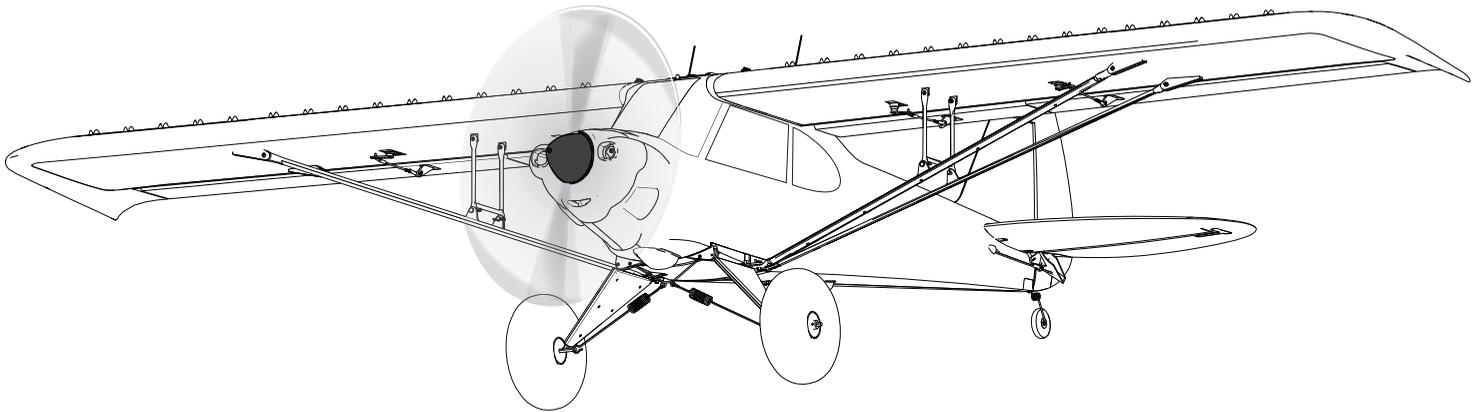


HORIZON[®]
H O B B Y

Eflite[®]
ADVANCING ELECTRIC FLIGHT

Carbon-Z[®] Cub SS



Instruction Manual
Bedienungsanleitung
Manuel d'utilisation
Manuale di Istruzioni

SAFE[®] 

SAFE[®] Select Technology, Optional Flight Envelope Protection

Plug-N-Play[®]

BNF[®]
BASIC

NOTICE

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Horizon Hobby, LLC. For up-to-date product literature, visit www.horizonhobby.com or towerhobbies.com and click on the support or resources tab for this product.

MEANING OF SPECIAL LANGUAGE:

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

WARNING: Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of superficial injury.

CAUTION: Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.

NOTICE: Procedures, which if not properly followed, create a possibility of physical property damage AND little or no possibility of injury.

 **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. 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. Do not use with incompatible components or alter this product in any way outside of the instructions provided by Horizon Hobby, LLC. This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.

14+ AGE RECOMMENDATION: Not for children under 14 years. This is not a toy.

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.

- Always keep a safe distance in all directions around your model to avoid collisions or injury. This model is controlled by a radio signal subject to interference from many sources outside your control. Interference can cause momentary loss of control.
- Always operate your model in open spaces away from full-size vehicles, traffic and people.
- Always carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.).
- Always keep all chemicals, small parts and anything electrical out of the reach of children.
- Always avoid water exposure to all equipment not specifically designed and protected for this purpose. Moisture causes damage to electronics.
- Never place any portion of the model in your mouth as it could cause serious injury or even death.
- Never operate your model with low transmitter batteries.
- Always keep aircraft in sight and under control.
- Always use fully charged batteries.
- Always keep transmitter powered on while aircraft is powered.
- Always remove batteries before disassembly.
- Always keep moving parts clean.
- Always keep parts dry.
- Always let parts cool after use before touching.
- Always remove batteries after use.
- Always ensure failsafe is properly set before flying.
- Never operate aircraft with damaged wiring.
- Never touch moving parts.

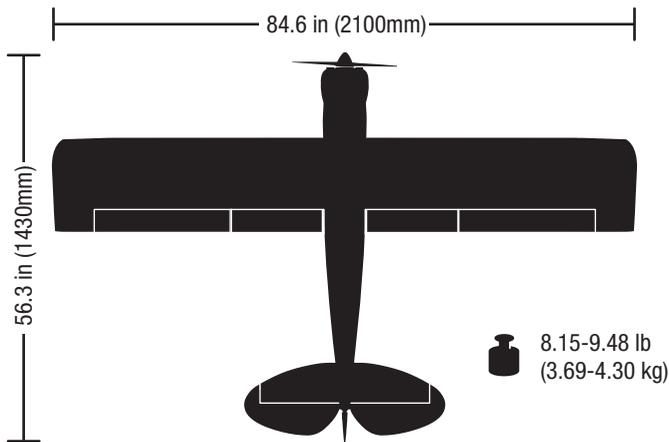
 **WARNING AGAINST COUNTERFEIT PRODUCTS:** If you ever need to replace your Spektrum receiver found in a Horizon Hobby product, always purchase from Horizon Hobby, LLC or a Horizon Hobby authorized dealer to ensure authentic high-quality Spektrum product. Horizon Hobby, LLC disclaims all support and warranty with regards, but not limited to, compatibility and performance of counterfeit products or products claiming compatibility with DSM or Spektrum technology.

Quick Start Information			
Transmitter Setup	1. Blank (Acro) Model		
	2. Wing Type: 1 Aileron, 1 Flap		
	3. Servo Reversing: Gear Reversed, All Others Normal		
	4. Travel Adjust (All Surfaces): 100%		
Dual Rates*		High Rate	Low Rate
	Aileron	▲ = 45mm ▼ = 45mm	▲ = 40mm ▼ = 40mm
	Elevator	▲ = 25mm ▼ = 15mm	▲ = 18mm ▼ = 10mm
	Rudder	▶ = 25mm ◀ = 25mm	▶ = 15mm ◀ = 15mm
Flap Travel	Take-off ▼ = 18mm	Landing ▼ = 40mm	
EXPO (Soft center)		High Rate	Low Rate
	Aileron	10%	5%
	Elevator	10%	5%
	Rudder	10%	5%
Center of Gravity (CG)	105-120mm back from the leading edge, measured at the wing root		
Flight Timer Setting	4 minutes		

* The dual rates values given are intended for first time pilots through intermediate level pilots. For advanced settings options, see the *Dual Rates and Control Throws* section of the manual.

Specifications

	BNF[®] BASIC	PNP[®] PLUG-N-PLAY
Motor: BL50-525Kv (EFLM7450)	Included	Included
ESC: 60A Pro Switch-Mode BEC Brushless (EFLA1060B)	Installed	Installed
Servos: (4) 26g Digital MG Mini Servo (EFLR7145) (2) 13g Digital MG Micro Servo (EFLR7155)	Installed	Installed
Receiver: Spektrum™ AR636 6-Channel Sport Receiver (SPMAR636)	Installed	Required to Complete
Recommended Battery: 4000mAh 22.2V 6S 50C Li-Po (SPMX40006S50)	Required to Complete	Required to Complete
Recommended Battery Charger: 6-cell Li-Po battery balancing charger	Required to Complete	Required to Complete
Recommended Transmitter: Full-Range 2.4GHz with Spektrum™ DSM2®/DSMX® technology with programmable mixing and adjustable dual rates	Required to Complete	Required to Complete



Tools Required

- 1.5mm Hex wrench
- 2mm Hex wrench
- 2.5mm Hex wrench
- 4mm Wrench /Socket
- Needle nose pliers
- Adjustable wrench

Box Contents

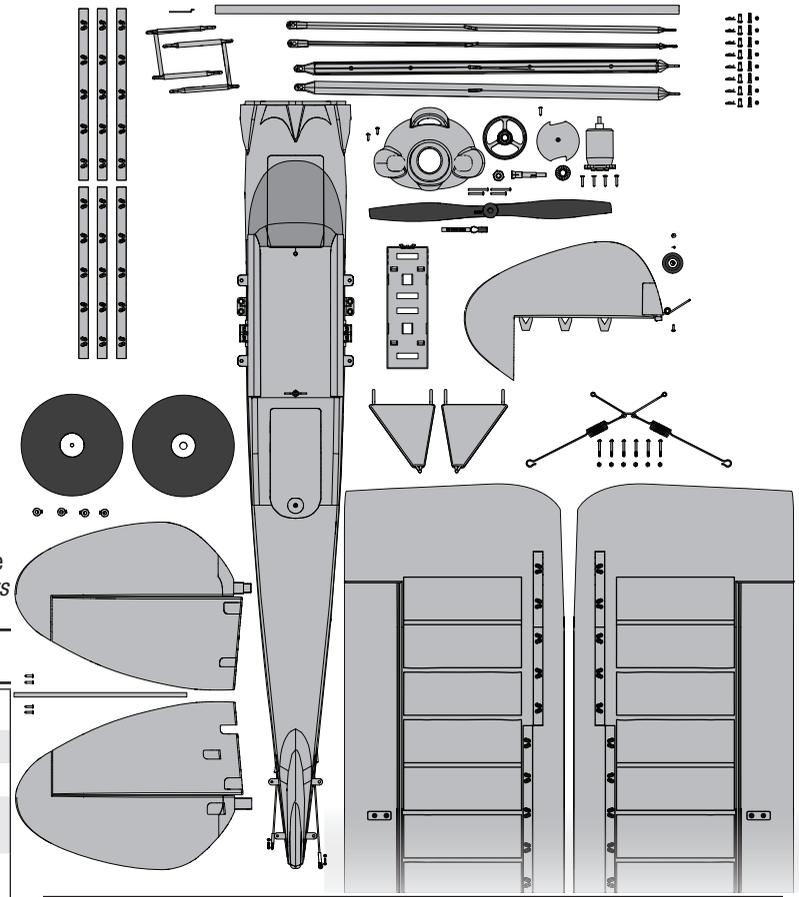


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If you own this product, you may be required to register with the FAA. For up-to-date information on how to register with the FAA, please visit <https://registermyuas.faa.gov/>. For additional assistance on regulations and guidance on UAS usage, visit knowbeforeyoufly.org/.

Preflight

1	Remove and inspect contents.
2	Read this instruction manual thoroughly.
3	Charge the flight battery.
4	Fully assemble the aircraft.
5	Install the flight battery in the aircraft (once it has been fully charged).
6	Check the Center of Gravity (CG).
7	Bind the aircraft to your transmitter.

8	Make sure all linkages move freely.
9	Perform the control direction test with the transmitter.
10	Adjust the flight controls and transmitter as needed.
11	Perform a radio system range test.
12	Find a safe open area to fly.
13	Plan flight for flying field conditions.

Transmitter Setup (BNF)

IMPORTANT: After you set up your model, always rebind the transmitter and receiver to set the desired failsafe positions.

If your transmitter allows it, enable the throttle cut feature. Always engage throttle cut before approaching the aircraft.

Dual Rates

Low rate is recommended for the initial flights.

NOTICE: To ensure AS3X® technology functions properly, do not lower rate values below 50%. If lower rates are desired, manually adjust the position of the pushrods on the servo arm.

NOTICE: If oscillation occurs at high speed, refer to the Troubleshooting Guide for more information.

Expo

After first flights, you may adjust expo in your transmitter.

† Some of the terminology and function locations used in the iX12 programming may be slightly different than other Spektrum AirWare™ radios. The names given in parenthesis correspond to the iX12 programming terminology. Consult your transmitter manual for specific information about programming your transmitter.

