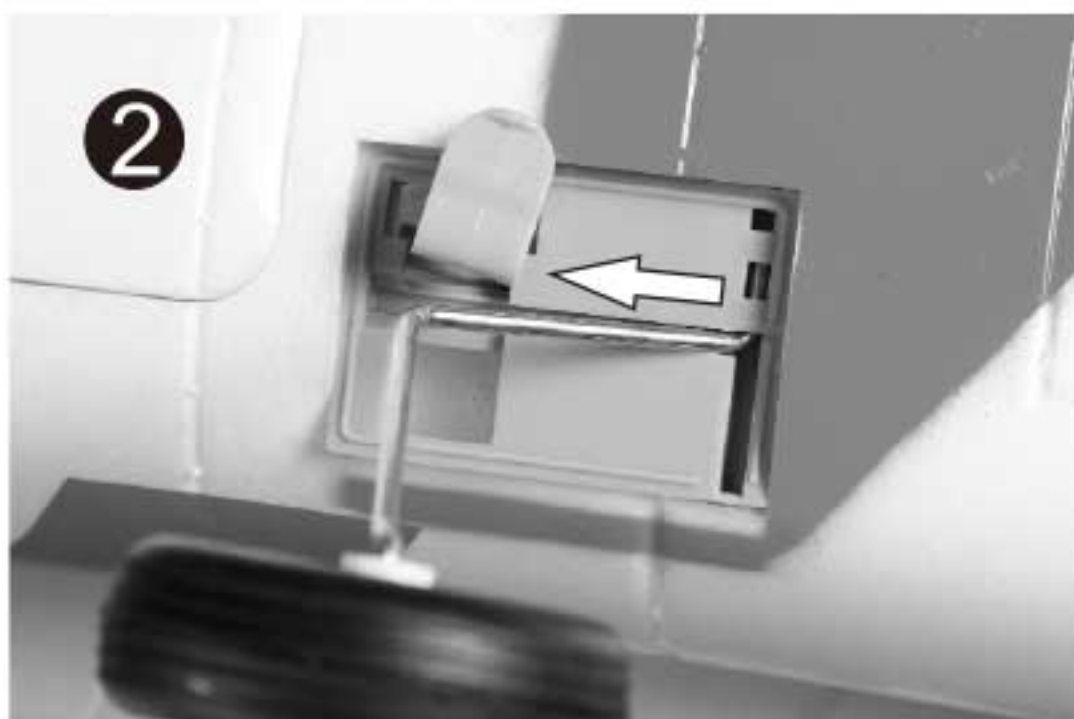
1. Install the main landing gear by fitting the gear into the gear mounting base and slide the L end of gear into the hole as the picture shows.



