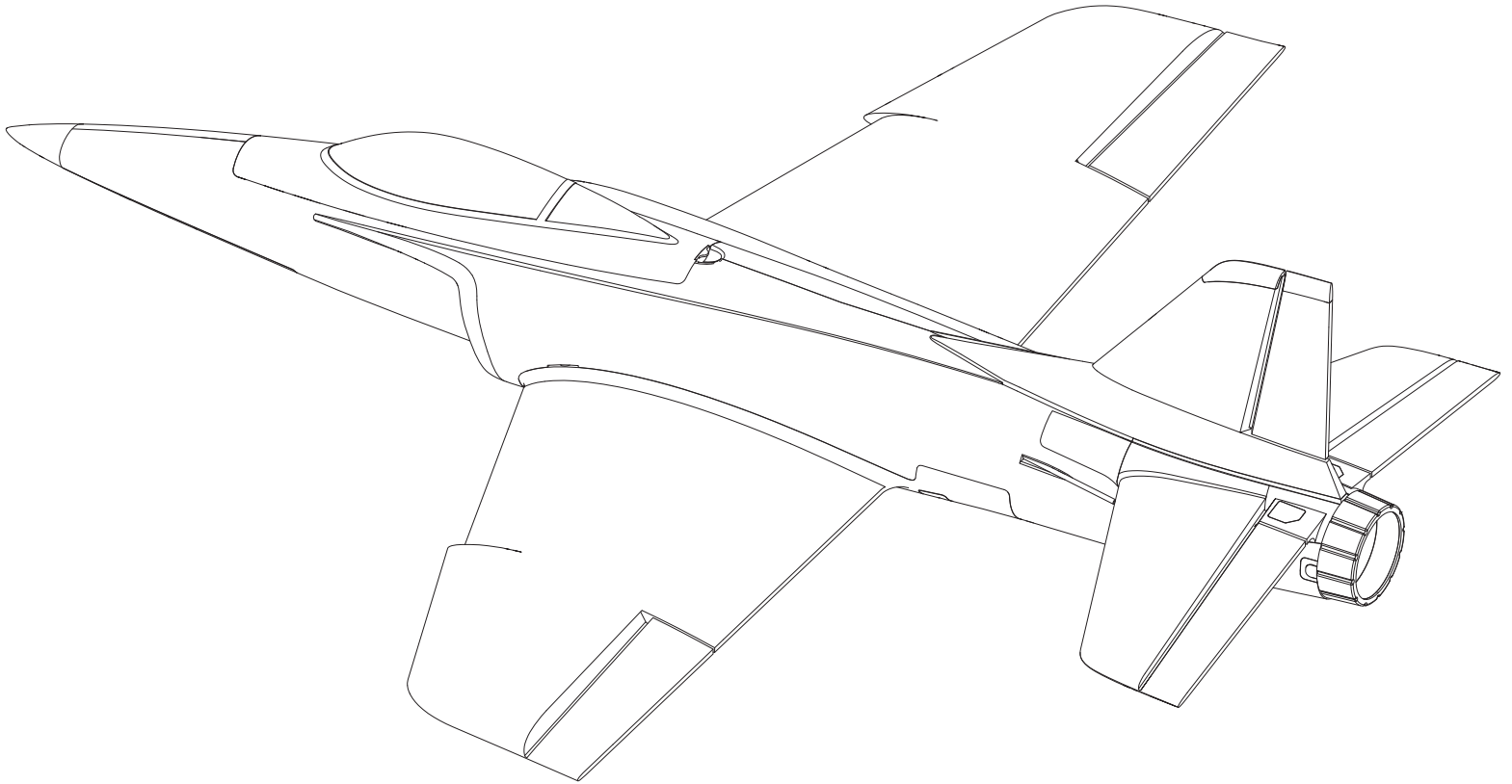


# Habu SS 50mm EDF



**Instruction Manual**  
**Bedienungsanleitung**  
**Manuel d'utilisation**  
**Manuale di Istruzioni**

Scan the QR code and select the Manuals and Support quick links from the product page for the most up-to-date manual information.

Scannen Sie den QR-Code und wählen Sie auf der Produktseite die Quicklinks Handbücher und Unterstützung, um die aktuellsten Informationen zu Handbücher.

Scannez le code QR et sélectionnez les liens rapides Manuals and Support sur la page du produit pour obtenir les informations les plus récentes sur le manuel.