* **Flap programming values may vary slightly. For your initial flights use the recommended flap travel settings provided in the Flaps section and adjust the flap travel to your preference on subsequent flights.**

Computerized Transmitter Setup (DX6i, DX6e†, DX6†, DX7, DX7S, DX8, DX9, DX10t, DX18, DX20 and iX12)	
Start all transmitter programming with a blank ACRO model (do a model reset), then name the model.	
Set Aileron, Elevator and Rudder Dual Rates to:	HIGH 100% LOW 70%
Set Servo Travel to:	100%
Set Throttle Cut to	-130%
DX6i	1. Go to the SETUP LIST MENU
	2. Set MODEL TYPE: ACRO
	3. Go to ADJUST LIST MENU
	4. Set FLAPS: Norm ↑100 Flap Elev 0 LAND ↓100 Flap ↓Elev 15
DX7S DX8	1. Go to the SYSTEM SETUP
	2. Set MODEL TYPE: AIRPLANE
	3. Set WING TYPE: 1 AIL 1 FLAP
	4. Go to the FUNCTION LIST
	5. Set FLAP SYSTEM: Choose Flap NORM: 0% FLAP* MID: 40% FLAP* 6% Elevator LAND: 100% FLAP* 15% Elevator SPEED 2.0S: SWITCH = FLAP
DX6e† DX6 (Gen2)† DX7 (Gen2) DX8 (Gen2) DX9 DX10t DX18 DX20 iX12†	1. Go to the SYSTEM SETUP (Model Utilities)†
	2. Set MODEL TYPE: AIRPLANE
	3. Set AIRCRAFT TYPE (Model Setup, Aircraft Type)†: WING: 1 AIL 1 FLAP
	4. Go to the FUNCTION LIST (Model Adjust)†
	5. Set FLAP SYSTEM: SELECT SWITCH D: POS 0: 0% FLAP* POS 1: 40% FLAP* 6% Elevator POS 2: 100% FLAP* 15% Elevator SPEED 2.0

Model Assembly

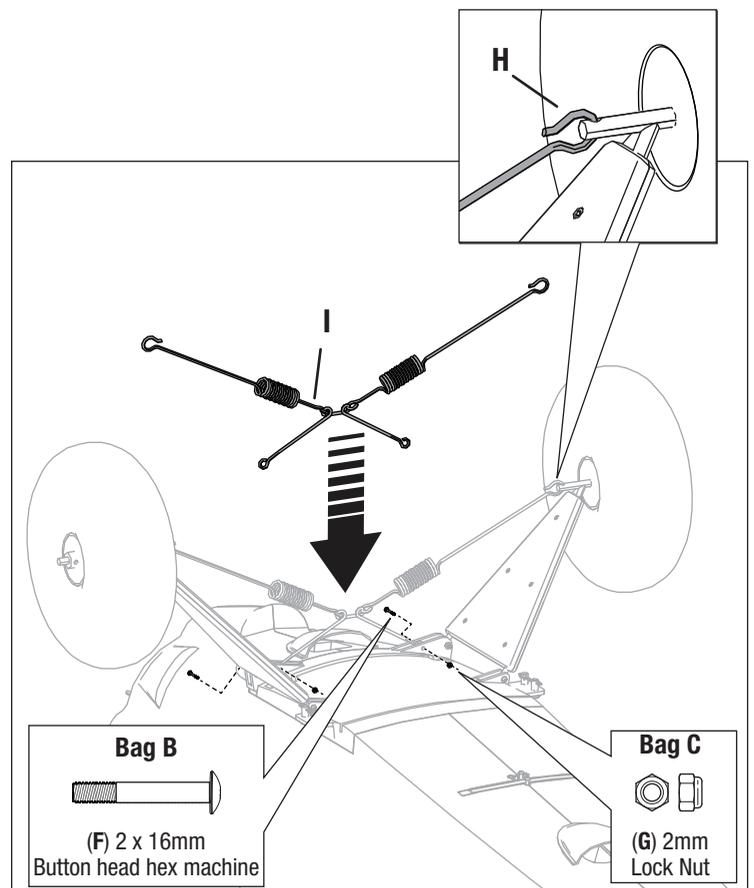
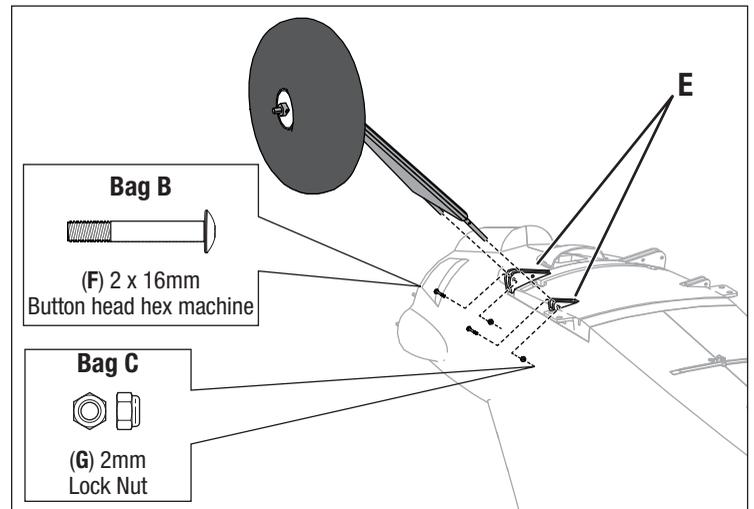
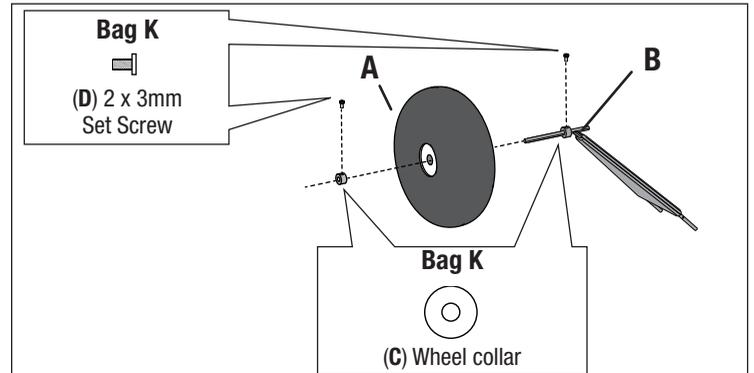
Required Adhesives:



Thread Lock

Landing Gear Installation

1. Install a tundra tire (A) on the strut (B) using 2 wheel collars (C) as shown. Ensure the set screws (D) are aligned with the flat spots on the strut. Apply threadlock and tighten. Repeat tire installation for the opposite strut.
2. Insert the legs of the strut assembly into the landing gear brackets (E) located on the bottom of the fuselage.
3. Align the holes of the strut legs with the holes of the landing gear bracket. Secure the landing gear into place using 2 screws (F) and 2 nuts (G). Repeat installation for opposite strut.
4. Connect both hooks (H) to the holes located on the strut behind the tire.
5. Align the bottom of the landing gear suspension spring (I) to the second hole of the front landing bracket. Secure it into place with the screw (F) and nut (G). Repeat installation for opposite strut.



Model Assembly (Continued)

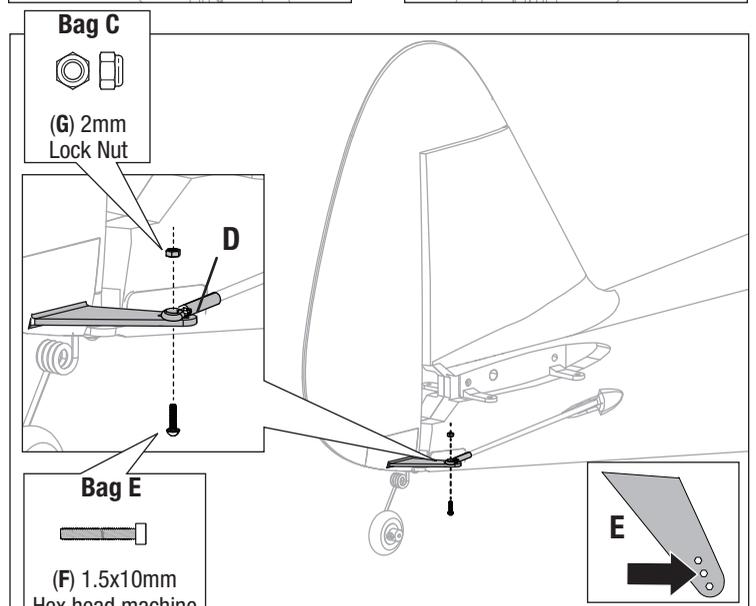
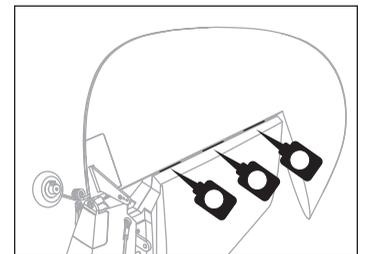
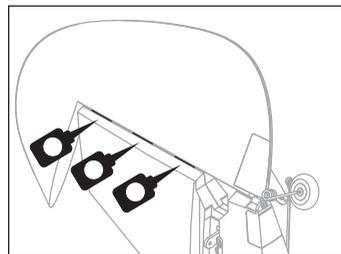
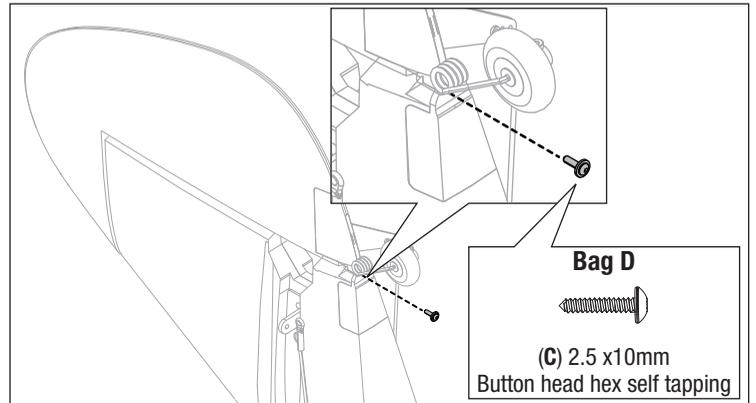
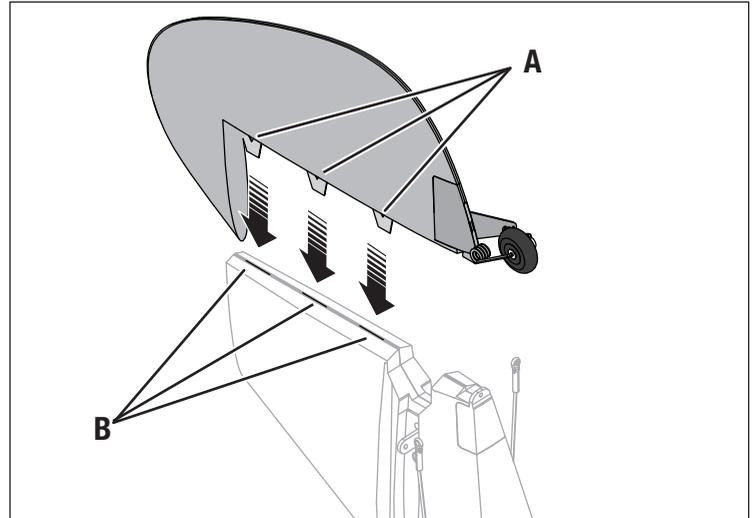
Required Adhesives:



Thin CA

Rudder Installation

1. Slide the rudder's CA hinges (A) into the hinge slots (B) of the vertical fin.
2. Install the screw (C) in the rudder mount. Do not over tighten, the rudder should move smoothly.
3. Rest the aircraft on its nose, holding the tail up so the thin CA (cyanoacrylate adhesive) will flow into the slots.
4. Bend the hinges by turning the rudder left, then carefully apply thin CA to each hinge in the right side of each slot. Repeat this process for the left side of the rudder. Apply 4-5 drops on each hinge on each side.
5. Connect the ball link (D) to the rudder control horn's middle hole (E) using a screw (F) and nut (G). Ensure the rudder servo arm is in the correct position, then adjust the ball link on the linkage to center the rudder.



