




SWIFT
OPERATING MANUAL



www.rochobby.com

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updated product information**

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 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.

ROCHOBBY Friendly Reminder



Thank you for purchasing a RocHobby product. Our goal is to provide high quality products and offer great customer service. If you have any problems with your product or want to offer suggestions for improvements (such as plane design, packaging, building instructions, etc.) please feel free to contact us at info@rochobby.com

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Kit contents**Kit contents**

1. The integrated wing and fuselage assembly (front gear, rear skid, elevon servos, ESC, motor, propeller, canopy, motor hatch cover, linkage rod)
2. Vertical stabilizer assembly (stabilizer mounted to the plastic base)
3. Nose cowl
4. Battery (RTF version only)
5. 2-3 cells BC-3C10 balance charger (RTF version only)

The spare parts list

Replacement parts for the ROC Hobby Delta wing 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

- KB 101 Fuselage (With the motor mount installed)
- KB 102 Vertical fin (With the mounting base installed)
- KB 103 Rear hatch cover
- KB 104 Nose cone
- KB 105 Battery hatch cover (The foam with the plastic cover glued into place)
- KB 106 The front gearset (The gear base with the tire and axle screw)
- KB 107 Rear fuselage skid
- KB 108 Motor mount (With four pieces machine screws)
- KB 109 Propeller adaptor
- KB 110 Linkage rod (With the clevis and securing ring)
- KB 111 Propeller (4.5*4.5E highly performance propeller)
- KB 112 Battery (11.1V 1800mAh 25C / 11.1V 2200mAh 25C)
- KB 113 Motor (2215 KV3000/ 2215KV3400)
- KB 114 ESC (30A for standard speed model / 50A for high-speed model)
- KB 115 Servo (9g positive for the elevons)
- KB 116 Decal sheet

The illustration of the spare parts



KB-101



KB-102



KB-103



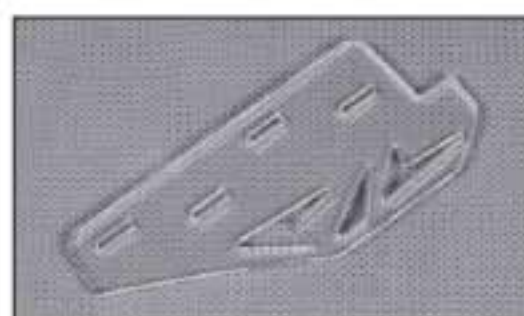
KB-104



KB-105



KB-106



KB-107



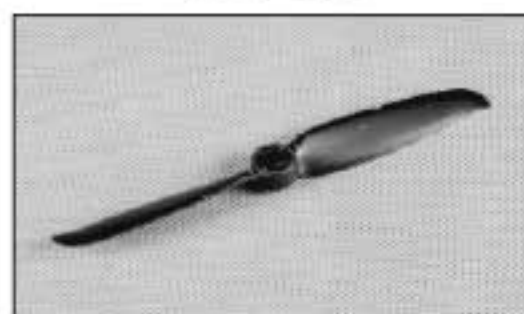
KB-108



KB-109



KB-110



KB-111



KB-112



KB-113



KB-114



KB-115



KB-116

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 ROC TEAM. Please write down the name of the parts when you are reporting defective or missing of them.

ROC TEAM Product Support

ADDRESS: **Weijian 2nd Road, Area39, Chashan Industrial Park, Chashan Town, Dongguan City, China**

Tel: **86-0769-86976658**

Email: **info@rochobby.com**

Web: **www.rochobby.com**

Charging the Flight Battery

The Battery Charger included with your aircraft 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

RTF kits come with a DC balancing charger. You must charge the battery with a Li-Po specific charger only (such as the included **BC-3S10** DC charger). 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.

BC-3S10 Balance Charger

To correctly use the charger, please read the instructions before use.

Charging the Flight Battery

Electrical Parameters

Parameter	Min	Type	Max	Unit
Working Voltage	9	12	16	V
Input Power	15			W
Work Temperature	- 20		45	°C
Store Temperature	- 20		65	°C
Charging Stop Voltage	4 . 19	4 . 20	4 . 21	V
Charging Current			1000	mA
Balancing Current	150		200	mA
Activate Current	80		120	mA

Charging the Flight Battery

Using Steps:

1. Connect the charger to adapter with enough voltage and wattage, then the Power LED will turn on;
2. Connect 2S/3S battery pack to the corresponding balance port (**Do not connect two battery packs at the same time**), then the Charge LED will flicker (1Hz) and start charging.
3. When the Charge LED stops flickering, charging is complete, and the batteries can be unplugged.

Charging Function Description

1. If all voltage of the installed battery pack is higher than 4.18V, charging will not start and the charge LED will shine.
2. If the voltage of one battery or some batteries is lower than 0.7V, charging will not start. If the voltage of the first battery of a 3S battery pack is lower than 0.7V, the charger will charge the battery pack as if it was a 2S battery pack.
3. If the voltage of one battery or some batteries is lower than 2.8V, the charger will activate the battery pack with a small current. If the voltage can't be increased above 2.8V after half an hour, the charger will judge the battery pack as bad. The charge LED will then flicker rapidly (0.5Hz), and charging will stop.

Self Checking Function

1. Charger will perform a self test before each charge. The charge LED will rapidly flicker (0.5Hz) if the charging function is abnormal;
2. Accuracy checking Function: Connect a fully charged 3S battery pack (all voltage at least 4.2V), the charge LED will flicker twice then shine always. This means that the accuracy is normal.