Scannerizzare il codice QR e selezionare i Link veloci Manuali e Supporto dalla pagina del prodotto per le informazioni manuali più aggiornate.



EFL-3133



EFL-3134

## 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 [horizonhobby.com](http://horizonhobby.com) or [towerhobbies.com](http://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.

**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.

## Registration

Register your product today to join our mailing list and keep up to date with product updates, offers and E-flite® news.



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## Specifications

<b>Wingspan</b>	27.56" (700mm)
<b>Length</b>	30.51" (775mm)
<b>Weight</b>	Without Battery: 17.8 oz (504g) With Recommended 4S 2200mAh Battery: 27.4 oz (777g)

## Included Equipment

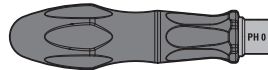
<b>Receiver*</b>	AR631+ 6CH AS3X+®/SAFE® Receiver (SPM-1031)
<b>ESC</b>	30-Amp Smart Lite Brushless ESC, 2S-4S: IC3 (SPMXAE30A)
<b>Motor</b>	Brushless Outrunner Motor 2628-4000Kv 6-Pole (SPMX-1135)
<b>Servos</b>	<b>Aileron:</b> (2) A345 9g Sub-Micro Digital Servo, 230mm Lead (SPMSA345) <b>Elevator:</b> (1) A345 9g Sub-Micro Digital Servo, 60mm Lead (SPMSA345SL) <b>Rudder:</b> (1) A345 9g Sub-Micro Digital Servo, 60mm Lead (SPMSA345SL)

\*These components are not included with the Plug and Play (PNP) version of this product.

## Recommended Equipment

<b>Transmitter</b>	NX7e+ 14-Channel Transmitter Only (SPMR7120)
<b>Flight Battery</b>	2200mAh 4S 14.8V Smart LiPo 30C: IC3 (SPMX224S30)
<b>Battery Charger</b>	S100 1x100W USB-C Smart Charger
<b>Receiver</b>	Receiver, 6+ channel (AR631+ Recommended) (PNP Only)