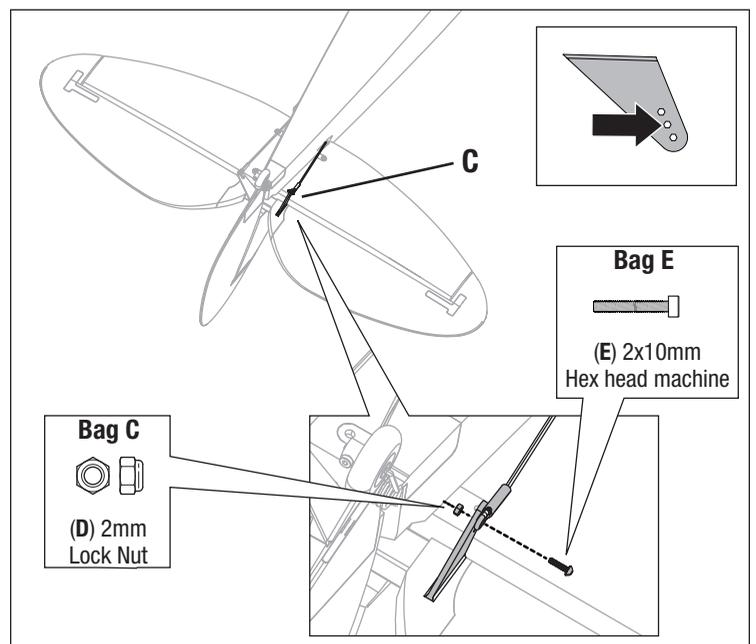
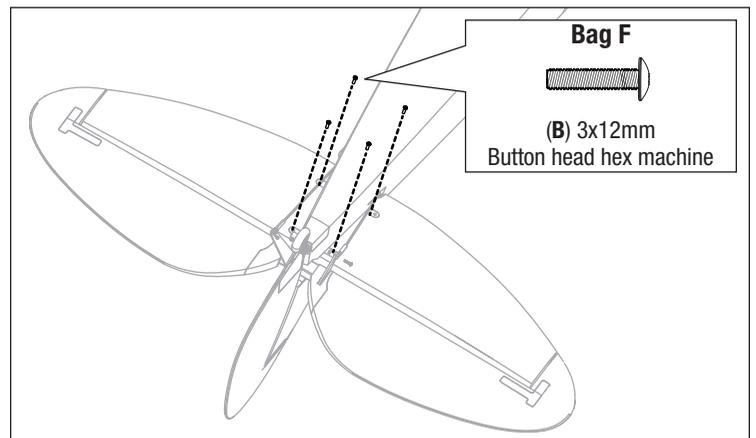
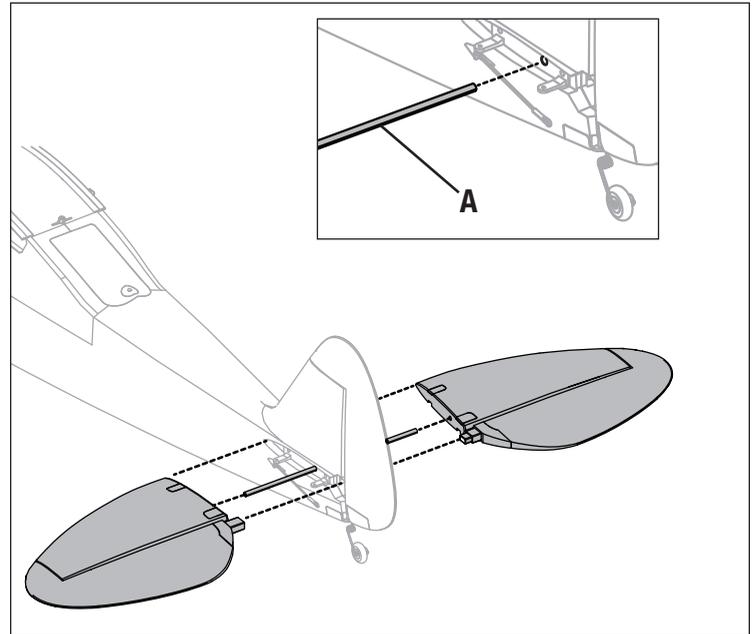
Model Assembly (Continued)

Horizontal Tail Installation

1. Slide the horizontal stabilizer rod (A) into the hole in the rear of the fuselage.
2. Install the 2 piece (left and right) horizontal stabilizer as shown. Ensure the control horn faces down.
3. Install 4 screws (B) in the front and rear holes in the bottom of the horizontal tail.
4. Attach the ball link (C) to the elevator control horn's middle hole using the included nut (D) and screw (E).
5. Ensure the elevator servo arm is in the correct position, then adjust the linkage to center the elevator.

When needed, disassemble in reverse order.

TIP: Use needle-nose pliers or ball link pliers (RV01005) to remove or install a link on a control horn.



Model Assembly (Continued)

Motor and Propeller Installation

1. Correctly align and connect the motor wire colors with the ESC wires.
2. Install the motor (A) with pre-installed X-mount (B) on the fuselage using 4 screws (C) and 4 lockwashers (D). Align the motor wires to face down and position them in the pocket below the motor location. Ensure that the wires are out of the way of the spinning motor.
3. Install the collet (E), and back plate (F) on the motor shaft (G).
4. Install the cowling (H) on the fuselage using 2 screws (I).
5. Install the spinner back plate (J), propeller (K) and nut (L) on the collet. Use a tool to tighten the nut.

IMPORTANT: The propeller size numbers (15 x 7) must face out from the motor for correct propeller operation. Ensure the nut holds the propeller tightly without damaging the propeller.

6. Install the spinner (M) on the collet using the screw (N).

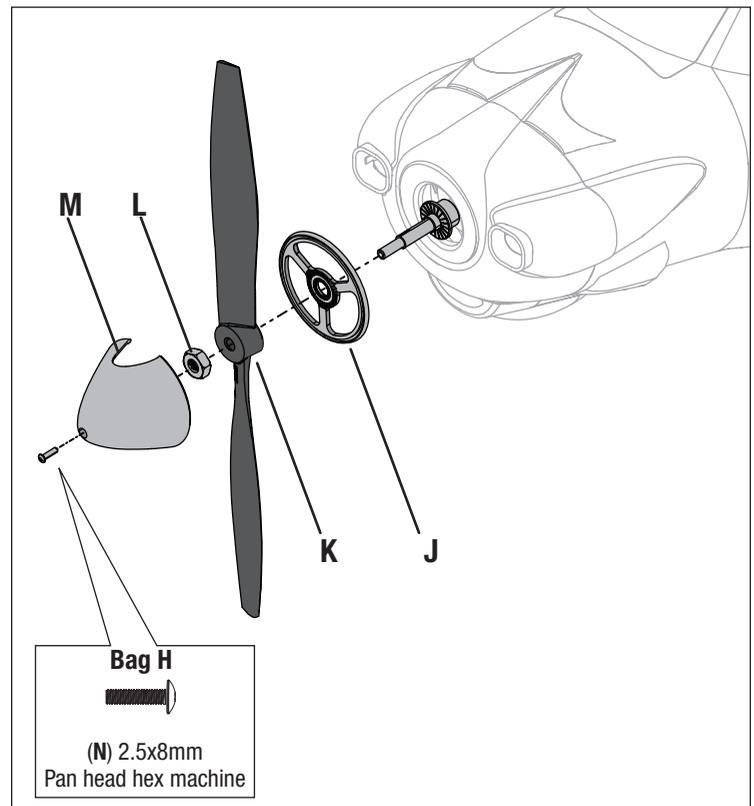
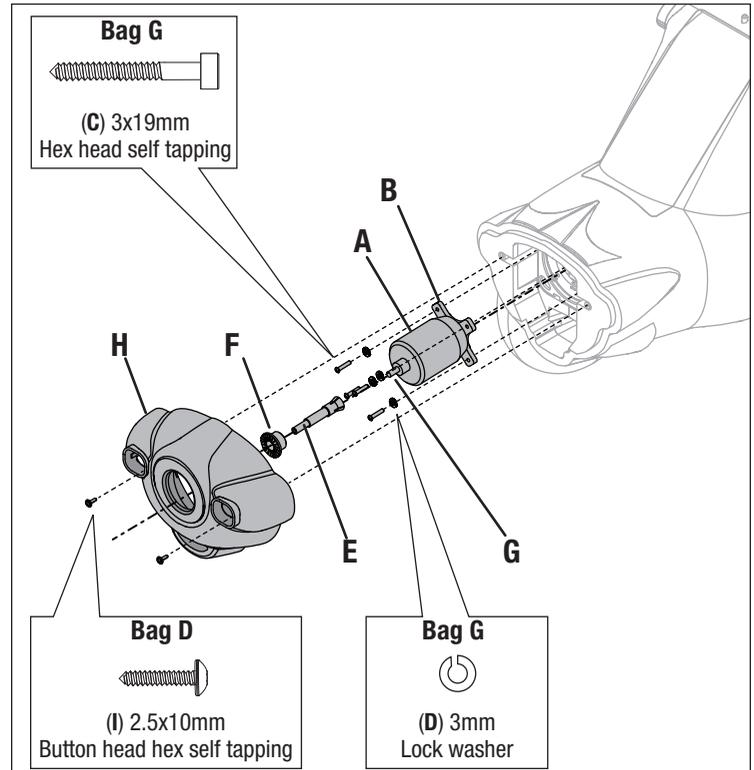
Disassemble in reverse order. Not all wiring shown.

NOTICE: If the propeller is not balanced, the aircraft may vibrate, causing the stabilization system to not operate correctly and/or decrease the life of the servos.

Horizon Hobby does not warrant replacement if the servos are used under extreme vibration or the stabilization system is used with an unbalanced propeller.

For more information, view the propeller balancing video at www.horizonhobby.com.

TIP: We recommend removal of the propeller before any radio system setup or transport of your aircraft.



Model Assembly (Continued)

Wing Installation

Before each flight, ensure all wing connectors and fasteners are secure. Assemble both wings using the following steps. (Only the right wing shown)

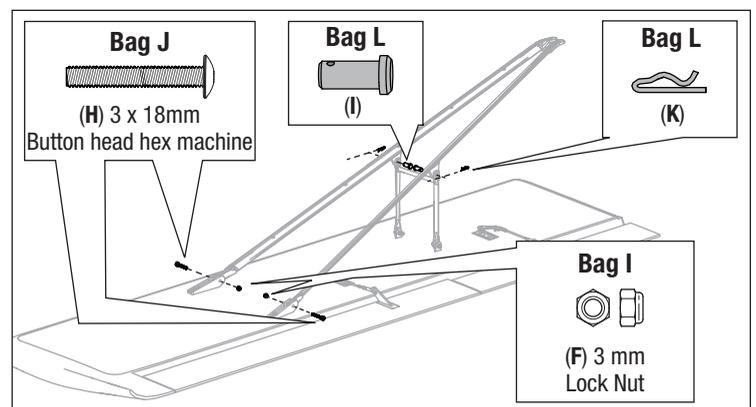
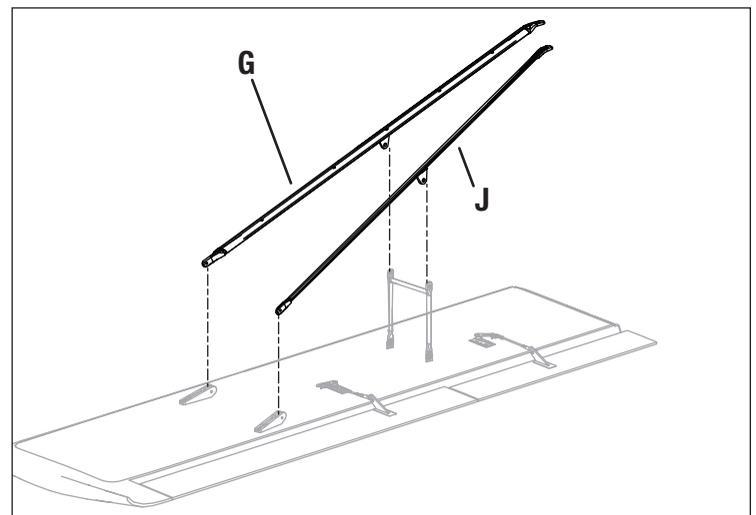
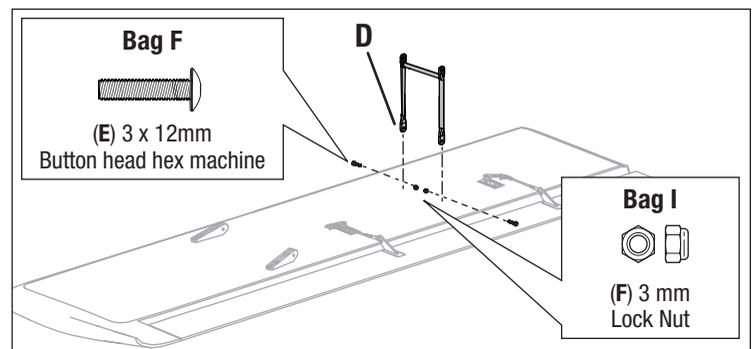
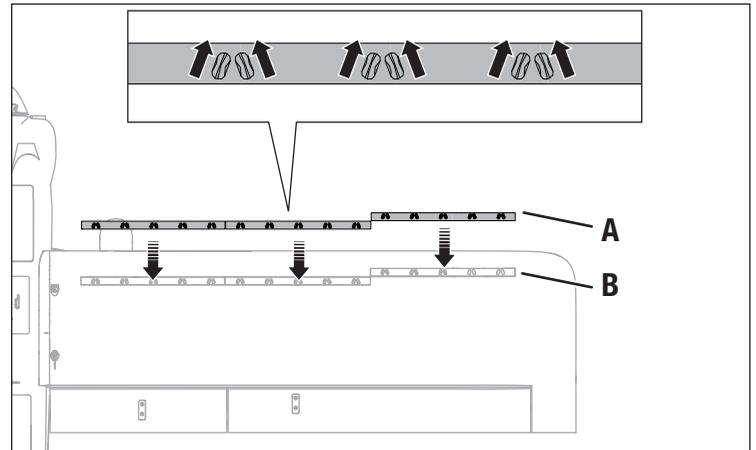
1. Install 6 vortex generators (A) in the wing channels (B) by using the installed double-sided tape.
2. Install the jury strut (D) on the wing mounts using 2 screws (E) and 2 lock nuts (F).