Protection Function

1. Reverse connection protection of input
2. Reverse connection protection of output
3. Short circuit protection of output
4. Over voltage protection of output

Troubleshooting

1. **Power LED does not shine** – Adapter isn't connected correctly. Please check the polarity and reconnect adapter.
2. **Charging abruptly stops and tries to restart constantly during charging** – Output power of the adapter is not sufficient, please replace the adapter.
3. **Charge LED does not shine** – Reconnect the battery pack; Check the voltage of batteries.
4. **Charge LED rapidly flickers** – Battery is bad or charging function is abnormal. Replace battery or contact technical support.

Low voltage cut off (LVC)

When a Li-Po is discharged below 3V per cell, it will not hold a charge. The ESC protects the flight battery from over-discharge using Low Voltage Cutoff. Before the battery charge decreases too much, LVC removes power from motor in two ways: (1) Reduces power - ESC reduces motor power (recommended), (2) Hard cutoff - ESC instantly cuts motor power when the pre-set Low Voltage Protection Threshold value is reached. These settings can be changed using the ESC programming guide (available on-line).

Assemble the plane

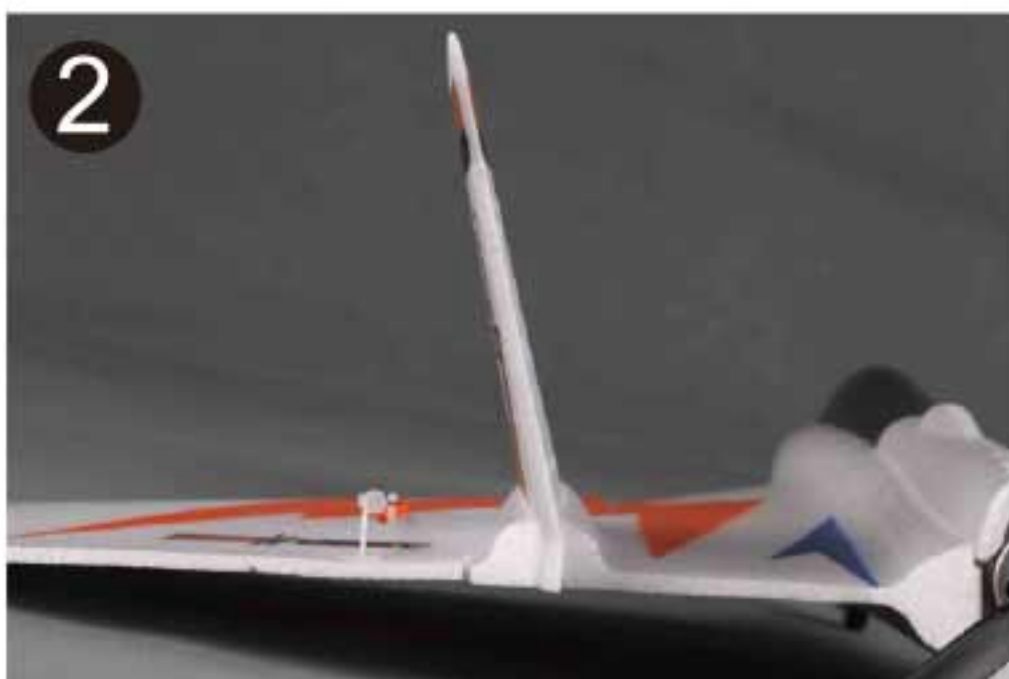
Install the vertical fins

1. Fit one of the vertical fins into the left fin mounting slot.

Note: The vertical fin will angle towards the wing tip when properly inserted. If it does not, install other fin.



2. Rear-view showing the fin properly inserted.



3. Fully seat the vertical fin all the way down into the slot, do not force it further than it will slide. You can use a pen to mark a line between the slot and the fin. This will help ensure the fin is fully seated when attaching to the fuselage in step 4.



4. Turn over the plane so the bottom faces up. Secure the fin into place using the provided screws. Make sure to not over tighten the screws, but make sure it's tight enough (use the pen mark as a guide). Repeat the same steps for the starboard vertical fin mounting. (**Screws: 2.0X8PWA 2.3X12PWA**)



Assemble the plane

Install the nose cone

1. The nose cone is attached to the fuselage by two powerful magnets. **Note:** Do not glue the nose into place, the crash separable nose design will minimize the damage to your plane in the event of a crash landing.