## Required Tools



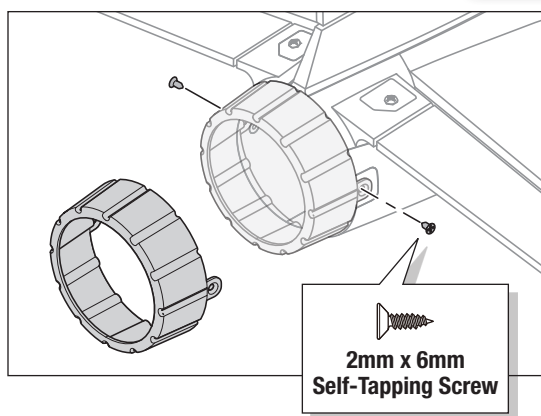
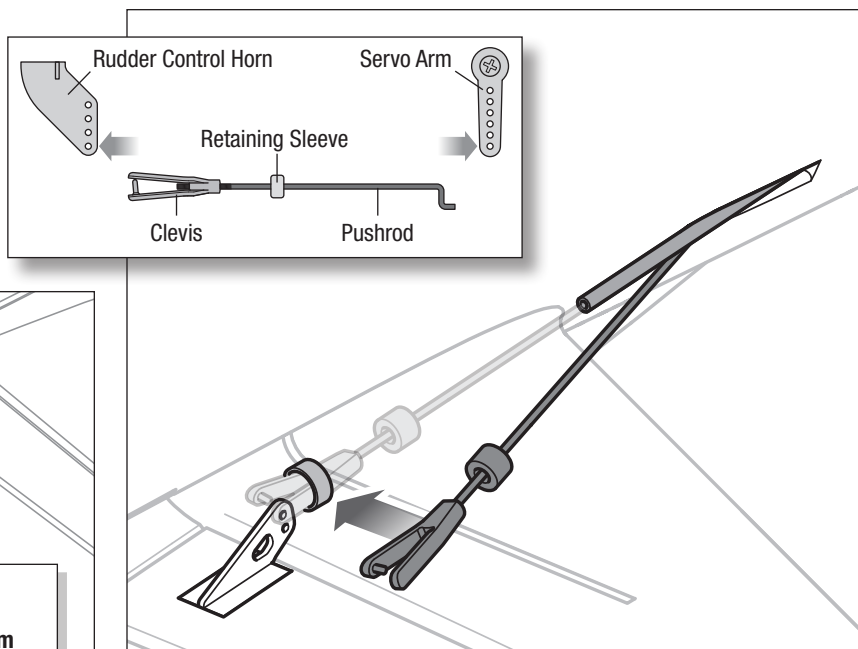
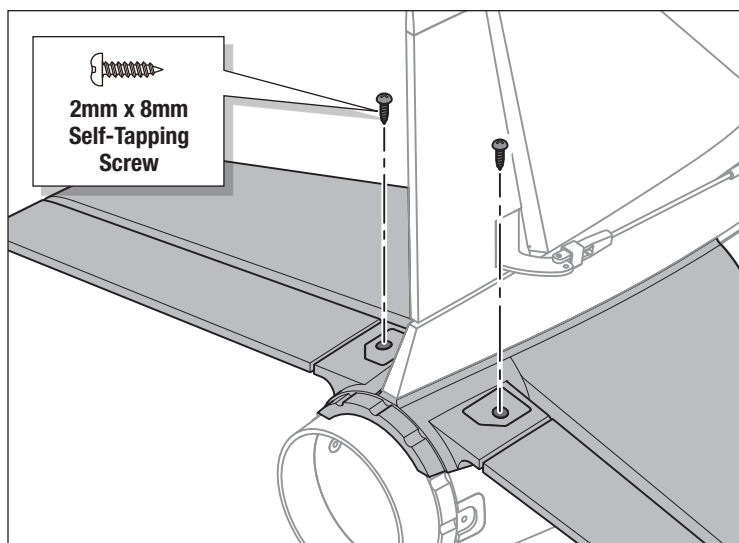
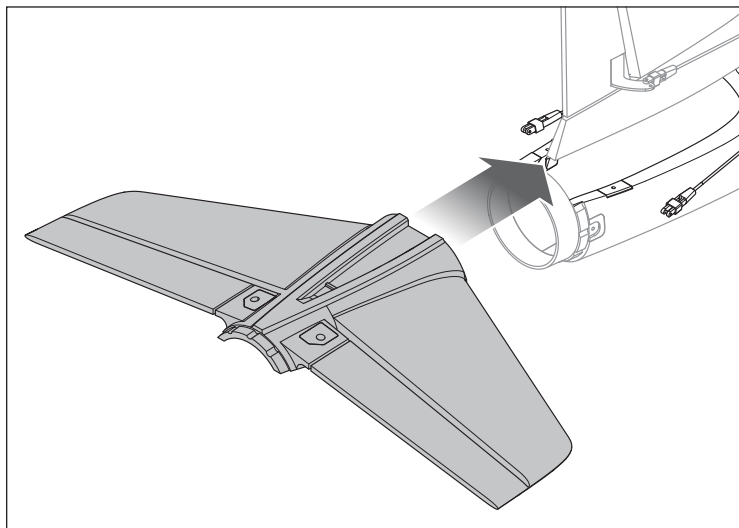
Phillips Screwdriver (PH#0)

## Model Assembly

### Horizontal Stabilizer Installation

1. Slide the horizontal stabilizer into the opening in the rear of the fuselage.
2. Secure the horizontal stabilizer into place using two 2mm x 8mm self-tapping screws and a PH#0 screwdriver.
3. Attach the left and right clevises to the outer holes on the left and right elevator control horns.
4. Slide the tail cone into place, and secure it to the fuselage using two 2mm x 6mm self-tapping screws and a PH#0 screwdriver.

Disassemble in reverse order.



## Wing Installation

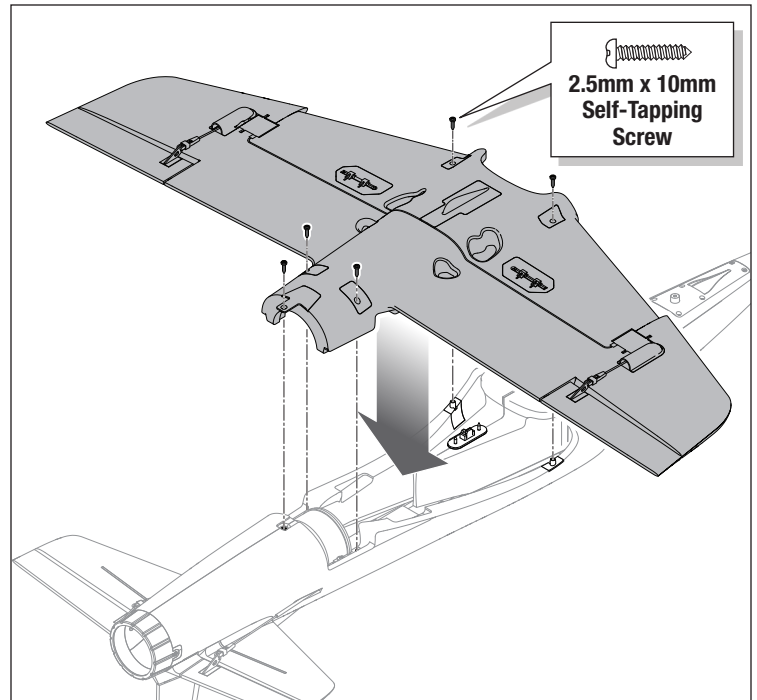
1. Align the hands-free servo connector, and press the wing into the wing saddle of the fuselage, as shown.