TIP: DO NOT overtighten lock nuts on the screws. Ensure the vertical brackets can pivot freely on the wing mounts.

3. Install the wide front strut (G) on the front strut mounts using a screw (H) and lock nut (F).
4. Install the narrow rear strut (J) on the rear strut mount using a screw (H) and lock nut (F).

TIP: DO NOT overtighten lock nuts on the screws. Ensure the struts can pivot freely in the strut mounts.

5. Attach the vertical bracket to the struts using 2 pins (I) and 2 R-clips (K).



Model Assembly (Continued)

Wing Installation (Continued)

1. Slide the wing tube (A) into the fuselage.
2. Install the left and right wing (B and C) onto the wing tube.
3. Connect the servo connectors (D) to the respective connectors on the fuselage (connectors are marked AIL or FLAP) and slide the wing into the slot of the fuselage.

NOTICE: Always put excess servo connector wire into the pocket of the wing to prevent pinching of wires or other damage.

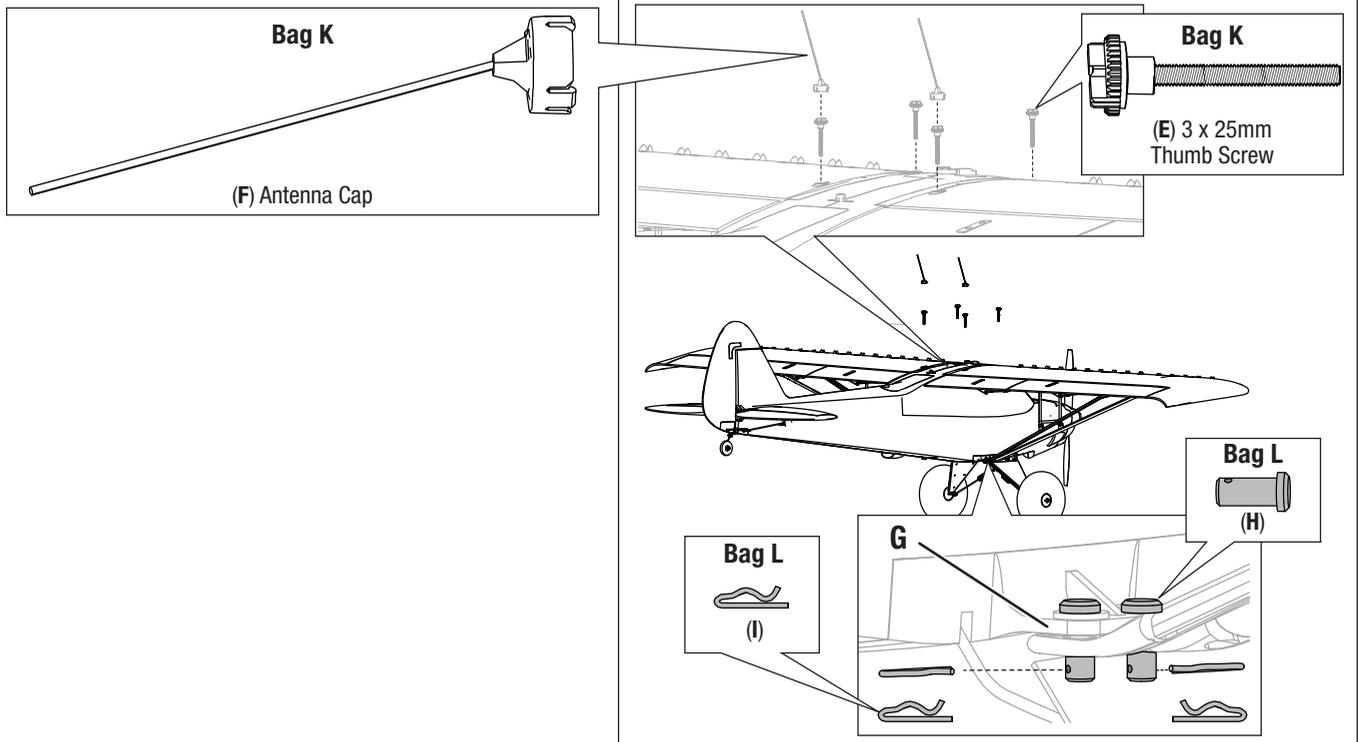
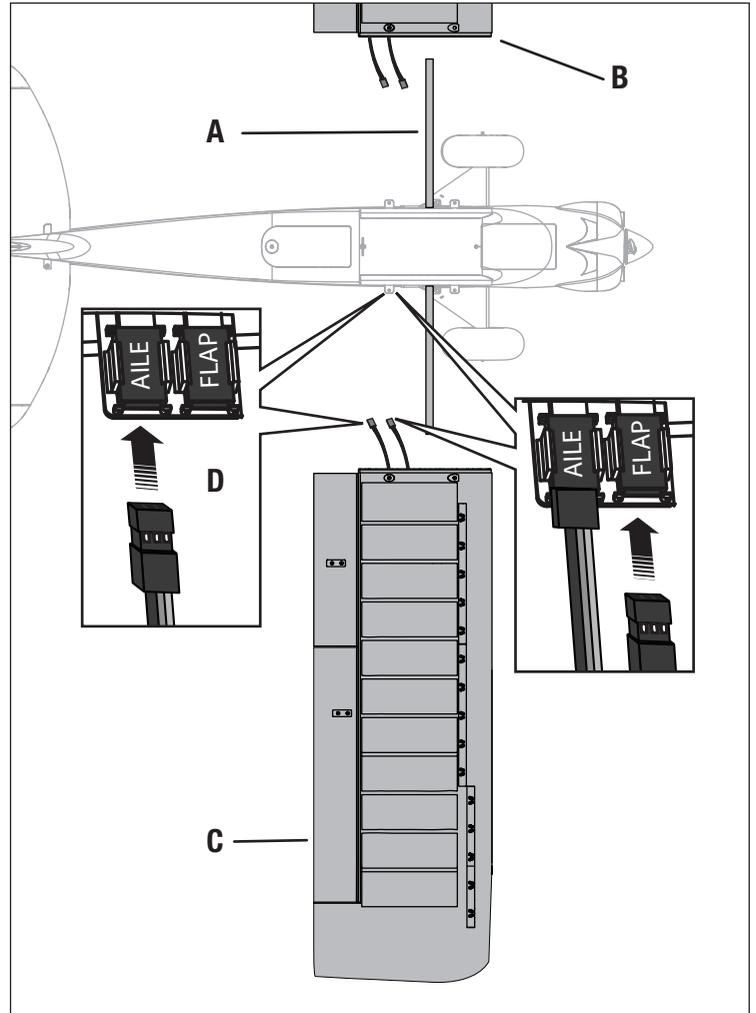
4. Secure the wings on the fuselage using 4 thumb screws (E) in the holes on the top of the wings.
5. Install the 2 antenna (F) on top of the two rear thumb screws by pressing them onto the thumb screw.
6. Connect the left and right wing struts to the fuselage mounts (G) using 4 pins (H) and 4 R-clips (I).

Removal

We recommend removing the wings from the fuselage for storage or transport of the aircraft.

TIP: Remove the jury strut pins and clips from the struts to pivot the brackets and struts down to the wings. Wing struts do not need to be disassembled to be removed.

NOTICE: Always secure loose parts after removal. DO NOT FLY if parts are missing or damage may result.



PNP Receiver Selection and Installation

The recommended receiver for this aircraft is the Spektrum AR636. If you choose to install a different receiver, ensure that it is at least a 6-channel full range (sport) receiver. Refer to the manual of your chosen receiver for correct installation and operation instructions.

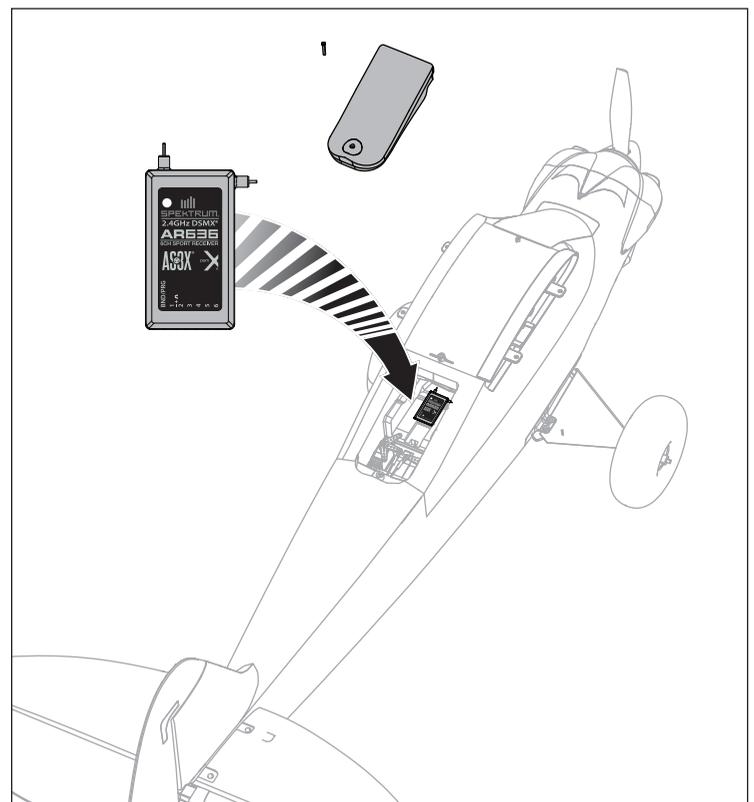
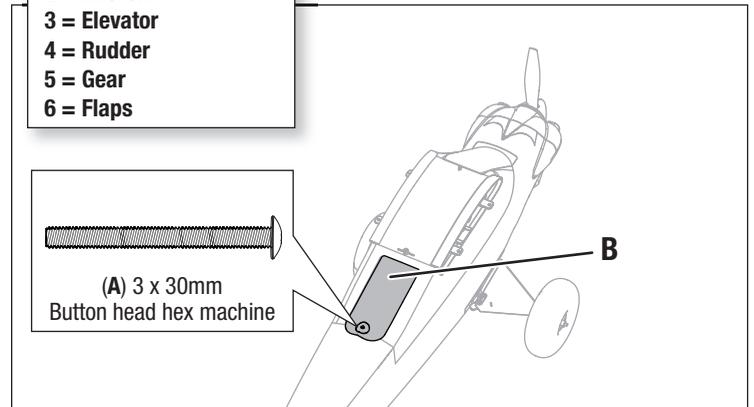
AR636 Installation

1. Remove the screw (A) and radio hatch (B) from the top of the fuselage.
2. Attach the appropriate control surfaces servo leads to their respective ports on the receiver using the table at the right.
3. Using double-sided servo tape, mount the receiver on the receiver platform. The receiver should be mounted parallel to the length of the fuselage, with the label facing up and the servo ports facing the rear of the aircraft, as shown. The orientation of the receiver is critical for all AS3X® and SAFE® technology setups.

CAUTION: Incorrect installation of the receiver could cause a crash.