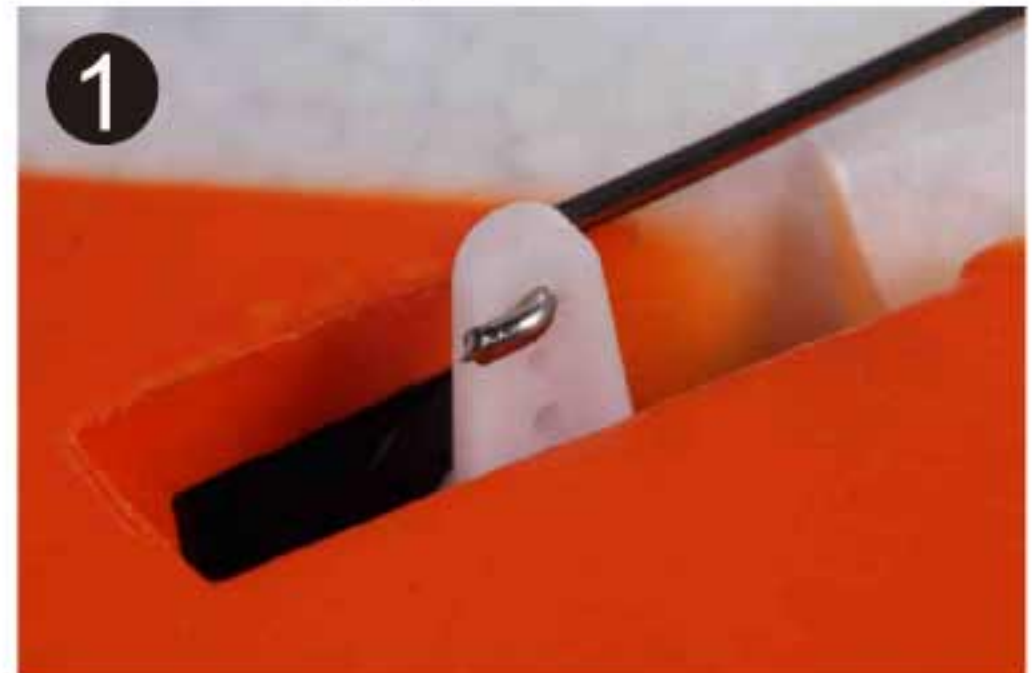


2. Ensure that the nose cone is fully seated on the front of the plane.



Install the linkage rods

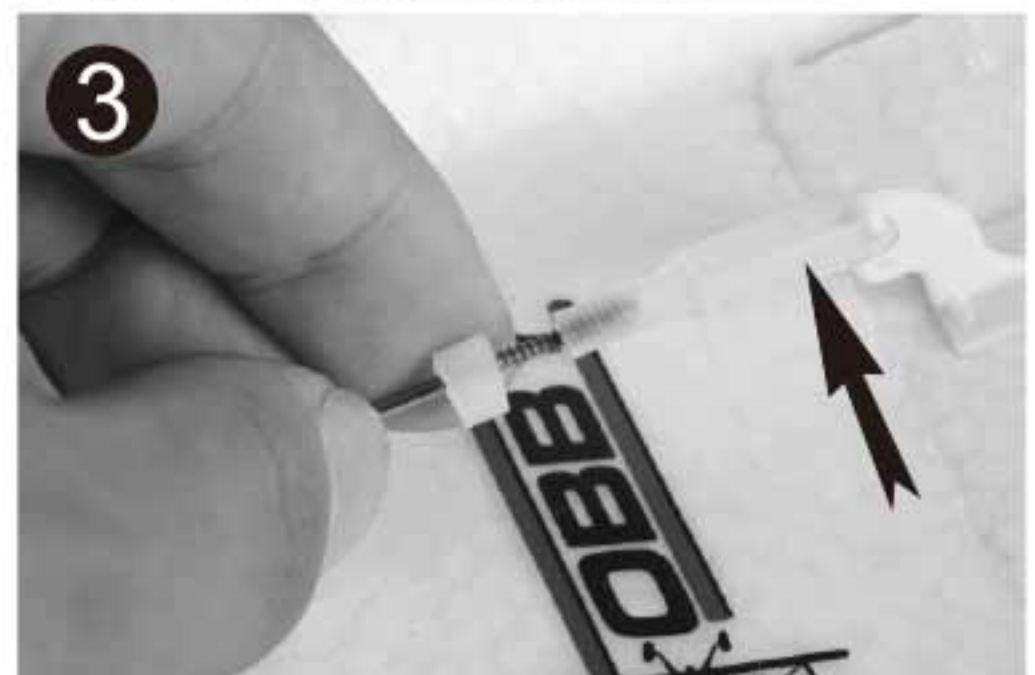
1. Put the Z-bend end of the linkage into the desired servo control horn hole. It is a tight fit and should allow the linkage to move just slightly within the hole to avoid binding up.



2. Snap the clevis into the surface control horn.



3. The provided piece of fuel tubing keeps the clevis closed during flight. **Note:** Do not slide the securing tube too far towards the control horn or it will impede the movement of the control surface.