**IMPORTANT:** The alignment pin holes and servo connector in the center top of the wing must align with the corresponding pins and connector in the bottom of the fuselage.

2. Secure the wing into position using the five 2.5mm x 10mm self-tapping screws and a PH#0 screwdriver.

**IMPORTANT:** Do not overtighten the screws. Overtightening may cause damage to the screws and attachment points.

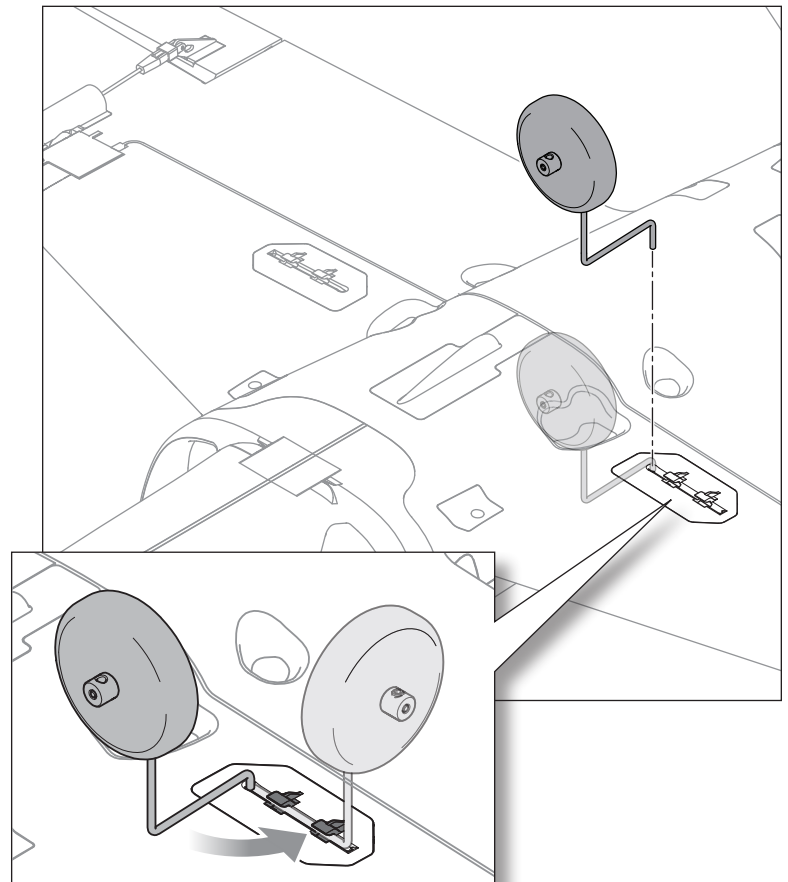
Disassemble in reverse order.



## Main Gear Installation

1. With the aircraft inverted, install the main landing gear by inserting the main gear struts into the corresponding gear plate hole located on each wing.
2. Carefully rotate each strut in the gear plate until the horizontal section of the strut gently snaps into place.

Disassemble in reverse order.