- | |
|--------------|
| 1 = Throttle |
| 2 = Aileron |
| 3 = Elevator |
| 4 = Rudder |
| 5 = Gear |
| 6 = Flaps |

(A) 3 x 30mm
Button head hex machine

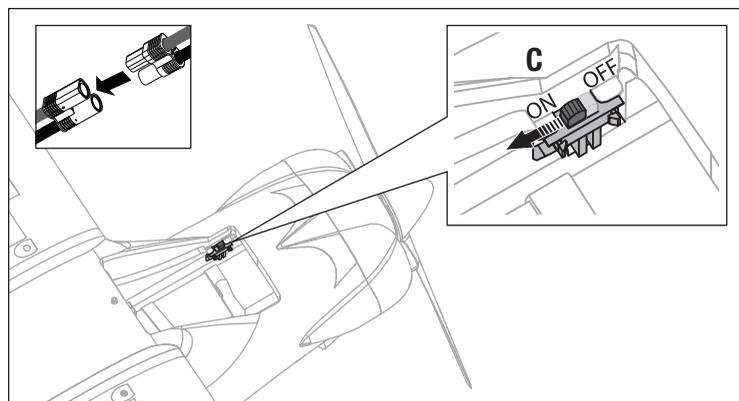
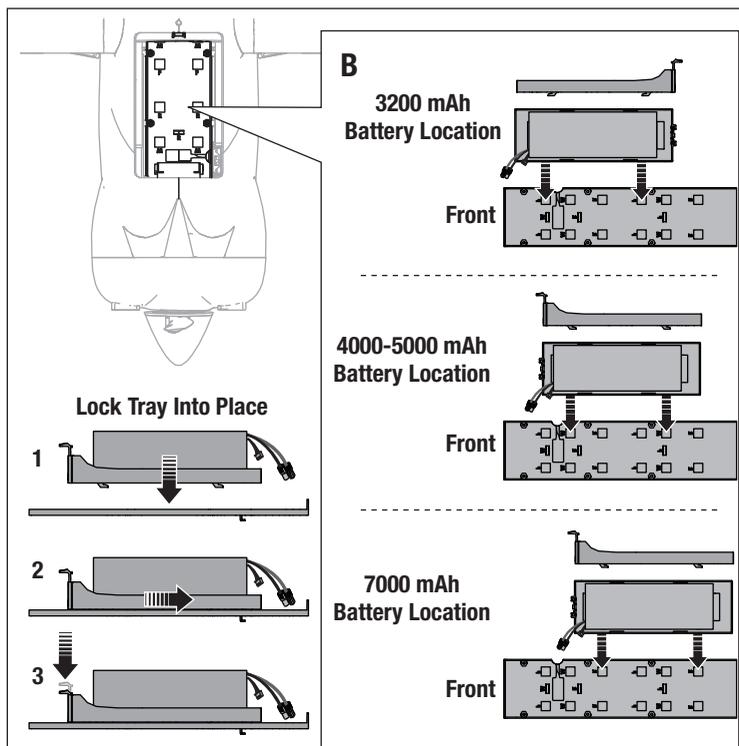
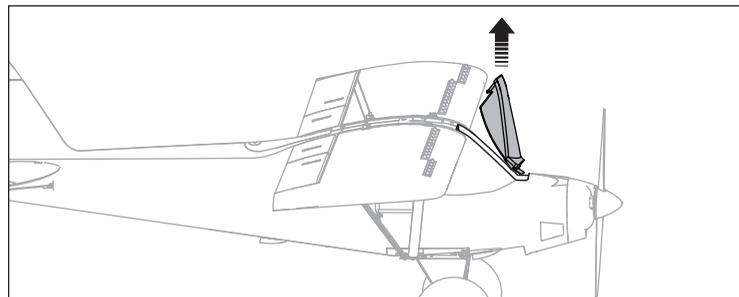
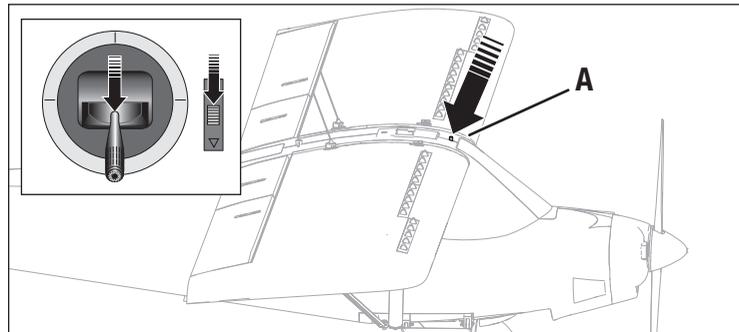


Battery Installation and ESC Arming

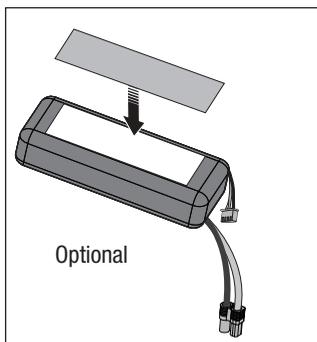
Battery Selection

The Spektrum 4000mAh 22.2V 6S 50C Li-Po battery (EFLB40006S50) is recommended. Refer to the Optional Parts List for other recommended batteries. If using a battery other than those listed, the battery should be within the range of capacity, dimensions and weight of the E-flite Li-Po battery pack. Be sure the model balances at the recommended CG before flying.

1. Lower the throttle and throttle trim to the lowest settings. Power on the transmitter, then wait five seconds.
2. Press the latch button (A) to lift the rear edge of the canopy hatch, then pull the hatch up and back from the fuselage.
3. Use the included hook and loop straps to secure your battery to the battery tray.
4. Install the battery tray into the battery compartment by aligning the battery tray hooks into the slots in the base of the battery compartment that best suits your battery size and weight. The battery compartment has multiple positions to lock the battery tray into (B) as shown. Once in place, press down on the lock tab to lock the tray into place. Adjust as needed to acquire proper CG. **See the Adjusting the Center of Gravity instructions for more information.**
5. Proceed to the binding section if the receiver is not bound.
6. Connect the battery to the ESC.
7. Power ON the ESC switch (C) located on the left side of the battery compartment. (The ESC is now armed).
8. Keep the aircraft immobile, away from wind, upright and on a flat surface until the system initializes.
 - The ESC will produce a series of sounds. Six flat tones followed immediately by two ascending tones.
 - An LED will light on the receiver.
9. Reinstall the canopy hatch.



CAUTION: Always keep hands away from the propeller. When armed, the motor will turn the propeller in response to any throttle movement.

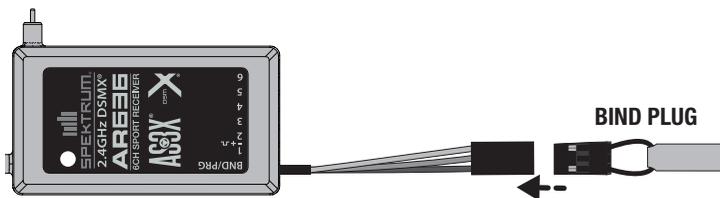


Transmitter and Receiver Binding / Enabling and Disabling SAFE Select

This product requires an approved Spektrum™ DSM2®/DSMX® compatible transmitter. Visit www.bindnfly.com for a complete list of approved transmitters. The aircraft has an optional SAFE Select feature, which can be switched ON or OFF easily by binding in a specific manner as described below.

IMPORTANT: Before binding a transmitter, read the Transmitter Setup section of this manual to ensure that your transmitter is properly programmed for this aircraft.

Bind Plug Installation



Binding Procedure / Enabling SAFE Select

IMPORTANT: The included AR636 receiver has been programmed for operation specifically for this aircraft. Refer to the receiver manual for correct setup if the receiver is replaced or is used in another aircraft.

CAUTION: When using a Futaba® transmitter with a Spektrum DSM® module, you must reverse the throttle channel and rebind. Refer to your Spektrum module manual for binding and failsafe instructions. Refer to your Futaba transmitter manual for instructions on reversing the throttle channel.

1. Move the transmitter controls to neutral (flight controls: rudder, elevators and ailerons) or to low positions (throttle, throttle trim).*
2. Install a bind plug in the receiver bind port extension.
3. Place the aircraft level on its wheels, then connect the flight battery to the ESC. The ESC will produce a series of sounds. Three flat tones followed immediately by two ascending tones confirm that the LVC is set correctly for the ESC. The orange bind LED on the receiver will begin to flash rapidly.
4. **Remove the bind plug from the bind port extension.**
5. Take three steps away from the aircraft /receiver and then power ON the transmitter while holding the transmitter bind button or switch. Refer to your transmitter's manual for specific binding instructions.
IMPORTANT: Do not to point the transmitter's antenna directly at the receiver while binding.
IMPORTANT: Keep away from large metal objects while binding.
6. The receiver is bound to the transmitter when the orange bind light on the receiver stays orange. The ESC will produce a series of sounds. Three flat tones followed immediately by two ascending tones. The tones indicate the ESC is armed, provided the throttle stick and throttle trim are low enough to trigger arming.

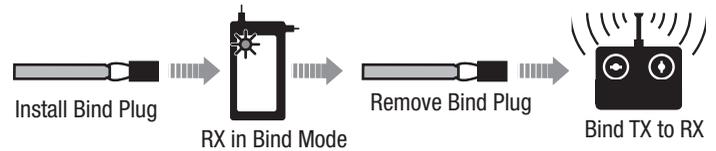
IMPORTANT: Once bound, the receiver will retain its bind settings for that transmitter until it has been intentionally changed, even when power is cycled ON and OFF. Repeat the binding process as necessary.

SAFE Select ON Indication

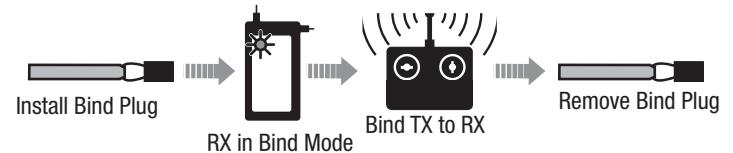
Every time the receiver is powered ON the surfaces will cycle back and forth **twice** with a slight pause at neutral position to indicate that SAFE Select is switched ON.

The throttle will not arm if the transmitter's throttle control is not put at the lowest position. If problems are encountered, follow the binding instructions and refer to the transmitter troubleshooting guide for other instructions. If needed, contact the appropriate Horizon Product Support office.

Switching ON SAFE Select Binding Sequence



Switching OFF SAFE Select Binding Sequence



Binding Procedure / Disabling SAFE Select

IMPORTANT: The included AR636 receiver has been programmed for operation specifically for this aircraft. Refer to the receiver manual for correct setup if the receiver is replaced or is used in another aircraft.

CAUTION: When using a Futaba® transmitter with a Spektrum DSM® module, you must reverse the throttle channel and rebind. Refer to your Spektrum module manual for binding and failsafe instructions. Refer to your Futaba transmitter manual for instructions on reversing the throttle channel.

1. Move the transmitter controls to neutral (flight controls: rudder, elevators and ailerons) or to low positions (throttle, throttle trim).*
2. Install a bind plug in the receiver bind port extension.
3. Place the aircraft level on its wheels, then connect the flight battery to the ESC. The ESC will produce a series of sounds. Three flat tones followed immediately by two ascending tones confirm that the LVC is set correctly for the ESC. **The orange bind LED on the receiver will begin to flash rapidly. DO NOT remove the bind plug at this time.**
4. Take three steps away from the aircraft /receiver and then power ON the transmitter while holding the transmitter bind button or switch. Refer to your transmitter's manual for specific binding instructions.
IMPORTANT: Do not to point the transmitter's antenna directly at the receiver while binding.
IMPORTANT: Keep away from large metal objects while binding.
5. The receiver is bound to the transmitter when the orange bind light on the receiver stays orange. The ESC will produce a series of sounds. Three flat tones followed immediately by two ascending tones. The tones indicate the ESC is armed, provided the throttle stick and throttle trim are low enough to trigger arming.
6. **Remove the bind plug from the bind port extension.**

IMPORTANT: Once bound, the receiver will retain its bind settings for that transmitter until it has been intentionally changed, even when power is cycled ON and OFF. Repeat the binding process as necessary.

SAFE Select OFF Indication

Every time the receiver is powered ON the surfaces will cycle back and forth **once** to indicate that SAFE Select has been switched OFF.

The throttle will not arm if the transmitter's throttle control is not put at the lowest position. If problems are encountered, follow the binding instructions and refer to the transmitter troubleshooting guide for other instructions. If needed, contact the appropriate Horizon Product Support office.

*Failsafe

If the receiver loses transmitter communication, the failsafe will activate. When activated, failsafe moves the throttle channel to its preset failsafe position (low throttle) that was set during binding. All other channels move to actively level the aircraft in flight.

SAFE® Select Switch Designation

SAFE® Select technology can be easily assigned to any open switch (2 or 3 position) on your transmitter. With this feature, you have the flexibility to enable or disable the technology while in flight.

IMPORTANT: Before assigning your desired switch, ensure that the travel for that channel is set at 100% in both directions and the aileron, elevator, rudder and throttle are all on high rate with the travel at 100%. Turn throttle hold OFF if it is programmed in the transmitter.

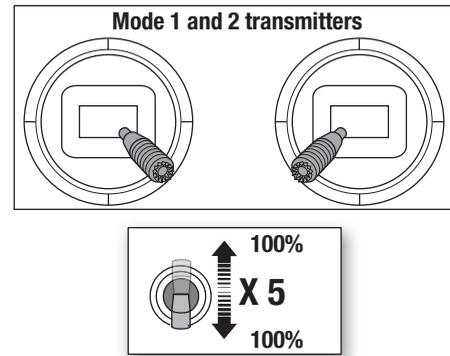
CAUTION: Keep all body parts well clear of the rotor, intakes and exhaust tube and keep the aircraft securely restrained in case of accidental throttle activation.

Assigning a switch

1. Bind the aircraft correctly to activate SAFE Select. This will allow the system to be assigned to a switch.
2. Hold both transmitter sticks to the inside bottom corners and toggle the desired switch 5 times (1 toggle = full up and down) to assign that switch. The control surfaces of the aircraft will move, indicating the switch has been selected.

Repeat the process to assign a different switch or to deactivate the current switch if desired.

TIP: SAFE Select is assignable on any unused Channels 5–9.