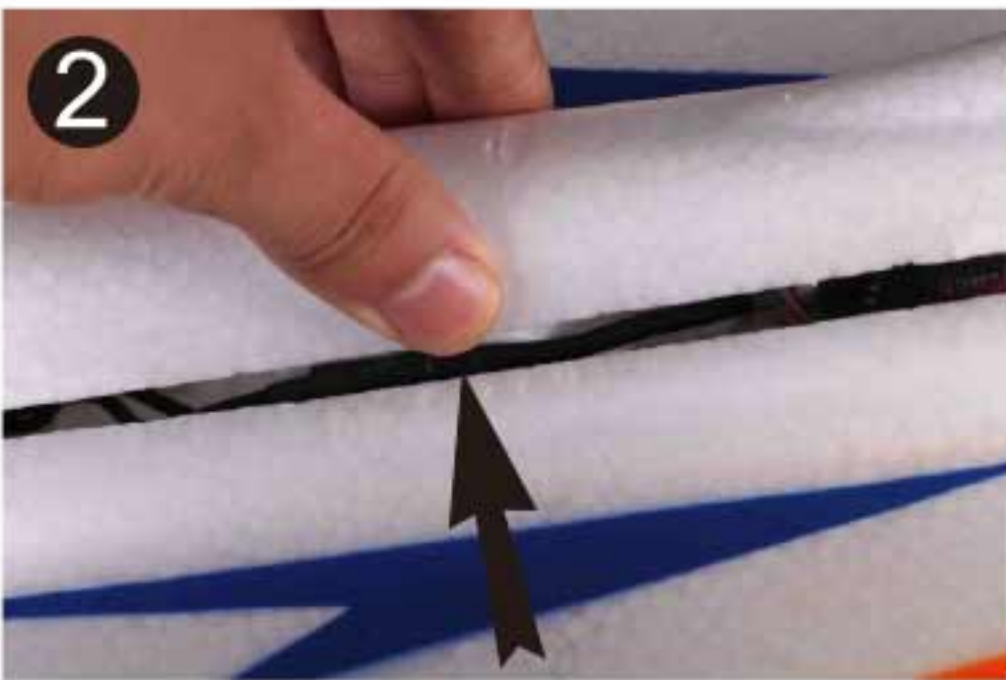
Assemble the plane

Disassembly

1. The tape band attached to the battery hatch cover will help you remove the cover.



2. Open the rear hatch cover by grip one side of the hatch cover with your hand and then raise it to the opposite side.



3. Do not try to remove the rear hatch cover by pulling up on either end. This will deform and likely damage the cover.



4. Counter-clockwise thread the bullet to disassemble the propeller set. Make sure to tightly grip the propeller root with your hand. Do not use tools to grip the propeller as it will damage the propeller.



5. Remove the propeller from the adaptor.



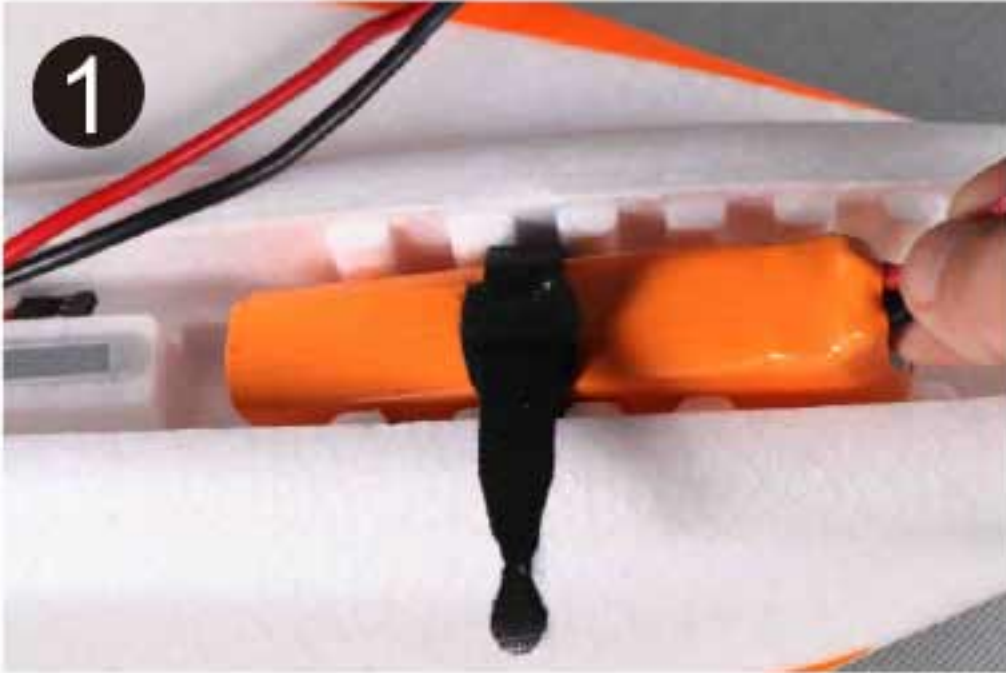
6. Take the propeller adaptor off. When reassembling, be sure to install the collar in the proper direction. The ratchet side will always face towards the end of the plane.



Assemble the plane

Install the battery

1. Install the battery into the battery compartment in the front of the airplane.



2. Secure the battery using the velco strip.
Note: You may need to relocate the battery position for proper CG. The Swift delta wing requires very accurate CG for proper flight performance.



3. Make sure to locate the battery's power connector toward the front of the battery hatch. There will be enough space for the connector.



The receiver connection

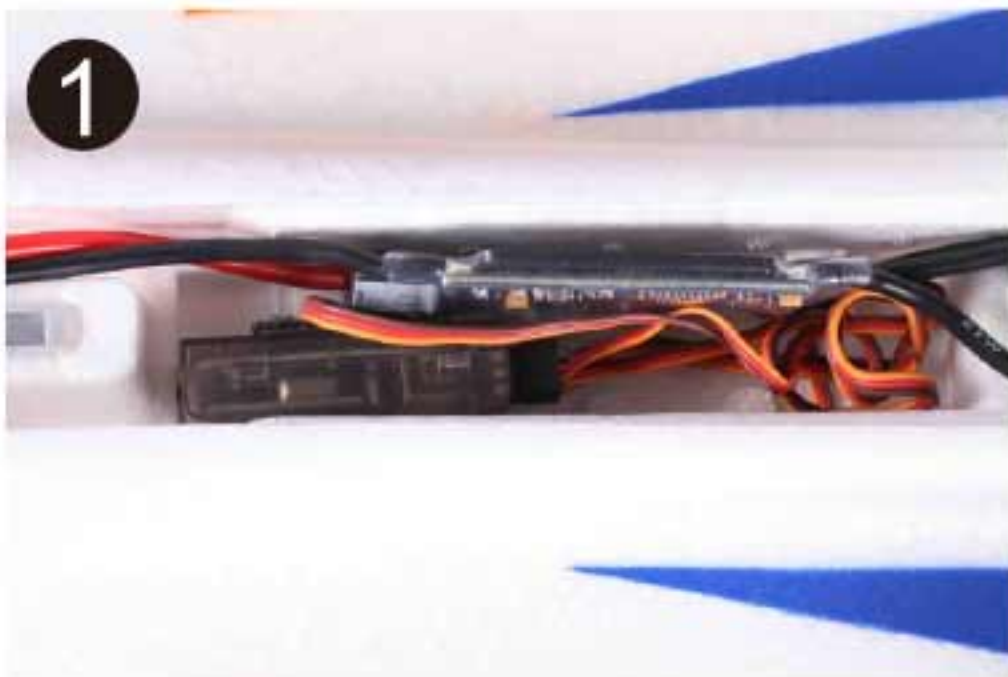
Attach the right aileron to the elevator channel of your receiver. Left aileron goes to aileron channel of your receiver. Attach the ESC connector to the throttle channel of the receiver. You will need to activate the delta wing (also called elevon) configuration of your transmitter.