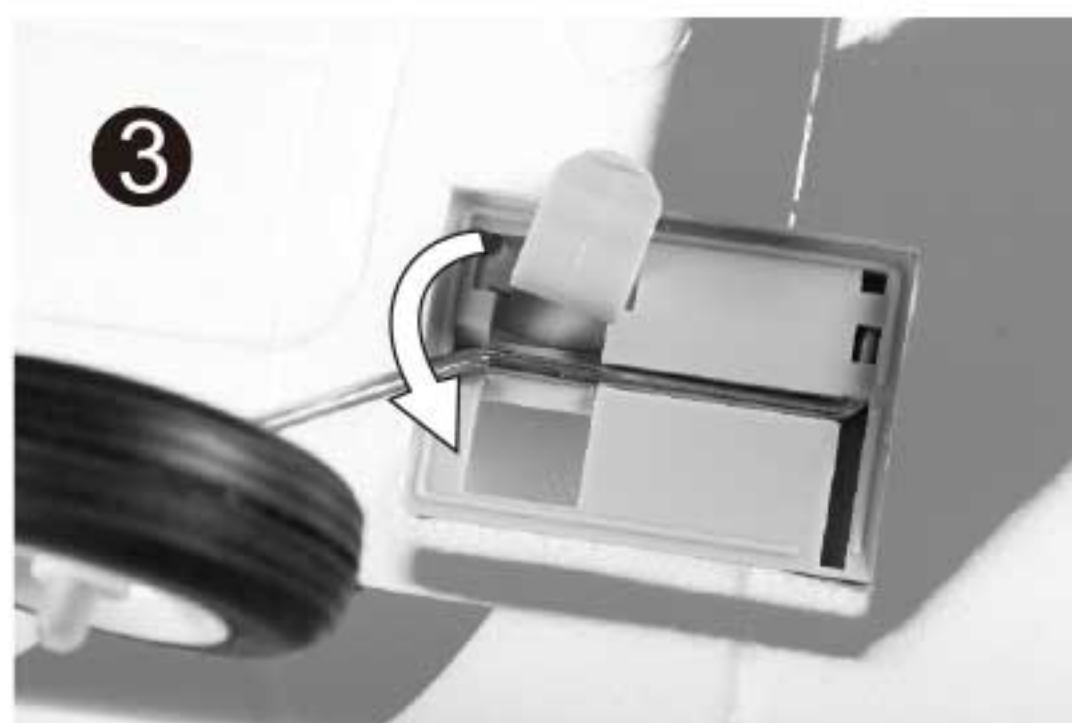
Assemble the plane



2. Rotate the gear strut and fully fit the strut into the slot.



3. Make sure the fairing plate will toward the wing tip side of the plane. If not, you have to change the other strut.



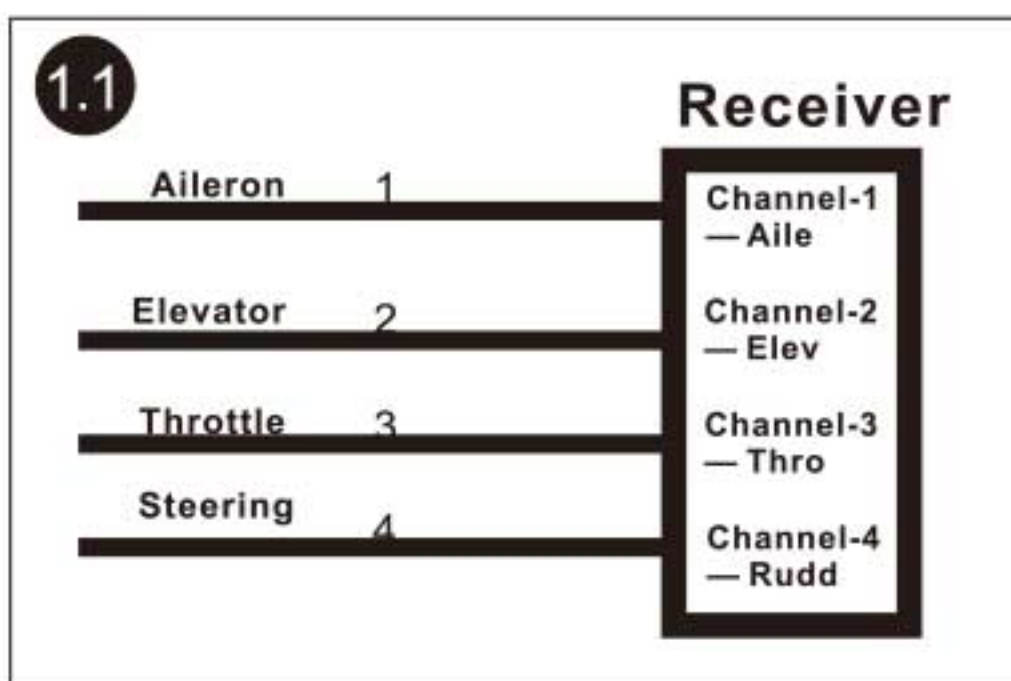
4. Snap in the button after the checking process completed, repeat the step for the other one strut installation.



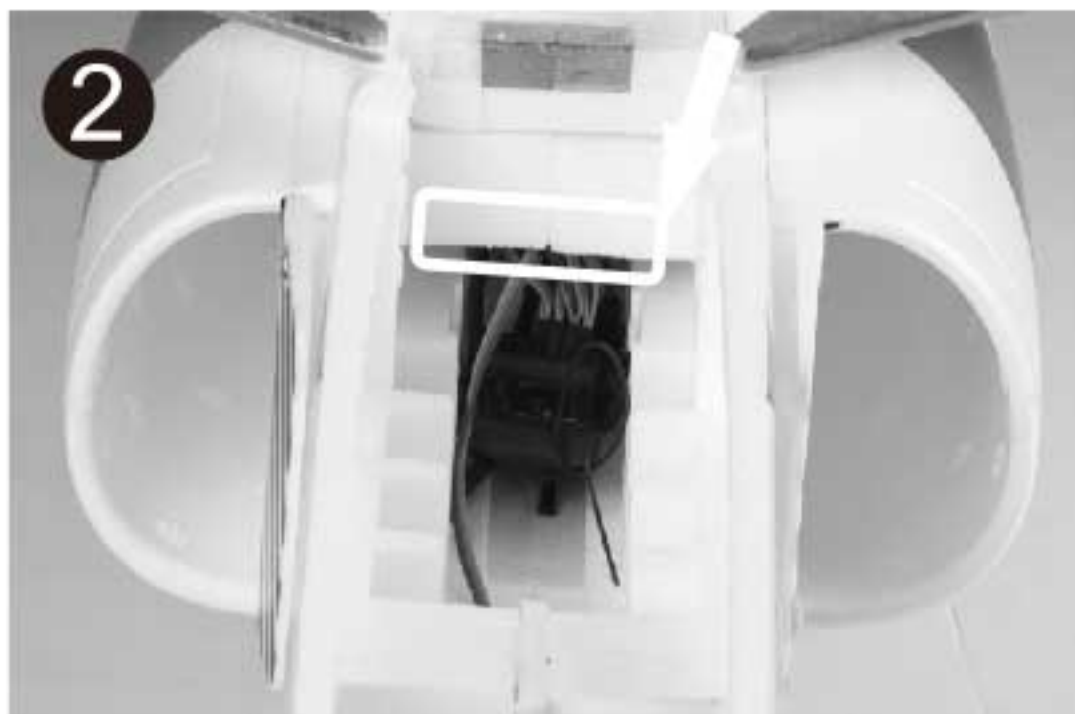
Assemble the plane

Installing the receiver

1. Attach aileron servo to the Aileron channel of your receiver. Elevator harness goes to elevator channel of your receiver. Steering servo goes to the Rudder channel. Attach the ESC connector to the throttle channel of the receiver.



2. Tuck the wire leads into the recessed cavity at the rear end of the canopy hatch.
Note: Keep wires clear from notched area at the rear of the hatch (highlighted) to ensure canopy stays secure in flight.