## Nose Gear Installation

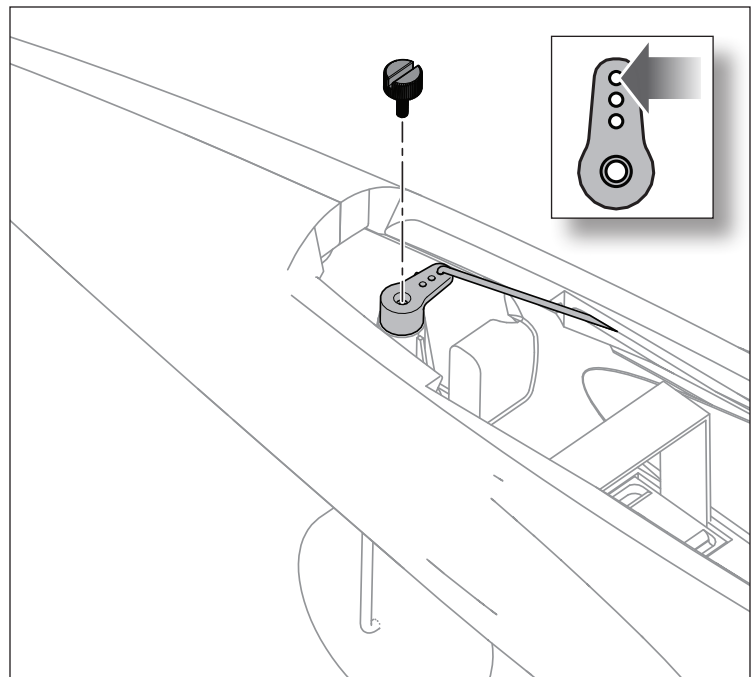
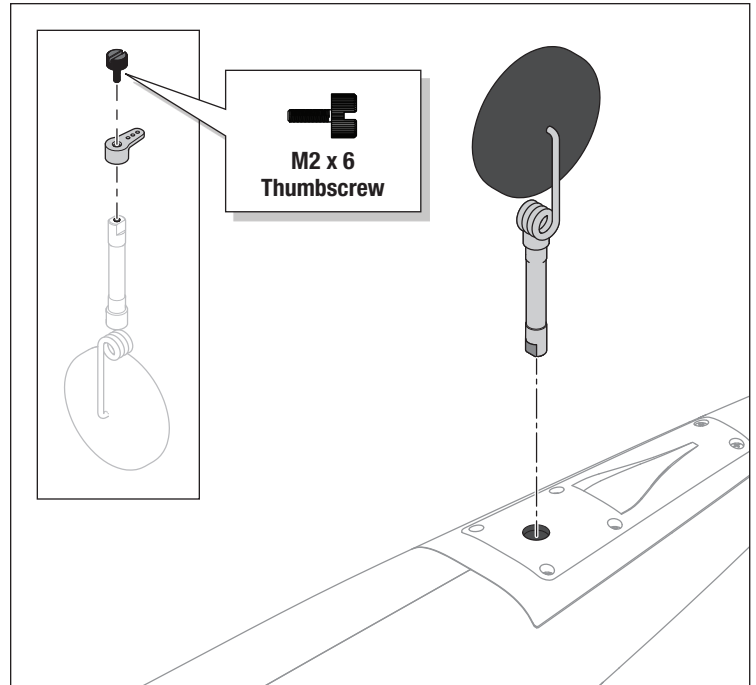
1. Loosen the M2 x 6 thumbscrew, then remove the nose gear steering arm.
2. Insert the nose gear strut into the fuselage.
3. Turn the fuselage over, and rest it on the landing gear.

**IMPORTANT:** Ensure the nose gear remains in the fuselage while rotating the aircraft.

4. Attach the steering clevis to the outer hole of the nose gear arm.
5. Install nose gear steering arm on the strut, aligning the D-shape in the steering arm with D-shape of the top of the strut.
6. Confirm the nose gear is straight, and re-install the nose gear steering arm, securing it with the thumbscrew.

If the nose gear is not straight, center the rudder/nose gear servo, and loosen the set-screw in the nose gear strut. Rotate the nose wheel to straighten it, and tighten the nose gear strut set screw.

Disassemble in reverse order.