		Receiver
Left aileron	1	Channel-1 — Aile
Right aileron	2	Channel-2 — Elev
Throttle	3	Channel-3 — Thro
	4	Channel-4 — Rudd

Assemble the plane

The placement of the receiver

1. The ESC and receiver will be installed in the same compartment. Place the ESC on its side so that your receiver will fit in the compartment. Make sure that the ESC and receiver have minimal overlap to allow for proper ESC cooling.



Install the canopy and rear hatch cover

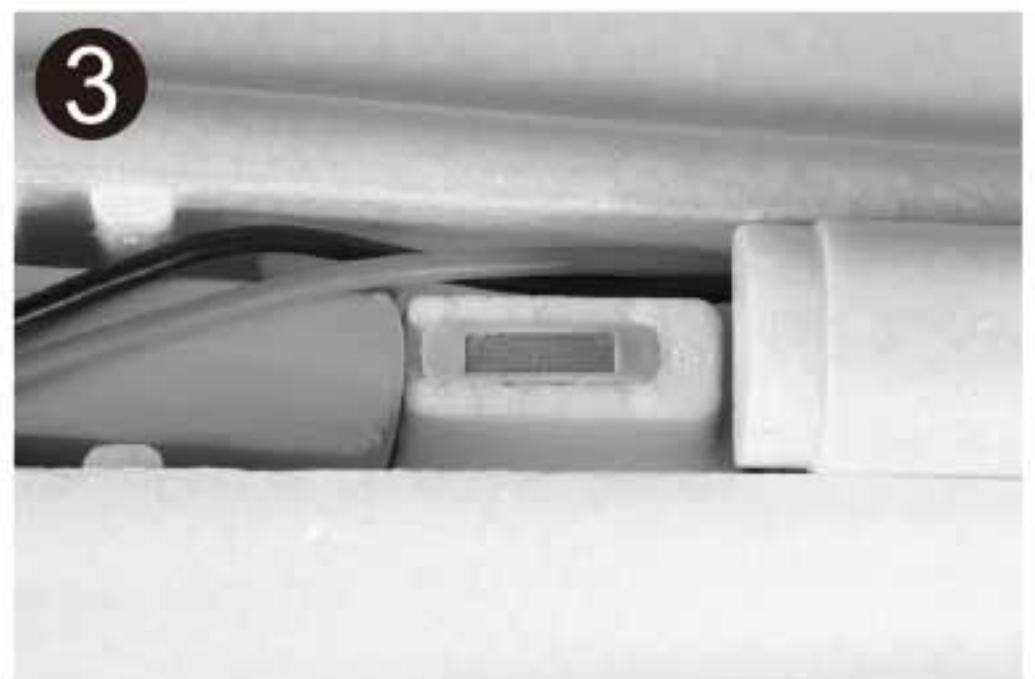
1. Before you install the rear hatch cover, make sure to distribute the motor power input cables on both sides of the foam mounting block.



2. The power system hatch cover is seated fully into place.



3. The battery hatch cover is held into place by the foam nose to the front and the magnet at the rear. Make sure to clear all wires from the path of the magnet so that the cover can be fully seated.