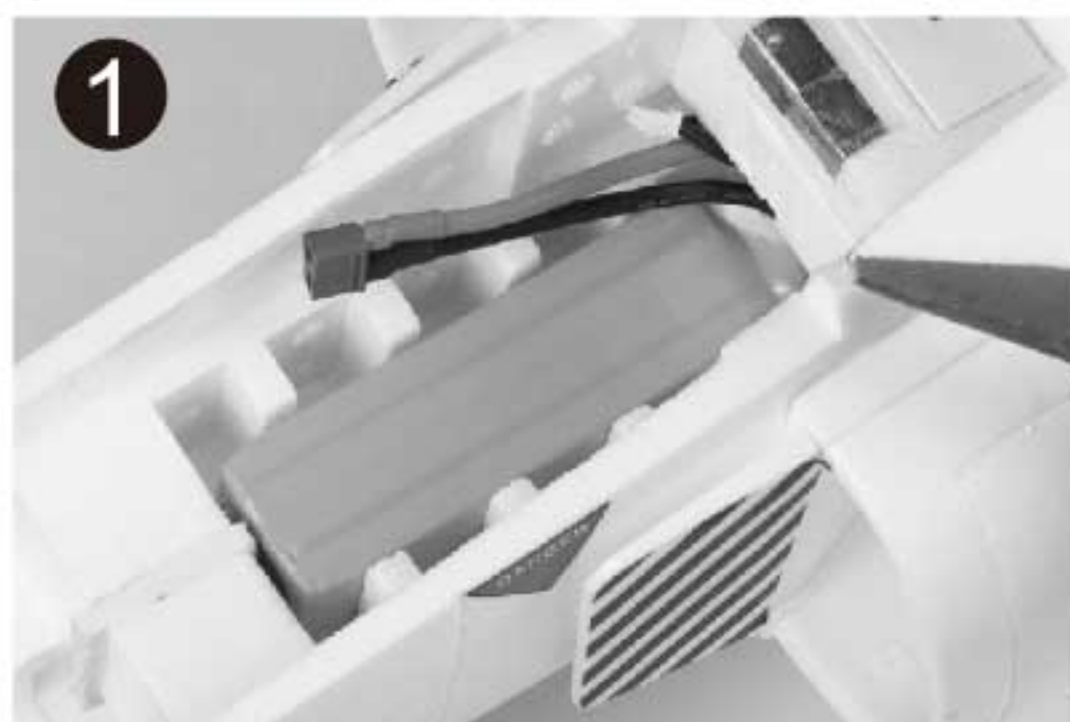


3. Mount the receiver into place and make sure it will not impede the canopy mounting.

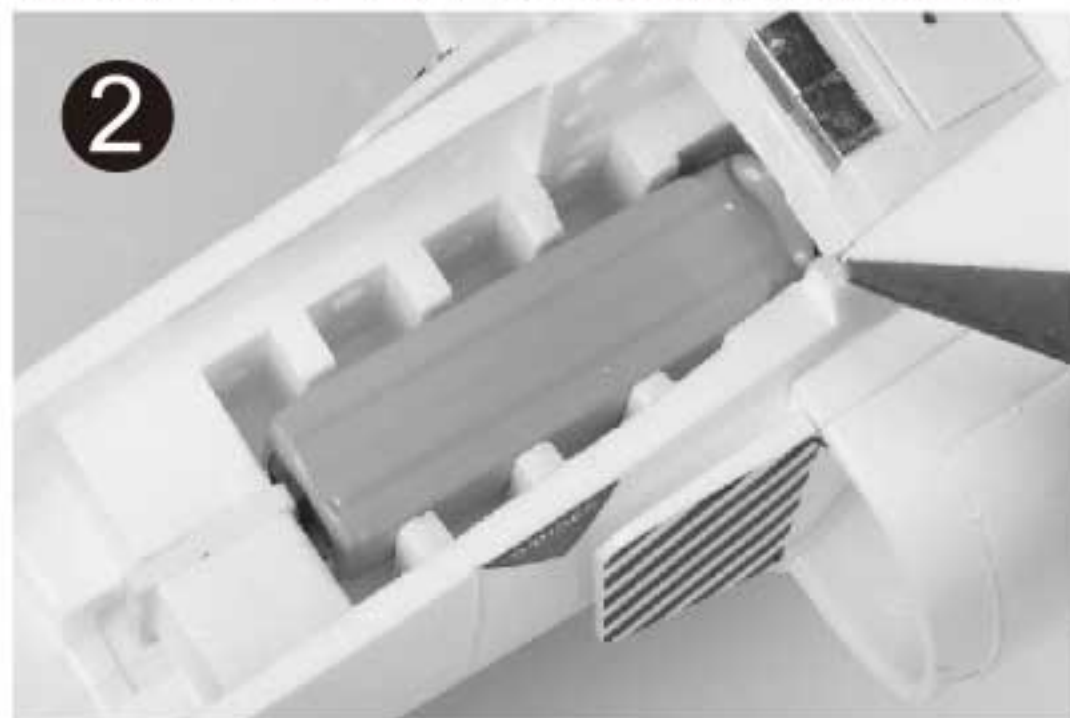


Install the battery

1. Slide the battery into the battery hatch with the power supply cable toward the rear end of the plane. Secure the battery using the hook and loop strip.
Note: You may need to relocate the battery position to achieve the correct CG for your **ALPHA** model.



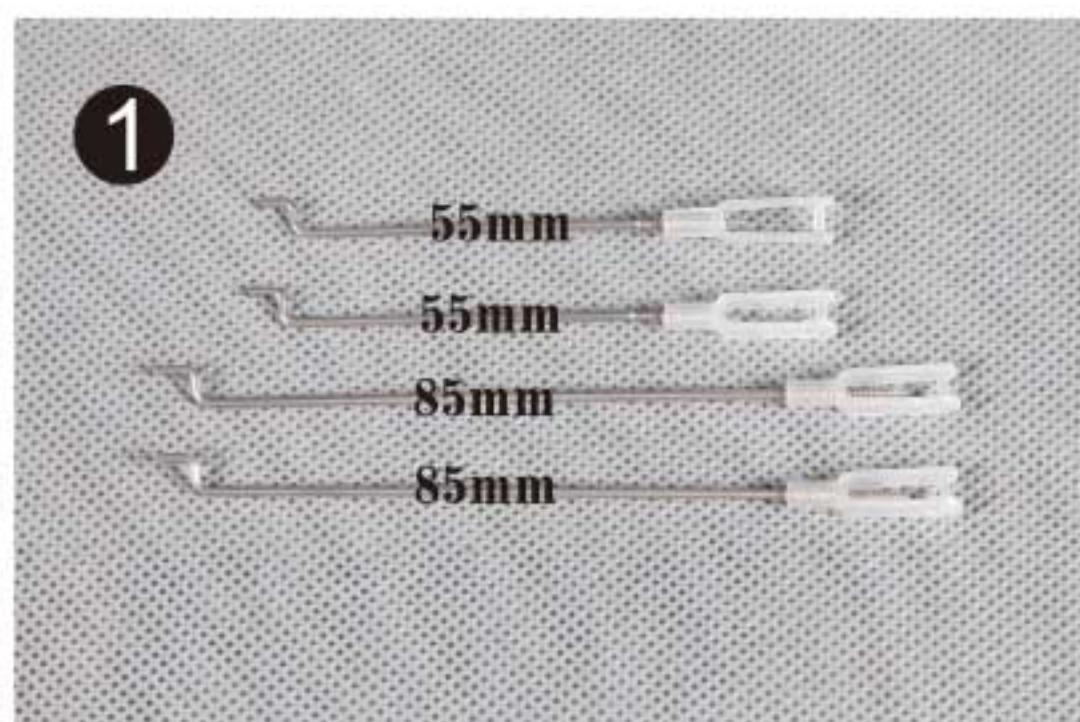
2. Fit the power connector into place and make sure the power supply wire does not interfere with the canopy's closure.