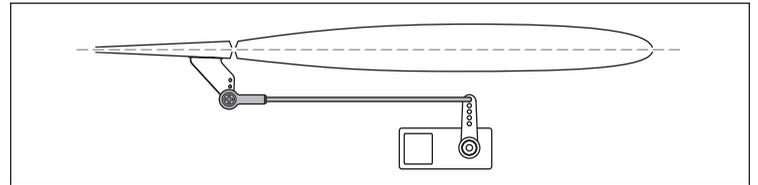


Control Surface Centering

After assembly and transmitter setup, confirm that the control surfaces are centered. If the control surfaces are not centered, mechanically center the control surfaces by adjusting the linkages.

If adjustment is required, turn the clevis on the linkage to change the length of the linkage between the servo arm and the control horn.

After binding a transmitter to the aircraft receiver, set the trims and sub-trims to 0, then adjust the clevises to center the control surfaces.



Control Surface Direction

Switch on the transmitter and connect the battery. Use the transmitter to operate the aileron and elevator controls. View the aircraft from the rear when checking the control directions.

Ailerons

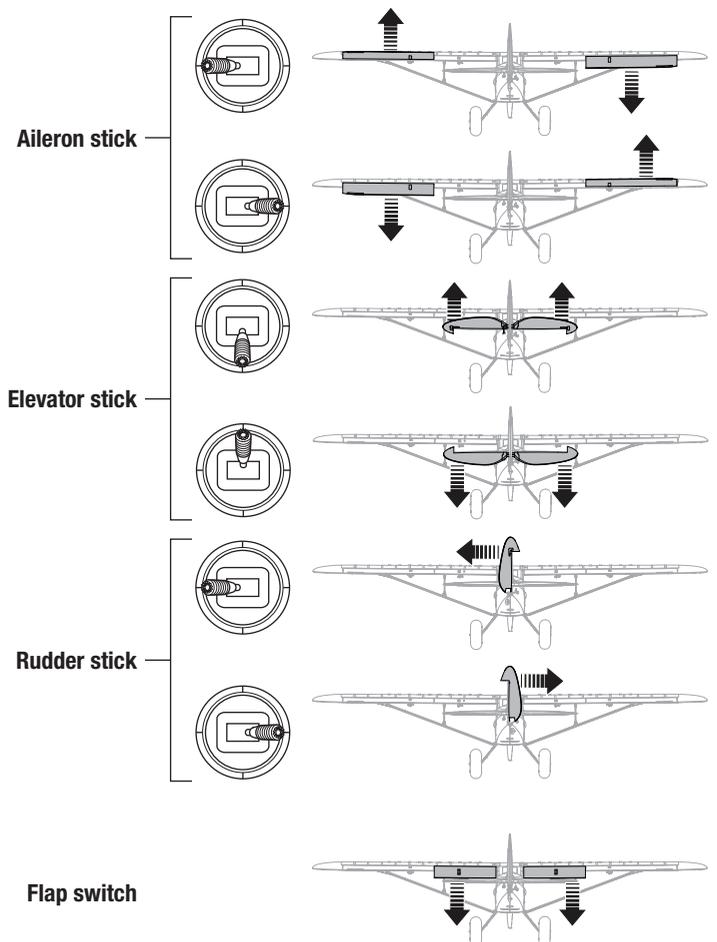
1. Move the aileron stick to the left. The right aileron should move down and the left aileron up, which will cause the aircraft to bank left.
2. Move the aileron stick to the right. The right aileron should move up and the left aileron down, which will cause the aircraft to bank right.

Elevators

1. Pull the elevator stick back. The elevators should move up, which will cause the aircraft to pitch up.
2. Push the elevator stick forward. The elevators should move down, which will cause the aircraft to pitch down.

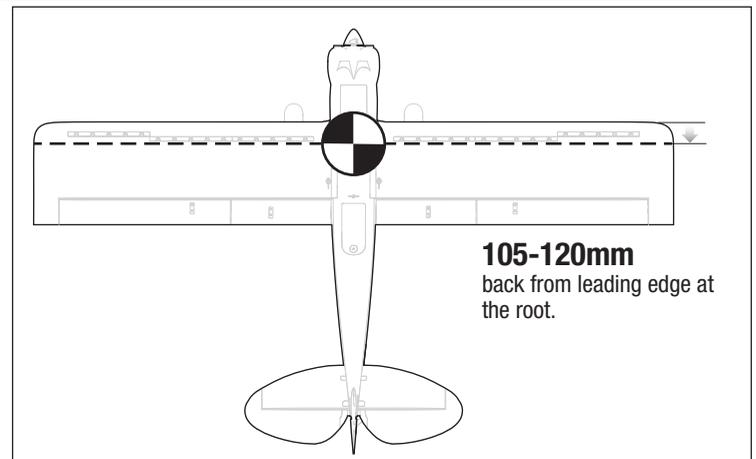
Rudder

1. Move the rudder stick to the left. The rudder should move to the left, which will cause the aircraft to yaw left.
2. Move the rudder stick to the right. The rudder should move to the right, which will cause the aircraft to yaw right.



Center of Gravity (CG)

The CG location is measured from the leading edge of the wing at the root. This CG location has been determined with the recommended Li-Po battery (SPMX40006S50) installed in the middle of the battery compartment.



Control Horn and Servo Arm Settings

The table to the right shows the factory settings for the control horns and servo arms. These settings, in conjunction with the low rate transmitter settings, are intended for the first time pilot through the intermediate level pilot to help ensure a successful flight.

Fly the aircraft at these factory settings before making changes. After flying, or for advanced level pilots you may choose to adjust the linkage positions to increase control response.

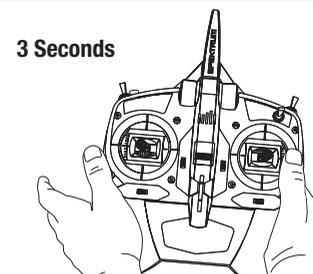
	Factory Settings	
	Control Horns	Servo Arms
Aileron		
Elevator		
Rudder		
Flaps		

In Flight Trimming

During your first flight, trim the aircraft for level flight at 3/4 throttle with flaps and gear up. Make small trim adjustments with your transmitter's trim switches to straighten the aircraft's flight path.

After adjusting trim do not touch the control sticks for 3 seconds. This allows the receiver to learn the correct settings to optimize AS3X performance.

Failure to do so could affect flight performance.



Flying Tips and Repairs

Consult local laws and ordinances before choosing a flying location.

Flying Field

Always choose a wide-open space for flying your aircraft. 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.

Range Check your Radio System

Before you fly, range check the radio system. Refer to your specific transmitter instruction manual for range test information.

Understanding Oscillation

Once the AS3X system is active (after advancing the throttle for the first time), you will normally see the control surfaces react to aircraft movement. In some flight conditions, you will see oscillation. If oscillation occurs, decrease airspeed. If oscillation persists, refer to the Troubleshooting Guide for more information.

Takeoff

Place the aircraft in position for takeoff (facing into the wind). Set your transmitter in low rate and gradually increase the throttle to $\frac{3}{4}$ to full and steer with the rudder. Pull back gently on the elevator and climb to a comfortable altitude.

Flying

Fly the airplane and trim it for level flight at $\frac{3}{4}$ throttle. After landing, adjust the linkages mechanically to account for trim changes, then reset the trims to neutral. Ensure the aircraft will fly straight and level with no trim or sub-trim.

TIP If using more than 8 clicks of flight trim, mechanically adjust the linkage so less trim is needed, or AS3X operation may be affected.

Landing

For your first flights and with the recommended battery pack (EFLB32006s30), set your transmitter timer or a stopwatch to 7 minutes. Adjust your timer for longer or shorter flights once you have flown the model. When the motor pulses, land the aircraft immediately and recharge the flight battery. It is not recommended to fly the battery to LVC.

Make sure to land into the wind. Fly the aircraft to approximately 36 inches (90 cm) or less above the runway, using a small amount of throttle for the entire descent. Keep the throttle on until the aircraft is ready to flare. During flare, keep the wings level and the aircraft pointed into the wind. Gently lower the throttle while pulling back on the elevator to bring the aircraft down on its wheels.

NOTICE: If a crash is imminent, reduce the throttle and trim fully. Failure to do so could result in extra damage to the airframe, as well as damage to the ESC and motor.

NOTICE: After any impact, always ensure the receiver is secure in the fuselage. If you replace the receiver, install the new receiver in the same orientation as the original receiver or damage may result.

NOTICE: Crash damage is not covered under warranty.

Flaps

When using flaps, takeoffs and landings are shorter. When taking off, the tail will come off the ground quicker for better rudder control during the takeoff roll.

During landing, the flaps allow a landing approach to be steeper with the ability to use more throttle. Flaps make the plane come in at a slower airspeed and make it easier to flare and settle in for a smooth landing.

When deploying the flaps, slow the aircraft down to $\frac{1}{4}$ throttle. If the flaps are deployed when the aircraft is at a higher speed, the aircraft will pitch up. Set your down elevator to flap compensation according to the Transmitter Setup Chart to reduce the pitch up tendency.

NOTICE: When using flaps with this airplane, down elevator to flap mixing is required. Failure to do so may result in loss of control or a crash.

Water Takeoff and Landing Using the Optional Float Set

Only use the floats if you are comfortable flying your aircraft and have repeatedly taken off, flown and landed with success. Flying off water poses a higher risk to the airplane because the electronics can fail if fully immersed in water.

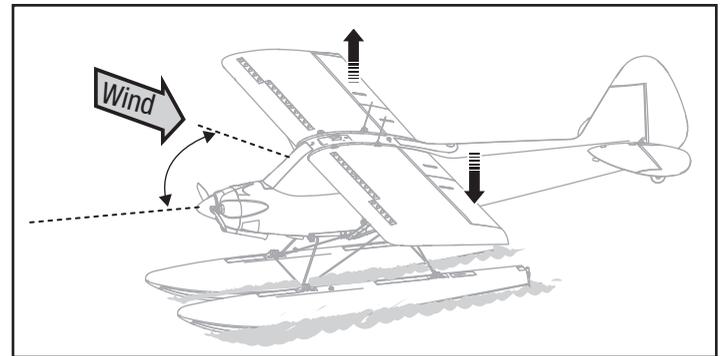
Always ensure the optional floats (EFLA5600 (floats) and EFL12419 (float Struts), sold separately) are secure on the fuselage and that the float rudder linkage is correctly connected and moves freely before putting the aircraft in water.

To take off from water, steer with the rudder to face into the wind and slowly increase the throttle. Keep the wings level on takeoff. Hold a small amount ($\frac{1}{4}$ – $\frac{1}{3}$) of up elevator and the aircraft will lift off once flying speed is reached. Avoid rapidly increasing the throttle as torque from the motor may cause the aircraft to roll to the left when on water.

To land this aircraft on water, fly the aircraft to a couple of feet off the surface of the water. Reduce throttle and add up elevator to flare the aircraft. When taxiing, you must use throttle to move the aircraft forward, but steer with the rudder stick. The stick will turn both the aircraft rudder and a small rudder attached to the left float.

Avoid taxiing cross wind if there is a breeze, as this can cause the aircraft to flip over if wind gets under the upwind wing. Taxi 45 degrees into the direction of the wind (not perpendicular to the wind) and use aileron to hold the upwind wing down. The aircraft will naturally try to face into the wind when taxiing.

Always fully dry the aircraft after landing on water.



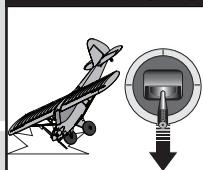
NOTICE: When you are finished flying, never leave the airplane in direct sunlight or a hot, enclosed area such as a car. Doing so can damage the foam.

Repairs

Thanks to the Z-Foam™ material in this aircraft, repairs to the foam can be made using virtually any adhesive (hot glue, regular CA, epoxy, etc). When parts are not repairable, see the Replacement Parts List for ordering by item number. For a listing of all replacement and optional parts, refer to the list at the end of this manual.

NOTICE: Use of CA accelerant on your aircraft can damage paint. DO NOT handle the aircraft until accelerant fully dries.

WARNING



Always decrease throttle at propeller strike.

Post Flight

1	Disconnect the flight battery from the ESC (Required for Safety and battery life).	5	Repair or replace all damaged parts.
2	Power OFF the transmitter.	6	Store the flight battery apart from the aircraft and monitor the battery charge.
3	Remove the flight battery from the aircraft.	7	Make note of the flight conditions and flight plan results, planning for future flights.
4	Recharge the flight battery.		

Optional Tow Release Installation

This aircraft is designed to tow 2-3 meter sailplanes. Refer to your sailplane manual for tow line instructions.

Installation

1. Remove the screw (A) and radio hatch (B) from the top of the fuselage.
2. Install a 13g tow release servo (C) (EFLR7155, sold separately) inside the fuselage using 2 screws (D).
3. Insert the servo connector in the GEAR port of the receiver.
4. Operate the GEAR channel on your transmitter so you see the servo arm move up (GEAR Switch position 1) and down (GEAR switch position 0).