Assemble the plane

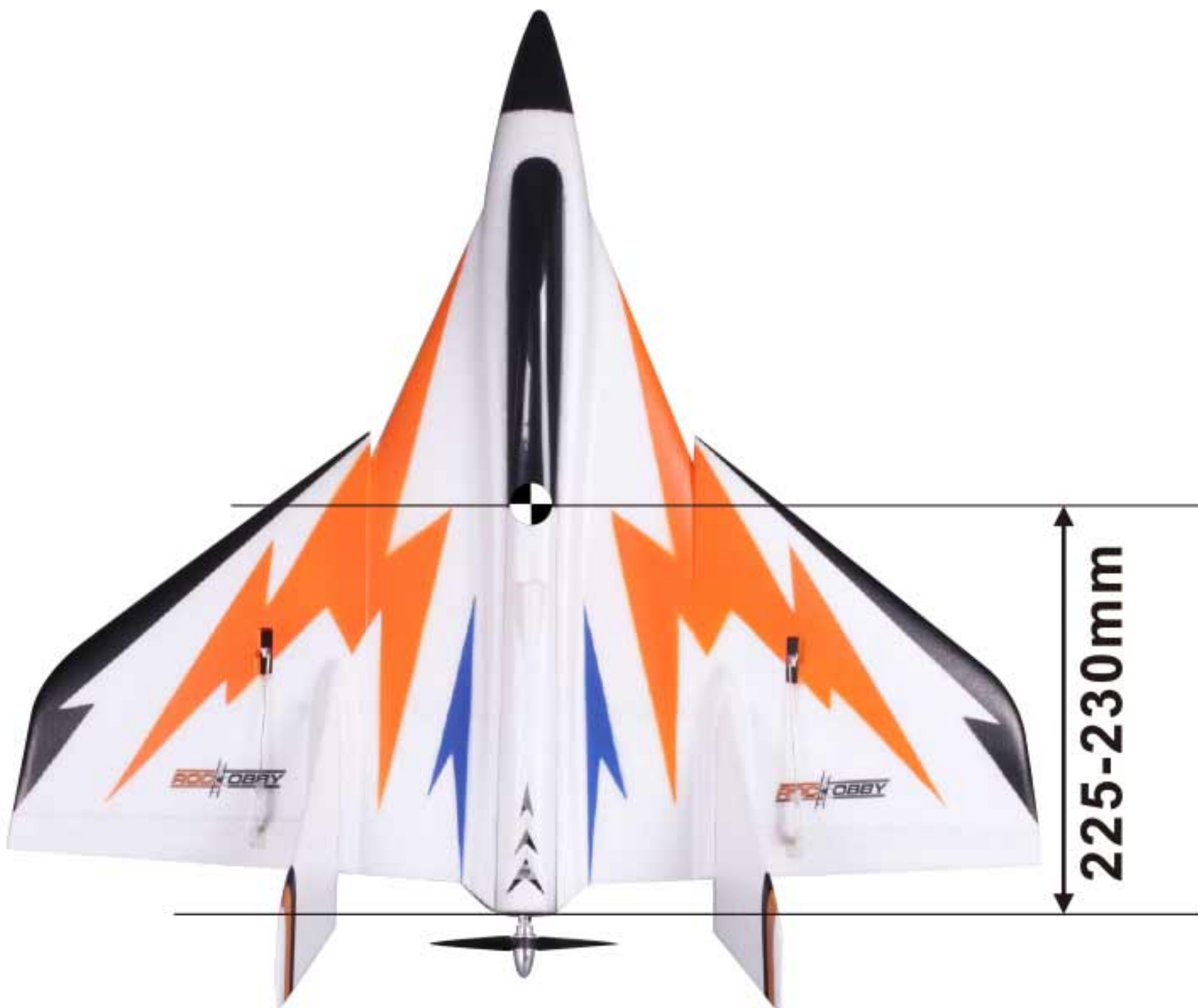
Check the C.G. (Center of Gravity)

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 **(225-230mm)** back from the most rear of the fuselage (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 inverted at the marks made on the top 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.



Get your model ready to fly

Important ESC information

1. The ESC included with the Swift 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 counts 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-installed and the motor rotation should be correct. If you disconnect the ESC from the motor, be sure to reverse two of the three motor wires when you reconnected it. This will ensure the motor rotates as a pusher type plane.
3. The motor has an optional brake setting. The ESC comes with the brake switched off and we recommended that the Swift 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. The Swift is available in two configurations, normal speed and high speed. We recommend using the battery pack designated for your configuration. If you are using a different battery, the battery must be at least a 11.1V 1800mAh/2200mAh 25C battery. Your battery should be approximately the same capacity, dimension and weight as the recommended packs to fit in the fuselage without changing the center of gravity.

Alternative configuration			
Normal Speed:		High Speed:	
Motor	2215-KV3000	Motor	2215-3400KV
ESC	30A	Esc	50A
Servo	9gX2 Positive	Servo	9gX2 Positive
Battery	11.1V-1800	Battery	11.1V-2200
Propeller	4.5*4.5E 2 blades highly performance	Propeller	4.5*4.5E 2 blades highly performance
Approx flying weight:	510g	Approx	570g