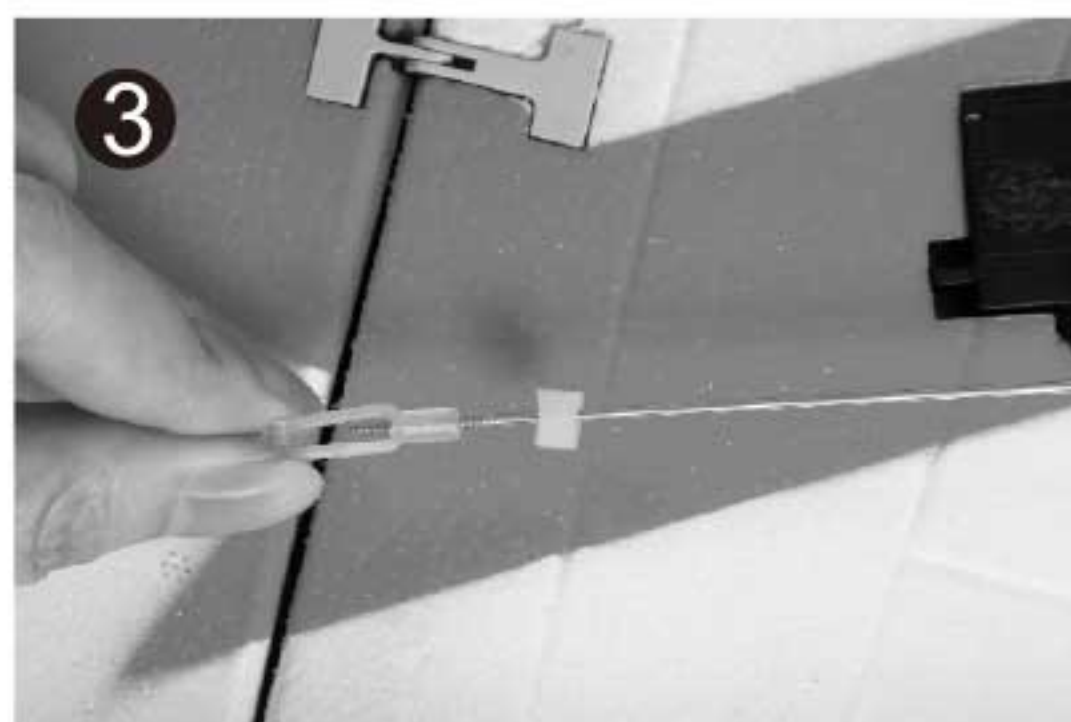
Assemble the plane

Install the servo arm and the linkage rod

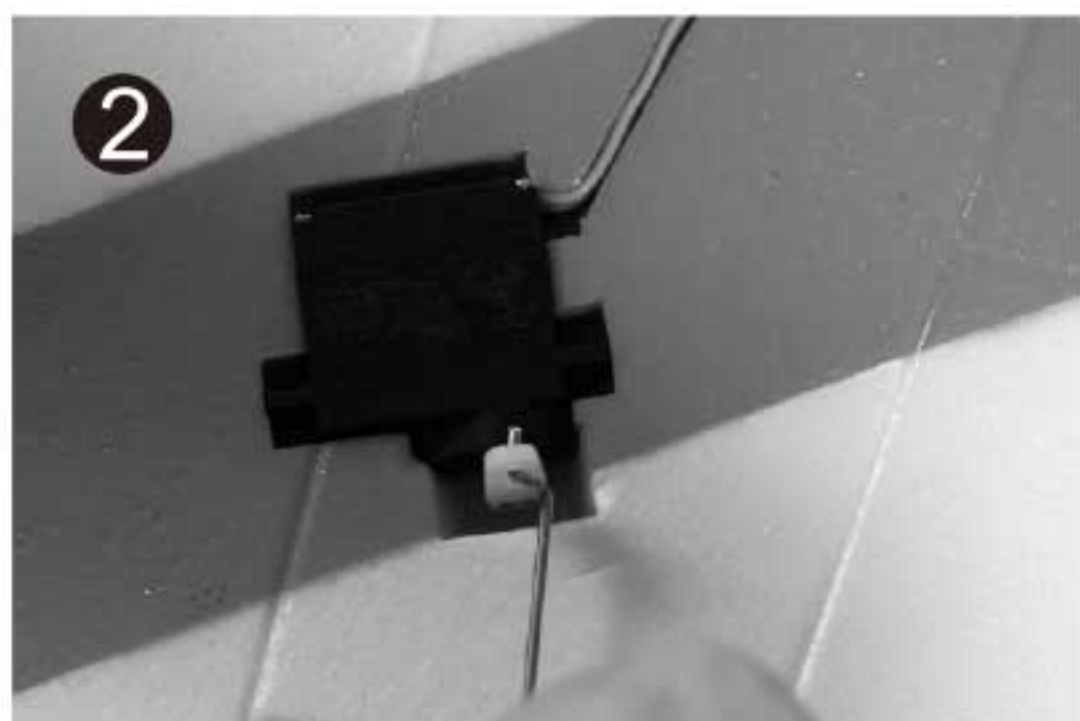
1. The two pieces 55mm linkage for ailerons, 85mm for elevator.