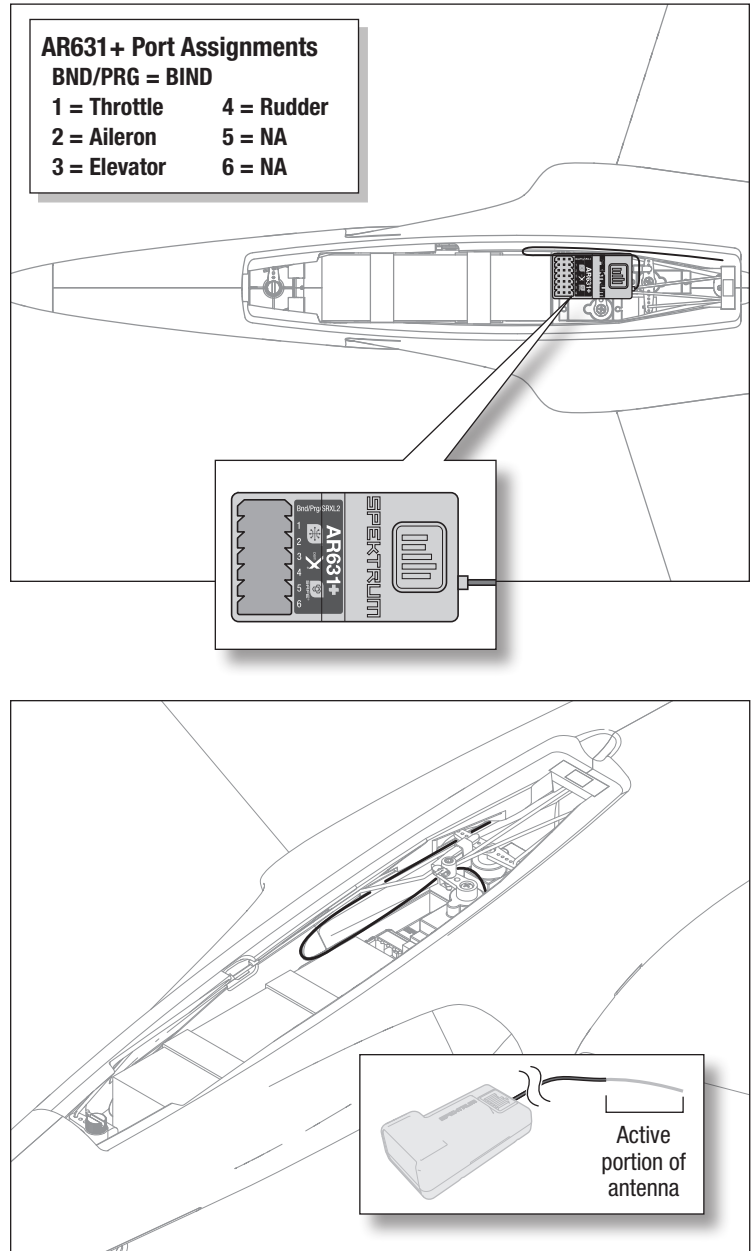
## Plug and Play (PNP) Receiver Selection and Installation

We recommend the Spektrum AR631+ receiver for this aircraft. If you select a different receiver, ensure that it is at least a 6-channel full range receiver, and refer to that receiver manual for correct installation and operation.

### AR631+ Installation

1. Pull up the rear of the canopy hatch to remove it.
2. Connect the control surface servos to their respective receiver ports using the table at the right.
3. Use double-sided servo tape (not included) to mount the receiver in the receiver compartment, as shown. Mount the receiver in the orientation shown, parallel to the length of the fuselage, with the label facing up and the servo ports facing the front of the aircraft. Receiver orientation is critical for AS3X+ and SAFE technology setups.

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



## Smart Transmitter File (STF) Loading Option

The receiver installed in the aircraft contains a transmitter setup file developed specifically for this aircraft. This Smart Transmitter File (STF) allows you to quickly import the transmitter settings directly from the receiver during the binding process.

### Load the Smart Transmitter File:

1. Turn on the transmitter.
2. Create a new blank model file on the transmitter.
3. Power on the receiver.
4. Press the bind button on the receiver.
5. Put the transmitter into bind mode; the model will bind normally.
6. Once the bind is complete, the download screen appears:
7. Select LOAD to continue.

The following screen is a warning that downloading overwrites all current model settings. If this is a new blank model, the file populates the transmitter parameters of the aircraft into the active model and renames it HABU50SS BNF EFL-3134.

**NOTICE:** Confirming will override any previously saved transmitter setups.

8. Press **CONFIRM** to continue.

The file is installed on the transmitter and the telemetry information loads automatically when the download is complete. The radio returns to the home screen, and the new model name is displayed.