IMPORTANT: In your transmitter, the GEAR channel (Channel 5) servo direction servo must be set to NORMAL with servo travel at 100% for correct operation of the tow release.

5. Move the servo arm down using the GEAR switch.
6. Remove the screw (E) and servo arm (F) from the servo. (figure 1)
7. Install the Z-bend of the tow release pin (G) (included with the aircraft) in the innermost hole of the arm from the bottom of the servo arm. (figure 2)
8. Install the tow release pin in the tow release housing (H) that is molded into the top portion of the fuselage.
9. Attach the servo arm to the servo using the screw so the center of the servo arm points to the 7 o'clock position. (figure 3)
10. Install the radio hatch on the fuselage reusing the screw.

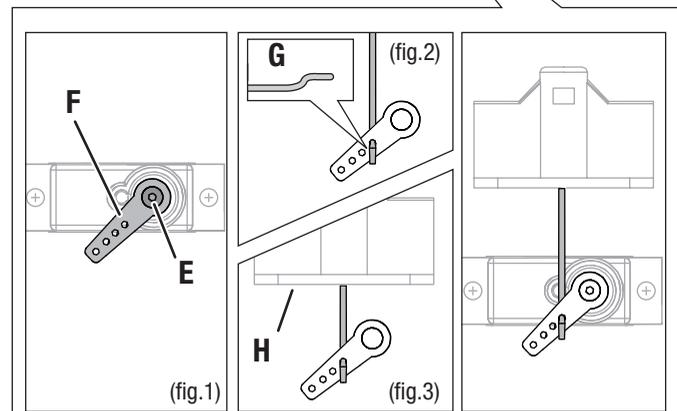
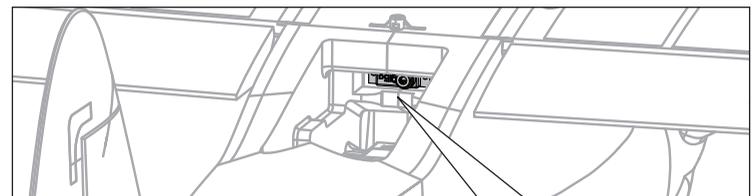
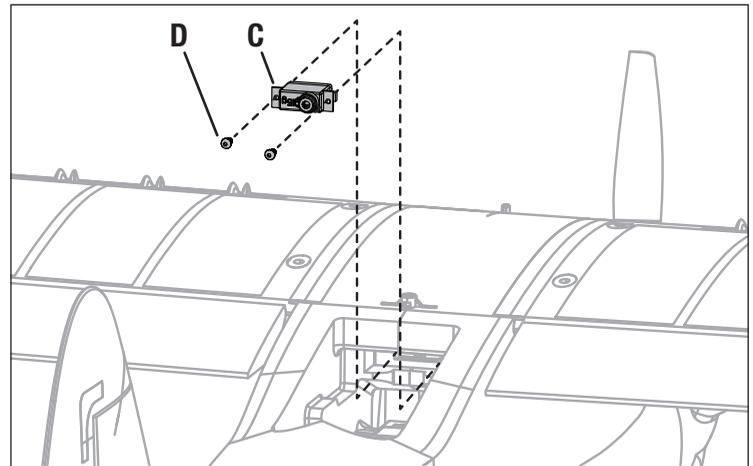
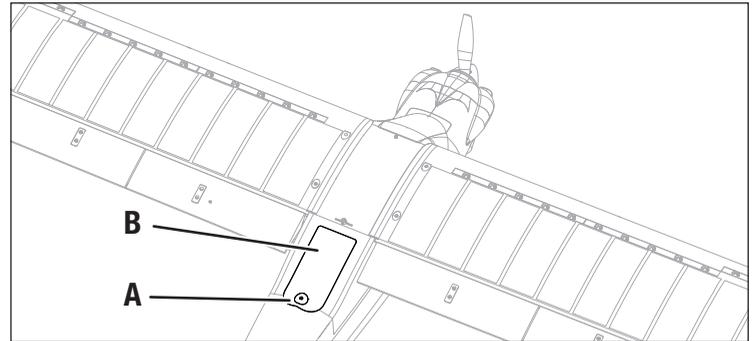
Operation

Operate the GEAR channel on your transmitter to ensure the pin retracts below the slot in the housing. If the pin does not retract appropriately, adjust the servo arm mechanically.

1. Retract the pin.
2. Insert a tow line loop into the housing slot and over the pin.
3. Extend the pin to hold the tow line.

Always put the tension on a tow line and cycle the release before aero-towing a sailplane.

NOTICE: When using a 6 channel transmitter, a SAFE Select Switch and Tow Hook Release cannot be used together, as both use Channel 5



Optional BNF advanced receiver setup

With the basic transmitter setup, the ailerons and flaps will operate separately. For increased aileron authority, the AR636 receiver included in the BNF version may be configured so the flaps can operate as both flaps and ailerons.

Servo Plug Order Change

1. Remove the Y-harness plugged into the Ch-6 port on the AR636, and unplug the servo leads from the Y-harness.
2. Insert the two flap servo leads into the receiver ports; RIGHT flap into Ch-5 and LEFT flap into Ch-6. We recommend labeling the wires to help identify the correct ports when mounting the wing.

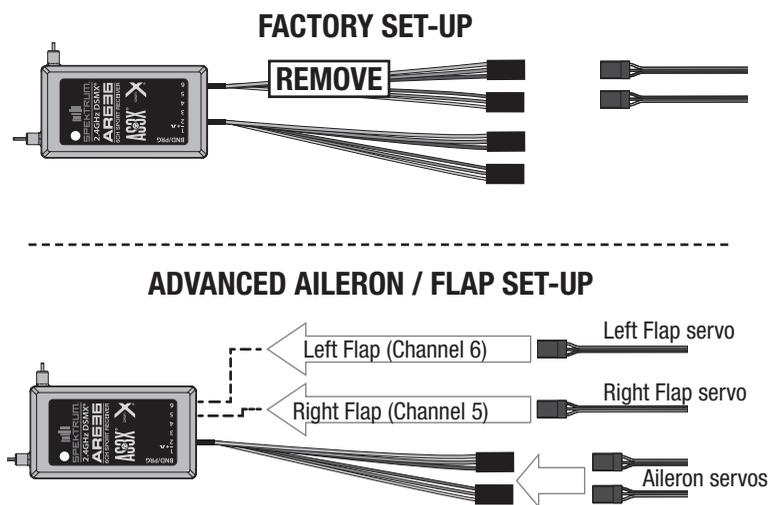
CAUTION: Connecting servos to the wrong port on the receiver could cause a crash.

IMPORTANT: A 7-channel or higher transmitter is required for the advanced BNF receiver setup plus the ability to select between AS3X and SAFE with SAFE Select. If using a 6 channel transmitter with the advanced receiver setup a selectable channel for the safe select is not available.

With the following advanced Transmitter Setup, the Full span aileron feature will be assigned to switch A.

AR636 advanced receiver setup port assignments

- | | |
|-------------------------|----------------|
| 1 = Throttle | 4 = Rudder |
| 2 = Y-harness: Ailerons | 5 = Right flap |
| 3 = Elevator | 6 = Left flap |



Advanced Transmitter Setup	
Start all transmitter programming with a blank ACRO model (perform a model reset), then name the model.	
Set Aileron, Elevator and Rudder Dual Rates to:	HIGH 100% LOW 70%
Expo	HIGH 10% LOW 5%
Set Throttle Cut to	Select desired switch to assigned value. (-130% is default)

Advanced Transmitter Setup	
DX6e, DX6G2, DX7G2, DX8G2, DX8e DX9, DX18, DX20, iX12	1. Go to the System Setup / Model Setup
	2. Set MODEL TYPE: AIRPLANE
	3. Set Model Setup, Aircraft Type: WING: 1 AIL 1 FLAP
	4. Set Channel Assign: Channel Input Config: Gear > INH Return to main menu.
	5. Go to the Functions List / Model Adjust
	6. Set FLAP SYSTEM: SELECT SWITCH D:
	POS 0: FLAP* 0% ELEVATOR
	POS 1: -40% 6%
	POS 2: -100% 15%
	SPEED 2.0
7. Set MIXING: P-MIX 1 Select: NORMAL Set Flap > Gear to read FLP > GER RATE: -100%# -100%# OFFSET: 0% Switch: ON	
8. Set MIXING: P-MIX 2 Select: NORMAL Set Aileron > Gear to read AIL > GER RATE: +100%# +100%# OFFSET: 0% TRIM: INH Switch: A 0 1	
9. Set MIXING: P-MIX 3 Select: NORMAL Set Aileron > Flap to read AIL > FLP RATE: +100%# +100%# OFFSET: 0% TRIM: INH Switch: A 0 1	
10. Servo Setup: Reversing: Gear Travel: Gear: L 100# Flap: Down 100# R (-)140# Up (-)140# Absolute Travel: (Not available on 6 and 6e) Move switch "A" to ON. Gear: R 1# Flap: Up 1# L 1760# Down 1760#	
CAUTION: It is necessary to set ABSOLUTE TRAVEL limits. The use of flap and full span ailerons could cause servo over travel.	

† Some of the terminology and function locations used in the iX12 programming may be slightly different than other Spektrum AirWare™ radios. The names given in parenthesis correspond to the iX12 programming terminology. Consult your transmitter manual for specific information about programming your transmitter.

* Flap programming values may vary slightly. For your initial flights use the recommended flap travel settings provided in the Flaps section and adjust the flap travel to your preference on subsequent flights.

TRAVEL, SUBTRIM and ABSOLUTE TRAVEL varies slightly per aircraft and will need to be finely tuned for your specific aircraft.

• ABSOLUTE TRAVEL in SERVO SETUP is set to limit your flap servos from over travel.

Troubleshooting Guide AS3X

Problem	Possible Cause	Solution
Oscillation	Damaged propeller or spinner	Replace propeller or spinner
	Imbalanced propeller	Balance the propeller. For more information, view John Redman's propeller balancing video at www.horizonhobby.com
	Motor vibration	Replace parts or correctly align all parts and tighten fasteners as needed
	Loose receiver	Align and secure receiver in fuselage
	Loose aircraft controls	Tighten or otherwise secure parts (servo, arm, linkage, horn and control surface)
	Worn parts	Replace worn parts (especially propeller, spinner or servo)
	Irregular servo movement	Replace servo
Inconsistent flight performance	Trim is not at neutral	If you adjust trim more than 8 clicks, adjust the clevis to remove trim
	Sub-Trim is not at neutral	No Sub-Trim is allowed. Adjust the servo linkage
	Aircraft was not kept immobile for 5 seconds after battery connection	With the throttle stick in lowest position. Disconnect battery, then reconnect battery and keep the aircraft still for 5 seconds
Incorrect response to the AS3X Control Direction Test	Incorrect direction settings in the receiver, which can cause a crash	DO NOT fly. Correct the direction settings (refer to the receiver manual), then fly

Troubleshooting Guide

Problem	Possible Cause	Solution
Aircraft will not respond to throttle but responds to other controls	Throttle not at idle and/or throttle trim too high	Reset controls with throttle stick and throttle trim at lowest setting
	Throttle servo travel is lower than 100%	Make sure throttle servo travel is 100% or greater
	Throttle channel is reversed	Reverse throttle channel on transmitter
	Motor disconnected from ESC	Make sure motor is connected to the ESC
Extra propeller noise or extra vibration	Damaged propeller and spinner, collet or motor	Replace damaged parts
	Propeller is out of balance	Balance or replace propeller
	Prop nut is too loose	Tighten the prop nut
Reduced flight time or aircraft underpowered	Flight battery charge is low	Completely recharge flight battery
	Propeller installed backwards	Install propeller with numbers facing forward
	Flight battery damaged	Replace flight battery and follow flight battery instructions
	Flight conditions may be too cold	Make sure battery is warm before use
	Battery capacity too low for flight conditions	Replace battery or use a larger capacity battery
Aircraft will not enter bind mode or initialize	Aircraft receiver is not level.	Raise tail wheel to make the fuselage close to level and hold steady until aircraft enters bind mode or initializes.
Aircraft will not Bind (during binding) to transmitter	Transmitter too near aircraft during binding process	Move powered transmitter a few feet from aircraft, disconnect and reconnect flight battery to aircraft
	Aircraft or transmitter is too close to large metal object, wireless source or another transmitter	Move aircraft and transmitter to another location and attempt binding again
	The bind plug is not installed correctly in the bind port	Install bind plug in bind port and bind the aircraft to the transmitter
	Flight battery/transmitter battery charge is too low	Replace/recharge batteries
	Bind switch or button not held long enough during bind process	Power off transmitter and repeat bind process. Hold transmitter bind button or switch until receiver is bound