3. Snap the clevis into the surface control horn and secure the grub screws.

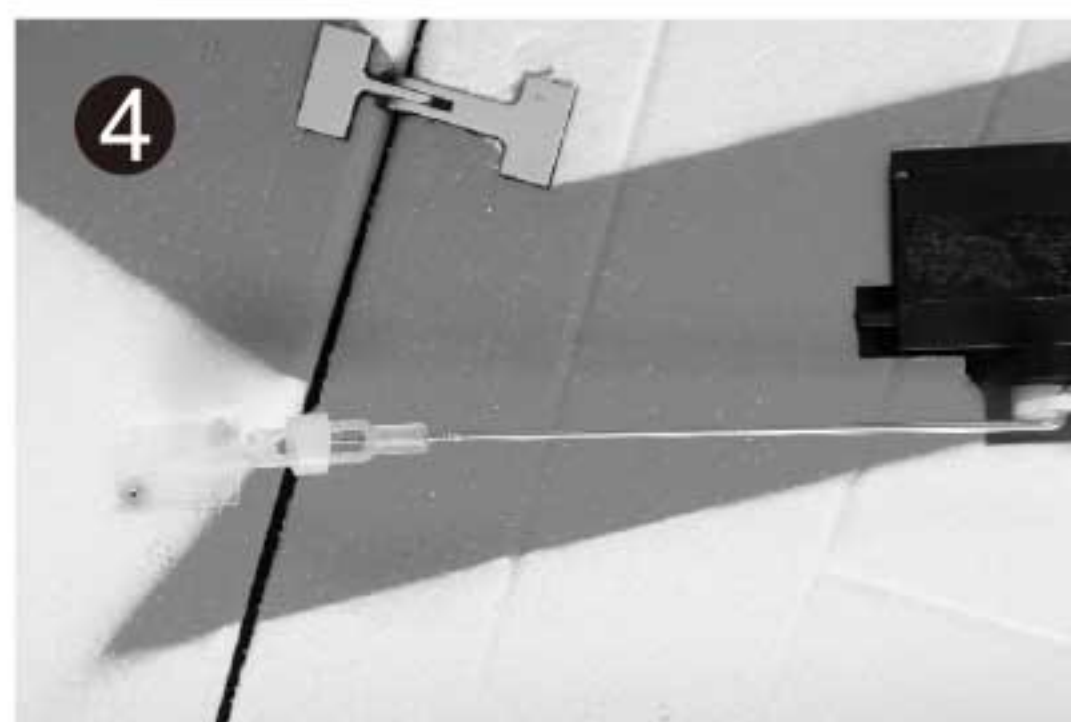


2. Insert the bare end of the linkage rod into the control connector



4. The provided piece of fuel tubing keeps the clevis closed during flight. Secure all the linkages the same way.

Note: Do not over slide the securing tube or it will impede the movement of the surface control horn. Install all of the linkages the same way.