**The transmitter setup is now complete, and the aircraft is ready to fly.**

## Important Notes

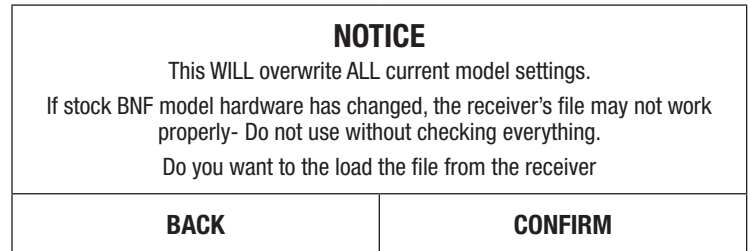
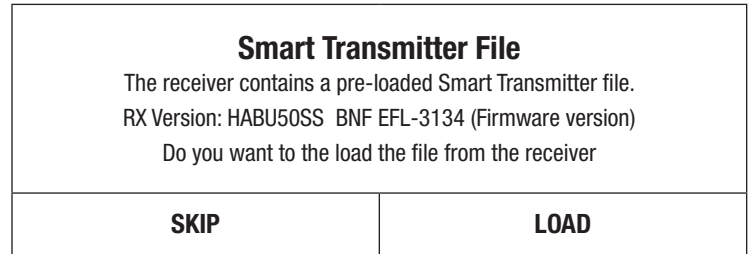
### Flight Timer

The STF does not populate a flight timer in the transmitter. The voltage monitor provides transmitter alerts when battery voltage drops to just above the LVC, indicating it is time to land. The transmitter alert is set so there is time to land before the ESC begins to surge (pulse) when LVC is reached. This method takes flying style and throttle use into account and is more precise than a timer alone.

If you are not using the STF, set a timer for 4 minutes when using the recommended battery. Monitor the battery usage and adjust the timer after the initial flights to best suit your flying style.

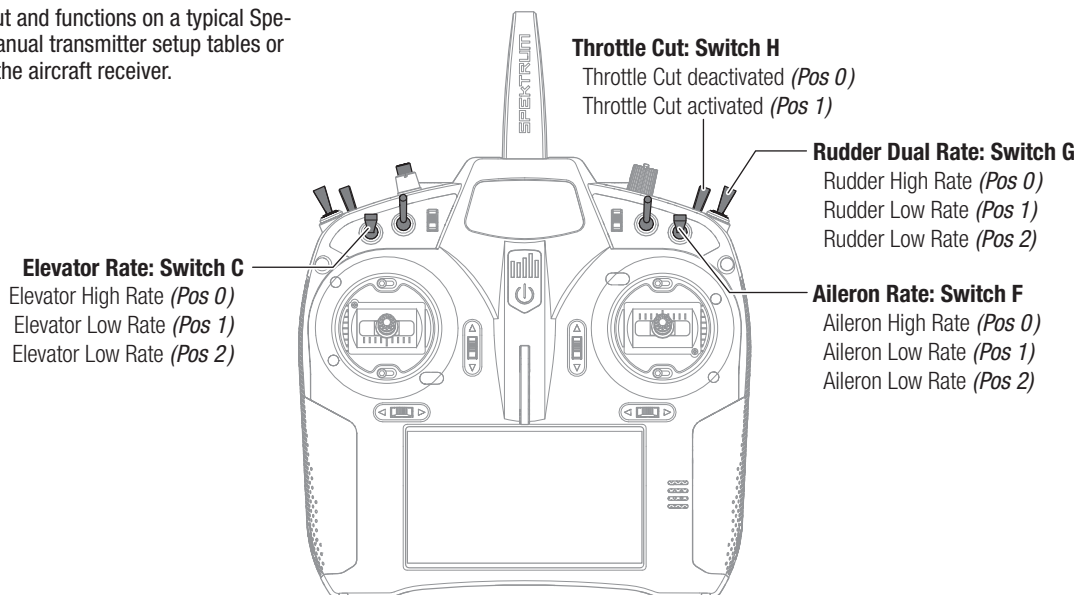
### Supported Transmitters, and firmware requirements, include the following:

- All NX Radios (with firmware version 4.0.11+)
- iX14 (with app version 2.0.9+)
- iX20 (with app version 2.0.9+)
- iX12 and DX radios do not currently support Smart Transmitter File transfers.



## STF and Manual Transmitter Setup Switch Layout

The following illustration shows the switch layout and functions on a typical Spektrum transmitter when programmed per the manual transmitter setup tables or utilizing the Smart Transmitter File loaded from the aircraft receiver.



## Manual Transmitter Setup / Programming Option

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

For the first flight, set the flight timer to 4 minutes when using a 3–4S 2200mAh battery. Adjust the time after the initial flight.