Get your model ready to fly

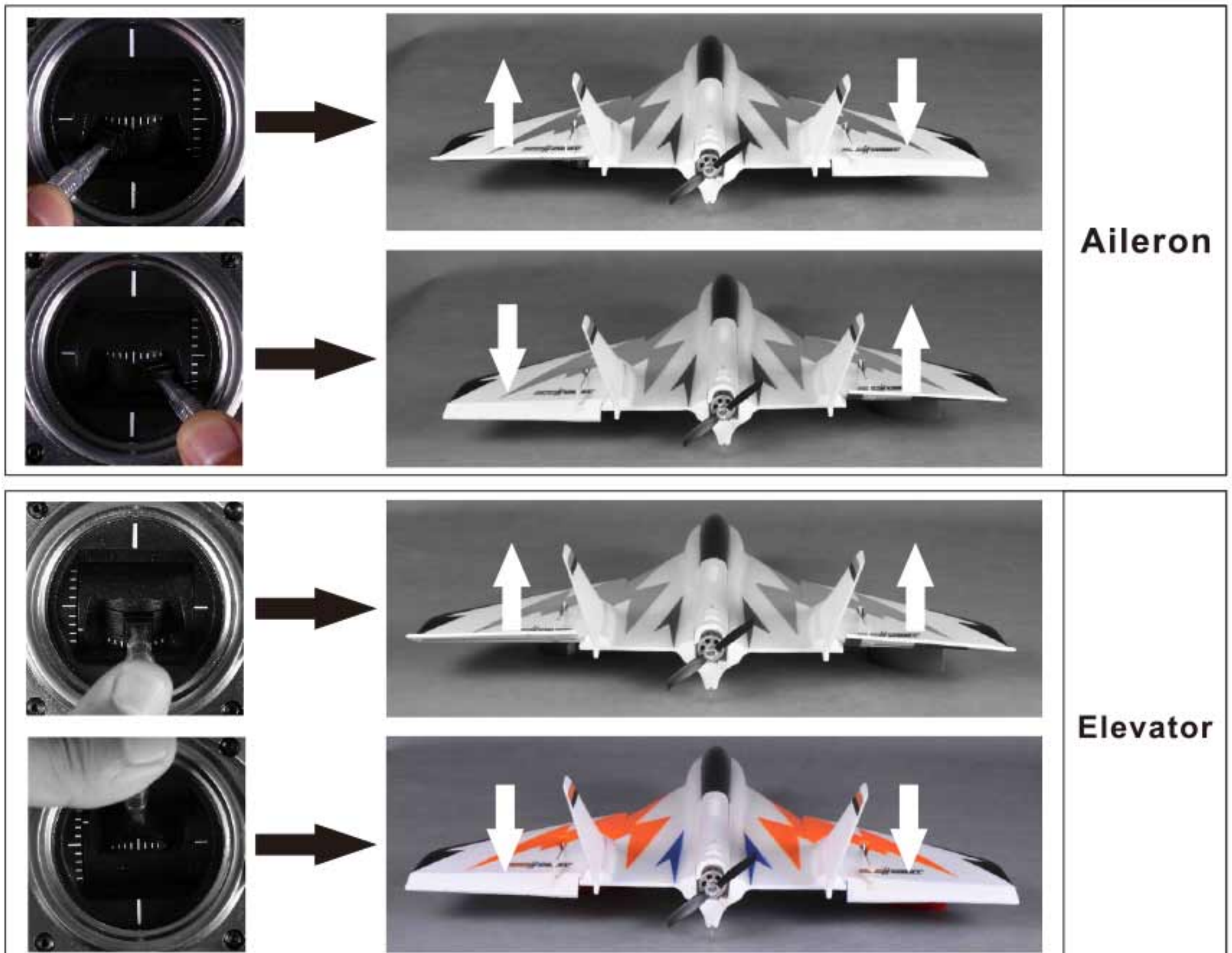
The transmitter and model setup

Before getting started, bind your receiver with your transmitter. Please refer to your **Transmitter Manual** for proper operation.

CAUTION: To prevent personal injury, DO NOT install the propeller assembly onto the motor shaft while testing the control surfaces. DO NOT arm the ESC and do not turn on the transmitter until the **Transmitter Manual** instructs you to do so.

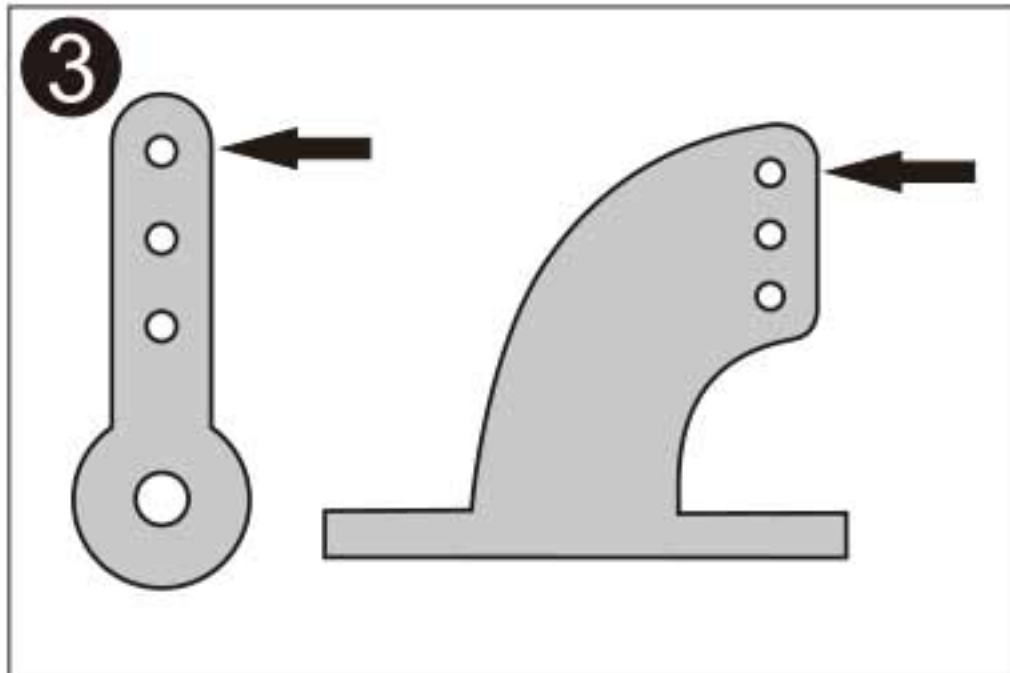
Tips: Flying wings are controlled by elevons (Moveable surfaces on the wings). Elevons take the aileron control (move opposite directions), and elevator control (move up/ down the same direction) and mix them together electronically through the transmitter. Make sure all control sticks on your radio are in the neutral position (rudder, elevator, ailerons) and the throttle is in the OFF position. Make sure both elevons move up and down (travel) the same amount. This model tracks well when the left and right ailerons travel the same amount in response to the control stick.

1. Move the controls on the transmitter to make sure aircraft control surface move correctly. Disconnect one of the motor power supply wires before arming the ESC to avoid any injury.