Assemble the plane

5. Apply glue on the oil tank.



6. Install the oil tank (not recommended for ultimate flight experience).



7. Cover the canopy.



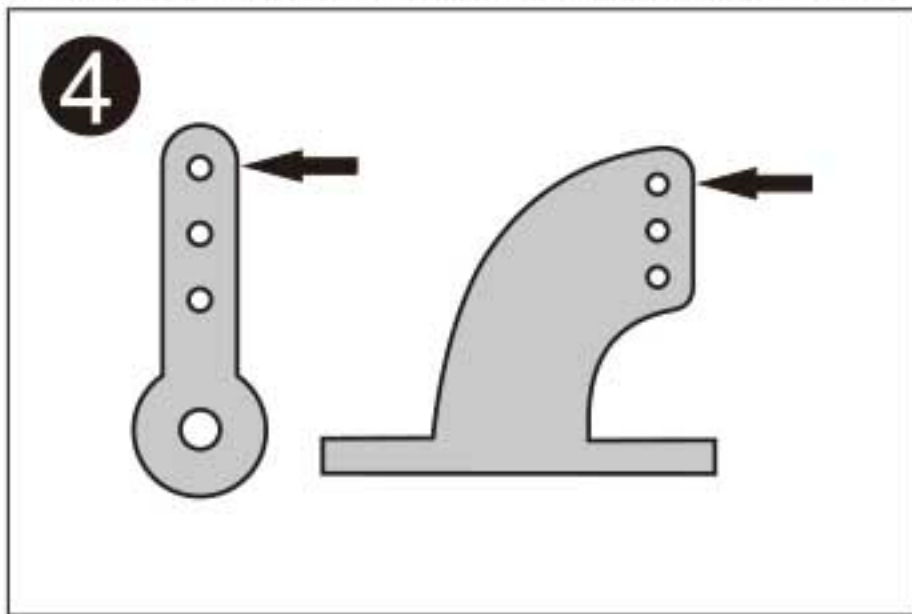
Get your model ready to fly

Important ESC and model information

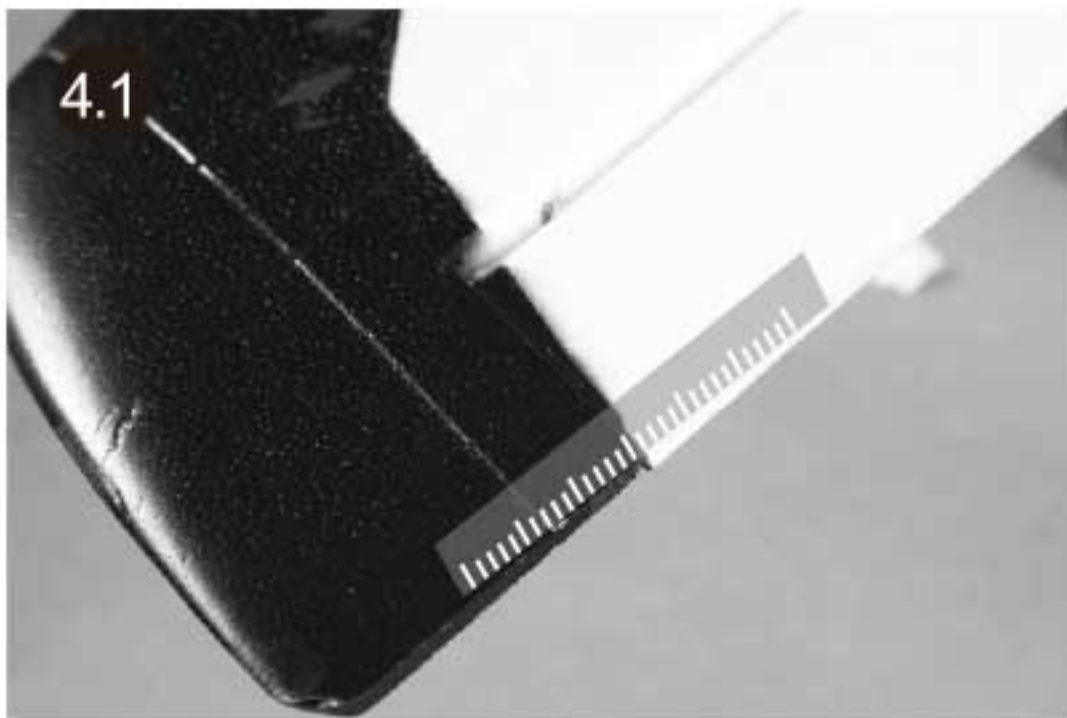
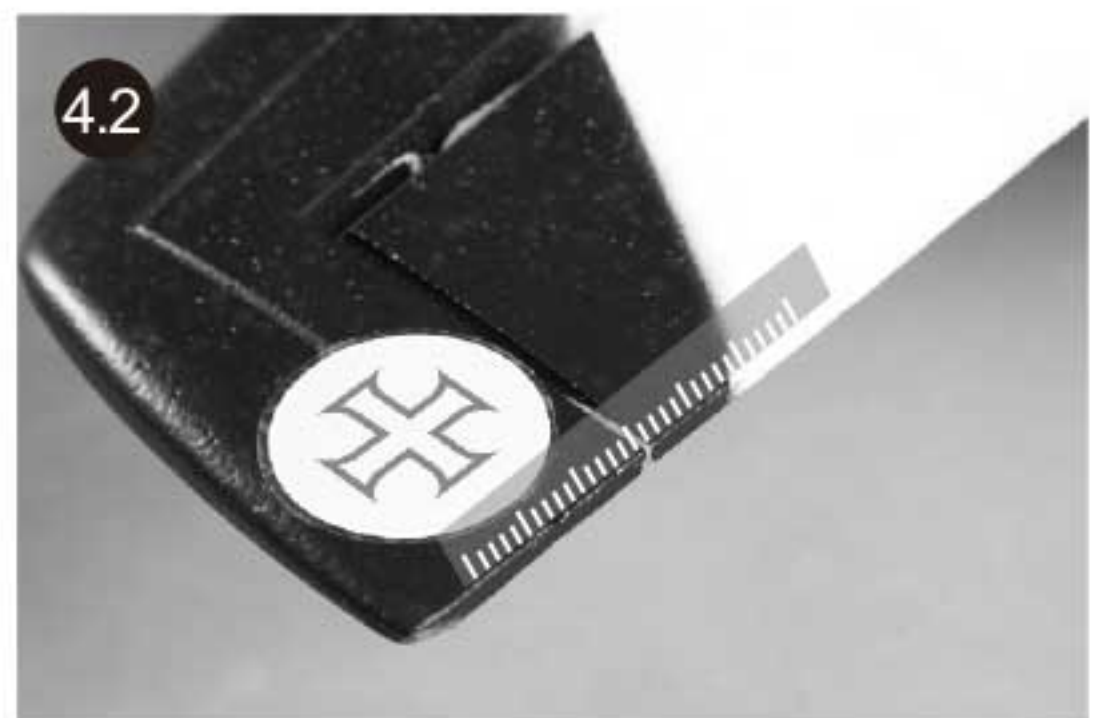
1. The ESC included with the **ALPHA** has a safe start. If the motor battery is connected to the ESC and the throttle stick is not in the low throttle or off position, the motor will not start until the throttle stick is moved to the low throttle or off position. Once the throttle stick is moved to the low throttle or off position, the motor will emit a series of beeps. Several beeps with the same tune means the ESC has detected the cells of the battery. The count of the beeps equals the cells of the battery. The motor is now armed and will start when the throttle is moved.
2. The motor and ESC come pre-connected and the motor rotation should be correct. If for any reason the motor is rotating in the wrong direction, simply reverse two of the three motor wires to change the direction of rotation.
3. The motor has an optional brake setting. The ESC comes with the brake switched off and we recommend that the **ALPHA** be flown with the brake off. However, the brake could be accidentally switched on if the motor battery is connected to the ESC while the throttle stick is set at full throttle. To switch the brake off, move the throttle stick to full throttle and plug in the motor battery. The motor will beep one time. Move the throttle stick to low throttle or the off position. The motor is ready to run and the brake will be switched off.
4. Battery Selection and Installation. We recommend the 14.8V 2600mAh 25C Li-Po battery. If using another battery, the battery must be at least a 14.8V 2600mAh 25C battery. Your battery should be approximately the same capacity, dimension and weight as the 14.8V 2600mAh 25C Li-Po battery to fit in the fuselage without changing the center of gravity significantly.
5. The specification of the model is as follows:
 - Wing span: 950mm/37.4in
 - Length: 1280mm/54.4in
 - Motor : 2845-KV3000
 - ESC : 70A with integrated 5A BEC
 - Battery : 14.8V 2600mAh 25C
 - Servo : 9g*5
 - Approx flying weight: 1300g
 - Wing area: 22.5dm²
 - Wing loading: 57.8 g/dm²

Get your model ready to fly

2. Adjust the servo arms mechanically make sure all servo arms are fully vertical. If not, adjust the servo arm by using the trim function on your radio.
Note: For computerized transmitters, use the servo/channel sub-trim feature to make each servo arm fully vertical. Make sure the trims and the sub trims in neutral position before making some mechanically trim.
3. The standard hole settings for linkage connections are shown by the black arrows in the the diagram below. You can move the linkage to different hole positions to increase control surface travel and increase the aerobatics of the airplane.