Problem	Possible Cause	Solution
Aircraft will not connect (after binding) to transmitter	Transmitter too near aircraft during connecting process	Move powered transmitter a few feet from aircraft, disconnect and reconnect flight battery to aircraft
	Aircraft or transmitter is too close to large metal object, wireless source or another transmitter	Move aircraft and transmitter to another location and attempt connecting again
	Bind plug left installed in bind port	Rebind transmitter to the aircraft and remove the bind plug before cycling power
	Aircraft bound to different model memory (ModelMatch™ radios only)	Select correct model memory on transmitter
	Flight battery/Transmitter battery charge is too low	Replace/recharge batteries
	Transmitter may have been bound to a different aircraft using different DSM protocol	Bind aircraft to transmitter
Control surface does not move	Control surface, control horn, linkage or servo damage	Replace or repair damaged parts and adjust controls
	Wire damaged or connections loose	Do a check of wires and connections, connect or replace as needed
	Transmitter is not bound correctly or the incorrect airplanes was selected	Re-bind or select correct airplanes in transmitter
	Flight battery charge is low	Fully recharge flight battery
	BEC (Battery Elimination Circuit) of the ESC is damaged	Replace ESC
Controls reversed	Transmitter settings are reversed	Perform the Control Direction Test and adjust the controls on transmitter appropriately
Motor power pulses then motor loses power	ESC uses default soft Low Voltage Cutoff (LVC)	Recharge flight battery or replace battery that is no longer performing
	Weather conditions might be too cold	Postpone flight until weather is warmer
	Battery is old, worn out, or damaged	Replace battery
	Battery C rating might be too small	Use recommended battery

Replacement Parts

Part #	Description
EFLM74501	Motor Shaft: BL50 Outrunner
EFL1025018	Motor Mount Set: Carbon-Z
EFL1045004	Stab Set: Carbon-Z Cub
EFL1045009	Wing & Stab Tube: Carbon-Z Cub
EFL1045010	Strut Set w/Hardware: Carbon-Z Cub
EFL1045011	Pushrod Set: Carbon-Z Cub
EFL1045013	Prop Shaft: Carbon-Z Cub
EFL1045014	Hdw Pack w/Ctrl Horns: Carbon-Z Cub
EFL1045025	Strut Pins and Clips: Carbon-Z Cub
EFL12401	NYA Fuselage: Carbon-Z Cub SS
EFL12402	NYA Wing Left: Carbon-Z Cub SS
EFL12403	NYA Wing Right: Carbon-Z Cub SS
EFL12405	NYA Rudder/Gear: Carbon-Z Cub SS
EFL12406	NYA Cowling: Carbon-Z Cub SS
EFL12407	NYA Hatches: Carbon-Z Cub SS
EFL12408	NYA Landing Gear: Carbon-Z Cub SS
EFL12412	NYA Tundra Tires: Carbon-Z Cub SS
EFL12415	NYA Decal Set: Carbon-Z Cub SS
EFL12421	NYA Vortex Generator: Carbon-Z Cub SS
EFL12422	NYA Wing Screws-Ant: Carbon-Z Cub SS
EFL12423	NYA Tailwheel: Carbon-Z Cub SS
EFL12424	NYA Spinner Orange: Carbon-Z Cub SS
EFLA1060B	60-Amp Pro SB Brushless ESC (V2)
EFL12425	Battery Tray
EFLM7450	"BL50 BL Outrunner Motor, 525Kv"
EFLP1570E	15 x 7 Electric Propeller
EFLR7145	26g Digital MG Mini Servo
EFLR7155	13g Digital Sub-Micro Servo
SPMAR636	AR636 6-Ch AS3X Sport Receiver

Recommended Parts

Part #	Description
SPMR636	AR636 6-Ch AS3X Sport Receiver
EFLB0004S30	14.8V 5000mAh 4 S 14.8V 30c LiPo, 10AWG EC5
SPMX40006S50	22.2V 4000mAh 6S 50C Smart LiPo Battery, IC5
SPMX50006S50	22.2V 4000mAh 6S 30C Smart LiPo Battery, IC5
EFLB50005S30	18.5V 5000mAh 5S 30C LiPo, 10AWG: EC5
EFLB50005S30	22.2V 5000mAh 6S 30C LiPo, 10AWG: EC5
SPMR6650	DX6e 6 Channel transmitter Only
DYNC2015	Prophet Precept 80W Charger
SPMXC1000	Smart S1200DC Charger, 1X200W

Optional Parts

Part #	Description
SPMAR636	AR636 6-Ch AS3X Sport Receiver
SPMR12000	iX12 12 Channel Transmitter Only
SPMR6750	DX6 Transmitter Only MD2 G3
SPMR8000	DX8 Transmitter Only MD2
SPMR8100	DX8e 8CH Transmitter Only
SPMR9910	DX9 Black Transmitter Only MD2
EFL12419	NYA Float Strut Set: Carbon-Z CUB
EFLA5600	Carbon-Z Float Set
APC17080E	Elictric Propeller, 17 x 8E
DYNC2050	Prophet Sport 4 x 100WAC/DC Charger
EFL1045023	Camera Mount: C-Z Cub
EFL12419	NYA Float Strut Set: Carbon-Z Cub S
EFLA56000	Carbon-Z Float Set
EFLB44006S30	22.2V 4400mAh 6S 30C LiPo, 10AWG: EC5
EFLB50006S30	22.2V 5000mAh 6S 30C LiPo, 10AWG: EC5
EFLM4060A	Power 60 BL Outrunner Motor, 400Kv
SPMR7350	7 Channel AS3X Receiver

AMA National Model Aircraft Safety Code

Effective January 1, 2014

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, education 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.)
 - (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) Not exceed a takeoff weight, including fuel, of 55 pounds unless in compliance with the AMA Large Model Aircraft program. (AMA Document 520-A.)
 - (f) 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).
 - (g) Not operate aircraft with metal-blade propellers or with gaseous boosts except for helicopters operated under the provisions of AMA Document #555.
 - (h) 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.
 - (i) 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.
 - Rocket motors (using solid propellant) up to a G-series size may be used provided they remain attached to the model during flight. Model rockets may be flown in accordance with the National Model Rocketry Safety Code but may not be launched from model aircraft.
 - 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).
 - (j) Not operate a turbine-powered aircraft, unless in compliance with the AMA turbine regulations. (AMA Document #510-A).
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

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. At all flying sites a safety line(s) must be established in front of which all flying takes place (AMA Document #706.)
 - (a) Only personnel associated with flying the model aircraft are allowed at or in front of the safety line.
 - (b) At air shows or demonstrations, a straight safety line must be established.
 - (c) An area away from the safety line must be maintained for spectators.
 - (d) Intentional flying behind the safety line is prohibited.
4. 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.
5. RC model aircraft will not operate within three (3) miles of any pre-existing flying site without a frequency-management agreement (AMA Documents #922 and #923.)
6. 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.
7. 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.
8. RC night flying requires a lighting system providing the pilot with a clear view of the model's attitude and orientation at all times. Hand-held illumination systems are inadequate for night flying operations.
9. 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) Fly using the assistance of autopilot or stabilization system only in accordance with the procedures outlined in AMA Document #560.

Please see your local or regional modeling association's guidelines for proper, safe operation of your model aircraft.

Limited Warranty

What this Warranty Covers

Horizon Hobby, LLC, (Horizon) warrants to the original purchaser that the product purchased (the "Product") will be free from defects in materials and workmanship at the date of purchase.

What is Not Covered

This warranty is not transferable and does not cover (i) cosmetic damage, (ii) damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation or maintenance, (iii) modification of or to any part of the Product, (iv) attempted service by anyone other than a Horizon Hobby authorized service center, (v) Product not purchased from an authorized Horizon dealer, (vi) Product not compliant with applicable technical regulations, or (vii) use that violates any applicable laws, rules, or regulations.

OTHER THAN THE EXPRESS WARRANTY ABOVE, HORIZON MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HEREBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

Purchaser's Remedy

Horizon's sole obligation and purchaser's sole and exclusive remedy shall be that Horizon will, at its option, either (i) service, or (ii) replace, any Product determined by Horizon to be defective. Horizon reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of Horizon. Proof of purchase is required for all warranty claims. SERVICE OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY.

Limitation of Liability

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF HORIZON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability. If you as the purchaser or user are not prepared to accept the liability associated with the use of the Product, purchaser is advised to return the Product immediately in new and unused condition to the place of purchase.

Law

These terms are governed by Illinois law (without regard to conflict of law principals). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Horizon reserves the right to change or modify this warranty at any time without notice.

WARRANTY SERVICES

Questions, Assistance, and Services

Your local hobby store and/or place of purchase cannot provide warranty support or service. Once assembly, setup or use of the Product has been started, you must contact your local distributor or Horizon directly. This will enable Horizon to better

answer your questions and service you in the event that you may need any assistance. For questions or assistance, please visit our website at www.horizonhobby.com, submit a Product Support Inquiry, or call the toll free telephone number referenced in the Warranty and Service Contact Information section to speak with a Product Support representative.

Inspection or Services

If this Product needs to be inspected or serviced and is compliant in the country you live and use the Product in, please use the Horizon Online Service Request submission process found on our website or call Horizon to obtain a Return Merchandise Authorization (RMA) number. Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for merchandise until it arrives and is accepted at our facility. An Online Service Request is available at http://www.horizonhobby.com/content/service-center_render-service-center. If you do not have internet access, please contact Horizon Product Support to obtain a RMA number along with instructions for submitting your product for service. When calling Horizon, you will be asked to provide your complete name, street address, email address and phone number where you can be reached during business hours. When sending product into Horizon, please include your RMA number, a list of the included items, and a brief summary of the problem. A copy of your original sales receipt must be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

NOTICE: Do not ship LiPo batteries to Horizon. If you have any issue with a LiPo battery, please contact the appropriate Horizon Product Support office.

Warranty Requirements

For Warranty consideration, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be serviced or replaced free of charge. Service or replacement decisions are at the sole discretion of Horizon.

Non-Warranty Service

Should your service not be covered by warranty, service will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for service you are agreeing to payment of the service without notification. Service estimates are available upon request. You must include this request with your item submitted for service. Non-warranty service estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Horizon accepts money orders and cashier's checks, as well as Visa, MasterCard, American Express, and Discover cards. By submitting any item to Horizon for service, you are agreeing to Horizon's Terms and Conditions found on our website http://www.horizonhobby.com/content/service-center_render-service-center.

ATTENTION: Horizon service is limited to Product compliant in the country of use and ownership. If received, a non-compliant Product will not be serviced. Further, the sender will be responsible for arranging return shipment of the un-serviced Product, through a carrier of the sender's choice and at the sender's expense. Horizon will hold non-compliant Product for a period of 60 days from notification, after which it will be discarded.

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Warranty and Service Contact Information

Country of Purchase	Horizon Hobby	Contact Information	Address
United States of America	Horizon Service Center (Repairs and Repair Requests)	servicecenter.horizonhobby.com/RequestForm/	2904 Research Rd Champaign, IL 61822
	Horizon Product Support (Product Technical Assistance)	productsupport@horizonhobby.com 877-504-0233	
	Sales	websales@horizonhobby.com 800-338-4639	
European Union	Horizon Technischer Service	service@horizonhobby.eu	Hanskampring 9 D 22885 Barsbüttel, Germany
	Sales: Horizon Hobby GmbH	+49 (0) 4121 2655 100	

FCC Information

FCC ID: BRWDASRX15

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

 **CAUTION:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This product contains a radio transmitter with wireless technology which has been tested and found to be compliant with the applicable regulations governing a radio transmitter in the 2.400GHz to 2.4835GHz frequency range.

Supplier's Declaration of Conformity

EFL Carbon-Z Carbon Cub SS BNF Basic and PNP (EFL12450, EFL12475)

 This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

 **CAUTION:** changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Horizon Hobby, LLC
2904 Research Rd.,
Champaign, IL 61822
Email: compliance@horizonhobby.com
Web: HorizonHobby.com

IC Information

IC ID: 6157A-AMRX15

CAN ICES-3 (B)/NMB-3(B)

This device complies with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions:

(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Compliance Information for the European Union

EU Compliance Statement: EFL Carbon-Z Carbon Cub SS BNF Basic (EFL12450)

Horizon Hobby, LLC hereby declares that this product is in compliance with the essential requirements and other relevant provisions of the RED and EMC Directives.

A copy of the EU Declaration of Conformity is available online at:
<http://www.horizonhobby.com/content/support-render-compliance>.

EFL Carbon-Z Carbon Cub SS PNP (EFL12475)

Horizon Hobby, LLC hereby declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.

A copy of the EU Declaration of Conformity is available online at:
<http://www.horizonhobby.com/content/support-render-compliance>.

Instructions for disposal of WEEE by users in the European Union



This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collections point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will

help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.



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