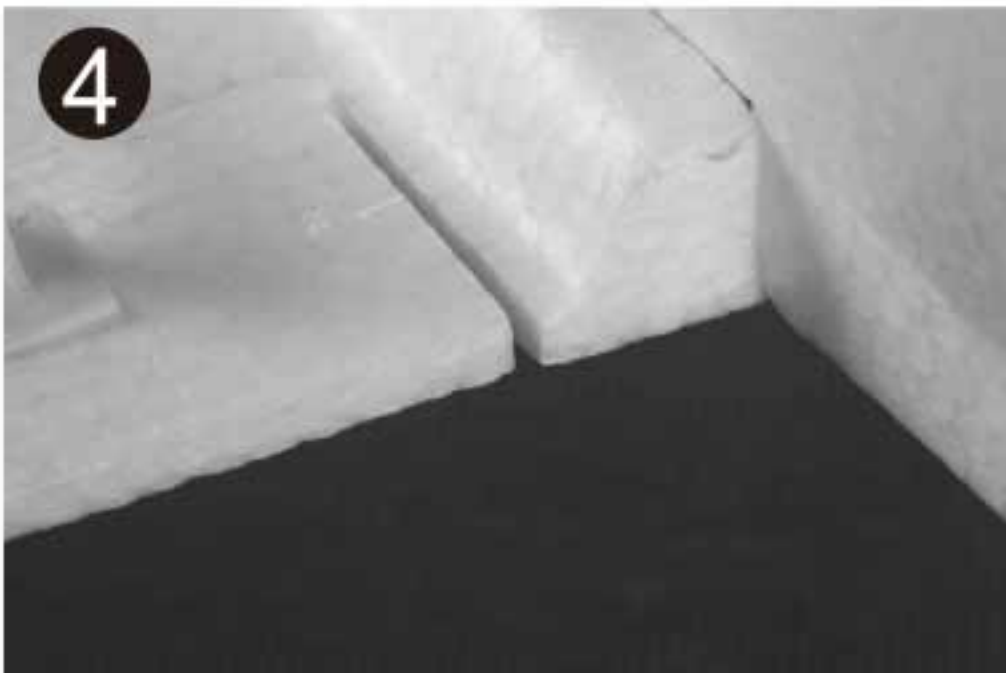


Get your model ready to fly

- Before attaching the linkage, make sure the servo arm is fully vertical (perpendicular to the wing's surface). If not, adjust servo arm using your radio's trim feature. **Note:** For computerized transmitters, adjust each servo/channel sub-trim as needed to make each servo arm fully vertical.
- The default setting for the linkage connectors is in the top hole position. If you wish to increase the aerobatics of the Swift, you can change the hole position on the control horn downward for increased travel. We recommend keeping the settings at the default positions (shown below) for most flyers.



- Align the control surface with the wing root by turning the clevis clockwise and counterclockwise on the linkage, carefully open the clevis fork and put the clevis pin in the desired hole of the control horn. **Note:** Secure the clevis with the provided piece of tube after the alignment of the surface is complete.



Check the control throws

The suggested control throw settings for **ROC HOBBY** Swift are as follows (Dual rate setting):

	High Rate	Low Rate
Elevator	13 mm up/down	6 mm up/down
Aileron	13 mm up/down	6 mm up/down

Tips: At first flight, fly the model in low rate. The first you set high rate, please fly at low to medium speed, high rate, as listed, is only for EXTREME maneuvering.

Get your model ready to fly

Check the motor rotation direction

1. The propeller should rotate clockwise when viewing the plane from the rear.
Note: (1.2) Be sure not to discard the propeller hub adaptor.



2. The tooth side of the collar for the propeller adaptor will assist in holding the propeller firmly into place. Ensure the teeth are facing towards the rear of the plane.

CAUTION: Before testing the propeller, make sure the tail of the plane is firmly on the model stand and ensure there are no people or objects in the range of the propeller.



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, a site at least the size of two to three football fields should be adequate— 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 the 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 will turn and possibly cause damage or injury.

Note: Please refer to your **Transmitter Manual** that come with your radio control system to perform a ground range check. If the controls aren't working correctly or if anything seems wrong, don't fly the model until you find and correct the problem. Make certain all the servo wires are securely connected to the receiver and the transmitter batteries are in 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

The Swift delta wing can only take off by the hand launch because of the lack of landing gear. To hand launch the Swift, hold the finger grips on the underside of the airplane. Give a firm throw directly into the wind slightly up (5-10 degrees above the horizon) with the throttle all the way down and the propeller not spinning. After release, when the propeller is clear of your hands, throttle up to climb out.

Warning: Do not engage the throttle while you are holding the plane in your hand to avoid any bodily injuries which could be caused by the fast moving propeller.

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.

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 nose wheel and bottom fin skids let the model land on the hard surfaces when needed (which may damage the propeller). 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.

Maintenance

The Swift is made from PA and polythene, repairs to the foam can be made using virtually any adhesive (hot glue, regular CA, epoxy, etc). 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 propeller 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.	ESC is not armed. Throttle channel is reversed.	Lower throttle stick and throttle trim to lowest settings. Reverse throttle channel on transmitter.
Extra propeller noise or extra Vibration.	Damaged spinner, propeller, motor, or motor mount. Loose propeller and spinner parts. Propellor installed backwards.	Replace damaged parts. Tighten parts for propeller adapter, propeller and spinner.
Reduced flight time or aircraft underpowered.	Flight battery charge is low. Propeller installed backward. Flight battery damaged.	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.	Control surface, control horn, linkage or servo damage. Wire damaged or connections loose.	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.
Motor loses power. Motor power pulses then motor loses power.	Damage to motor, or battery. Loss of power to aircraft. ESC uses default soft Low Voltage Cutoff(LVC).	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.	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

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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.

AMA

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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