4. Align the control surfaces well by adjusting the linkage rod in the control connector. The ailerons align with the wing root fillet, the counterbalance leading edge of the elevator with the horizontal stabilizer leading edge and the counterbalance leading edge of the rudder with the vertical stabilizer leading edge.
Note: Use a drop of thread lock on the grub screws before securing the linkage rod.



Get your model ready to fly

Check the control throws

1. Adjust ATV/travel adjustment on your transmitter until you obtain the following control surface travel. Do not adjust dual rates until you have correctly adjusted the total travel.

Ailerons: 22 to 32mm up and down (both ailerons), measured at the aileron root.

Elevator: 22 to 32mm up and down, measured at the counterbalance leading edge.

2. The dual rates and the Exponential setting for intermediate flyers of FMS **ALPHA** are based on the ATV set in previous step.

	High Rate	Expo	Low Rate	Expo
Aileron	100% 22mm up/down	60%	30% 18mm up/down	30%
Elevator	100% 22mm up/down	50%	22% 18mm up/down	25%

Note: 1. This control throws were developed by FMS TEAM for the best performance of the **ALPHA**. The small mount of elevator throw on low rate is capable of extreme aerobatics.

2. At first flight, fly the model in low rate. The first time you use high rates, be sure to fly at low to medium speeds. High rates, as listed, are only for EXTREME maneuvering. Only switch to high rate when the plane is flying at slow speed. Never fly at high speed at full air speed. This plane is very responsive and pilot can easily lose orientation. Get familiar with the plane first and then try high rate.

3. For take off and landing, low rate in all control surfaces is strongly recommended.

Get your model ready to fly

Check the C.G. (Center of Gravity)

Center of Gravity

When balancing your model, adjust the motor battery as necessary so the model is level or slightly nose down. This is the correct balance point for your model. After the first flights, the **CG** position can be adjusted for your personal preference.

1. The recommended Center of Gravity (**CG**) location for your model is **(178mm)** forward from the leading edge of the main wing (as shown) with the battery pack installed. Mark the location of the **CG** on top of the wing.
2. When balancing your model, support the plane at the marks made on the bottom of the main wing with your fingers or a commercially available balancing stand. This is the correct balance point for your model. Make sure the model is assembled and ready for flight before balancing.

Caution: Do not connect the battery to the ESC while balancing the plane.



Before the model flying

Find a suitable flying site

Find a flying site clear of buildings, trees, power lines and other obstructions. Until you know how much area will be required and have mastered flying your plane in confined spaces, choose a site which is at least the size of two to three football fields – a flying field specifically for R/C planes is best. Never fly near people– especially children who can wander unpredictably.

Perform the range check of your plane

As a precaution, an operational ground range test should be performed before the first flight each time you go out. Performing a range test is a good way to detect problems that could cause loss of control such as low batteries, defective or damaged radio components, or radio interference. This usually requires an assistant and should be done at the actual flying site you will be using.

First turn on the transmitter, then install a fully-charged battery into the fuselage. Connect the battery and install the hatch.

Remember, use care not to bump the throttle stick, otherwise, the propeller / fan will turn and possibly cause damage or injury.

Note: Please refer to your **Transmitter Manual** that came with your radio control system to perform a ground range check. If the controls are not working correctly or if anything seems wrong, do not fly the model until you correct the problem. Make certain all the servo wires are securely connected to the receiver and the transmitter batteries have a good connection.

Monitor your flight time

Monitor and limit your flight time using a timer (such as one on a wrist watch or in your transmitter if available). When the batteries are getting low you will usually notice a performance drop before the ESC cuts off motor power, so when the plane starts flying slower you should land. Often (but not always) power can be briefly restored after the motor cuts off by holding the throttle stick all the way down for a few seconds.

To avoid an unexpected dead-stick landing on your first flight, set your timer to a conservative 4 minutes. When your alarm sounds you should land right away.

Flying course

Take off

While applying power slowly steer to keep the model straight, the model should accelerate quickly. As the model gains flight speed, you will want to climb at a steady and even rate. The **ALPHA** will climb out at a nice angle of attack (AOA).

Flying

Always choose a wide-open space for flying your plane. It is ideal for you to fly at a sanctioned flying field. If you are not flying at an approved site, always avoid flying near houses, trees, wires and buildings. You should also be careful to avoid flying in areas where there are many people, such as busy parks, schoolyards, or soccer fields. Consult laws and ordinances before choosing a location to fly your aircraft. After takeoff, gain some altitude. Climb to a safe altitude and begin to trim the model till it's tracks well through all aspects of flight, including high speed passes, inverted flight, loops, and point rolls.

Landing

Land the model when you hear the motor pulsing (LVC) or if you notice a reduction in power. If using a transmitter with a timer, set the timer so you have enough flight time to make several landing approaches.

Recharge the battery and repair the model as needed. The model's three point landing gear allows the model to land on hard surfaces. Align model directly into the wind and fly down to the ground. Fly the airplane down to the ground using 1/4-1/3 throttle to keep enough energy for proper flare. Before the model touches down, always fully decrease the throttle to avoid damaging the propeller or other components. The key to a great landing is to manage the power and elevator all the way to the ground and set down lightly on the main landing gear. After a few flights you will find the model can be set down lightly on the mains and you can hold the nose wheel off balancing the model on the mains till it slows and gently settles the nose.

Maintenance

Repairs to the foam should be made with foam safe adhesives such as hot glue, foam safe CA, and 5 min epoxy. When parts are not repairable, see the Spare Parts List for ordering by item number.

Always check to make sure all screws on the aircraft are tightened. Pay special attention to make sure the bullet of the rotor adaptor is firmly in place before every flight.

Troubleshooting

Problem	Possible Cause	Solution
Aircraft will not respond to the throttle but responds to other controls.	<ul style="list-style-type: none"> - ESC is not armed. - Throttle channel is reversed. 	<ul style="list-style-type: none"> - Lower throttle stick and throttle trim to lowest settings. - Reverse throttle channel on transmitter.
Extra propeller noise or extra Vibration.	<ul style="list-style-type: none"> - Damaged spinner, propeller, motor, or motor mount. - Loose propeller and spinner parts. - Propeller installed backwards. 	<ul style="list-style-type: none"> - Replace damaged parts. - Tighten parts for propeller adapter, propeller and spinner.
Reduced flight time or aircraft underpowered.	<ul style="list-style-type: none"> - Flight battery charge is low. - Propeller installed backward. - Flight battery damaged. 	<ul style="list-style-type: none"> - Remove and install propeller correctly. - Completely recharge flight battery. - Replace flight battery and obey flight battery instructions.
Control surface does not move, or is slow to respond to control inputs.	<ul style="list-style-type: none"> - Control surface, control horn, linkage or servo damage. - Wire damaged or connections loose. 	<ul style="list-style-type: none"> - Replace or repair damaged parts and adjust controls. - Do a check of connections for loose wiring.
Controls reversed.	Channels are reversed in the transmitter.	Do the Control Direction Test and adjust controls for aircraft and transmitter.
<ul style="list-style-type: none"> - Motor loses power. - Motor power pulses then motor loses power. 	<ul style="list-style-type: none"> - Damage to motor, or battery. - Loss of power to aircraft. - ESC uses default soft Low Voltage Cutoff(LVC). 	<ul style="list-style-type: none"> - Do a check of batteries, transmitter, receiver, ESC, motor and wiring for damage (replace as needed). - Land aircraft immediately and Recharge flight battery.
LED on receiver flashes slowly.	Power loss to receiver.	<ul style="list-style-type: none"> - Check connection from ESC to receiver. - Check servos for damage. - Check linkages for binding.

AMA

If you are not already a member of the AMA, please join, The AMA is the governing body of model aviation and membership provided liability insurance coverage, protects modelers' rights and interests and is required to fly at most R/C sites.

Academy of Model Aeronautics

5151 East Memorial Drive

Muncie, IN 47302-9252

Ph.(800)435-9262

Fax(765)741-0057

Or via the Internet at: <http://www.modelaircraft.org>



Academy of Model Aeronautics National Model Aircraft Safety Code Effective January 1, 2011

- A. GENERAL:** A model aircraft is a non-human-carrying aircraft capable of sustained flight in the atmosphere. It may not exceed limitations of this code and is intended exclusively for sport, recreation and/or competition.
All model flights must be conducted in accordance with this safety code and any additional rules specific to the flying site.
1. Model aircraft will not be flown:
 - (a) In a careless or reckless manner.
 - (b) At a location where model aircraft activities are prohibited.
 2. Model aircraft pilots will:
 - (a) Yield the right of way to all man carrying aircraft.
 - (b) See and avoid all aircraft and a spotter must be used when appropriate.
(AMA Document #540-D-See and Avoid Guidance.)
 - (c) Not fly higher than approximately 400 feet above ground level within three (3) miles of an airport, without notifying the airport operator.
 - (d) Not interfere with operations and traffic patterns at any airport, heliport or seaplane base except where there is a mixed use agreement.
 - (e) Ensure the aircraft is identified with the name and address or AMA number of the owner on the inside or affixed to the outside of the model aircraft.
(This does not apply to model aircraft flown indoors).
 - (f) Not operate aircraft with metal-blade propellers or with gaseous boosts except for helicopters operated under the provisions of AMA Document #555.
 - (g) Not operate model aircraft while under the influence of alcohol or while using any drug which could adversely affect the pilot's ability to safely control the model.
 - (h) Not operate model aircraft carrying pyrotechnic devices which explode or burn, or any device which propels a projectile or drops any object that creates a hazard to persons or property.

Exceptions:

- ◆ Free Flight fuses or devices that burn producing smoke and are securely attached to the model aircraft during flight.
 - ◆ Officially designated AMA Air Show Teams (AST) are authorized to use devices and practices as defined within the Team AMA Program Document (AMA Document #718).
3. Model aircraft will not be flown in AMA sanctioned events, air shows or model demonstrations unless:
 - (a) The aircraft, control system and pilot skills have successfully demonstrated all maneuvers intended or anticipated prior to the specific event.
 - (b) An inexperienced pilot is assisted by an experienced pilot.
 4. When and where required by rule, helmets must be properly worn and fastened. They must be OSHA, DOT, ANSI, SNELL or NOCSAE approved or comply with comparable standards.

B. RADIO CONTROL (RC)

1. All pilots shall avoid flying directly over unprotected people, vessels, vehicles or structures and shall avoid endangerment of life and property of others.
2. A successful radio equipment ground-range check in accordance with manufacturer's recommendations will be completed before the first flight of a new or repaired model aircraft.
3. RC model aircraft must use the radio-control frequencies currently allowed by the Federal Communications Commission (FCC). Only individuals properly licensed by the FCC are authorized to operate equipment on Amateur Band frequencies.
4. RC model aircraft will not operate within three (3) miles of any pre-existing flying site without a frequency-management agreement (AMA Documents #922-Testing for RF Interference; #923- Frequency Management Agreement)
5. With the exception of events flown under official AMA Competition Regulations, excluding takeoff and landing, no powered model may be flown outdoors closer than 25 feet to any individual, except for the pilot and the pilot's helper(s) located at the flight line.
6. Under no circumstances may a pilot or other person touch a model aircraft in flight while it is still under power, except to divert it from striking an individual. This does not apply to model aircraft flown indoors.
7. RC night flying requires a lighting system providing the pilot with a clear view of the model's attitude and orientation at all times.
8. The pilot of a RC model aircraft shall:
 - (a) Maintain control during the entire flight, maintaining visual contact without enhancement other than by corrective lenses prescribed for the pilot.
 - (b) Fly using the assistance of a camera or First-Person View (FPV) only in accordance with the procedures outlined in AMA Document #550.

C. FREE FLIGHT

1. Must be at least 100 feet downwind of spectators and automobile parking when the model aircraft is launched.
2. Launch area must be clear of all individuals except mechanics, officials, and other fliers.
3. An effective device will be used to extinguish any fuse on the model aircraft after the fuse has completed its function.



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