### Exponential

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

#### NX Series Transmitter Setup

1. Power ON your transmitter, click on scroll wheel, roll to **System Setup** and click the scroll wheel. Select **YES**.
2. Go to **Model Select** and choose **Add New Model** near the bottom of the list. Select **Airplane Model Type** by choosing airplane image, select **Create**.
3. Set **Model Name**: Input a name for your model file.
4. Go to **Aircraft Type** and scroll to the wing selection, choose **Wing: Normal Tail: Normal**
5. Select **Main Screen**, Click the scroll wheel to enter the **Function List**.
6. Go to **D/R (Dual Rate) and Expo** menu to set **D/R** and **Expo**.
7. Set **Rates and Expo: Aileron**  
Set **Switch: Switch F**  
Set **High Rates: 100%, Expo 10% — Low Rates: 70%, Expo 5%**
8. Set **Rates and Expo: Elevator**  
Set **Switch: Switch C**  
**High Rates: 100%, Expo 10% — Low Rates 70%, Expo 5%**
9. Set **D/R (Dual Rate) and Expo: Rudder**  
Set **Switch: Switch G**  
**High Rates: 100%, Expo 10% — Low Rates 70%, Expo 5%**
10. Set **Throttle Cut; Switch: Switch H, Position: -100%**

#### DX Series Transmitter Setup

1. Power ON your transmitter, click on scroll wheel, roll to **System Setup** and click the scroll wheel. Select **YES**.
2. Go to **Model Select** and choose **Add New Model** at the bottom of the list. The system asks if you want to create a new model, select **Create**.
3. Set **Model Type**: Select **Airplane Model Type** by choosing the airplane. The system asks you to confirm model type, data will be reset. Select **YES**.
4. Set **Model Name**: Input a name for your model file.
5. Go to **Aircraft Type** and scroll to the wing selection, choose **Wing: Normal Tail: Normal**
6. Select **Main Screen**, Click the scroll wheel to enter the **Function List**.
7. Set **D/R (Dual Rate) and Expo: Aileron**  
Set **Switch: Switch F**  
Set **High Rates: 100%, Expo 10% — Low Rates: 70%, Expo 5%**
8. Set **D/R (Dual Rate) and Expo: Elevator**  
Set **Switch: Switch C**  
**High Rates: 100%, Expo 10% — Low Rates 70%, Expo 5%**
9. Set **D/R (Dual Rate) and Expo: Rudder**  
Set **Switch: Switch G**  
**High Rates: 100%, Expo 10% — Low Rates 70%, Expo 5%**
10. Set **Throttle Cut; Switch: Switch H, Position: -100%**

### Dual Rates

**Low rate is recommended for the initial flights. When landing, use high rate elevator.**

**NOTICE:** To ensure AS3X+ technology functions properly, do not lower rate values below 50%. If less control deflection is 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.

#### iX Series Transmitter Setup

1. Power ON your transmitter and begin once the Spektrum AirWare app is open. Select the orange pen icon in the screen's upper left corner, the system asks for permission to **Turn Off RF**, select **PROCEED**.
2. Select the three dots in the upper right corner of the screen, select **Add a New Model**.
3. Select **Model Option**, choose **DEFAULT**, select **Airplane**. The system asks if you want to create a new acro model, select **Create**.
4. Select the last model on the list, named **Acro**. Tap on the word Acro and rename the file to a name of your choice.
5. Press and hold the back arrow icon in the upper left corner of the screen to return to the main screen.
6. Go to the **Model Setup** menu. Select **Aircraft Type**. The system asks for permission to **Turn Off RF**, select **PROCEED**. Touch the screen to select wing. Select **Normal**.
7. Press and hold the back arrow icon in the upper left corner of the screen to return to the main screen.
8. Go to the **Model Adjust** menu.
9. Set **Dual Rates and Expo**: Select **Aileron**  
Set **Switch: Switch F**  
Set **High Rates: 100%, Expo 10% — Low Rates: 70%, Expo 5%**
10. Set **Dual Rates and Expo**: Select **Elevator**  
Set **Switch: Switch C**  
**High Rates: 100%, Expo 10% — Low Rates 70%, Expo 5%**
11. Set **D/R (Dual Rate) and Expo: Rudder**  
Set **Switch: Switch G**  
**High Rates: 100%, Expo 10% — Low Rates 70%, Expo 5%**
12. Set **Throttle Cut; Switch: Switch H, Position: -100%**

## General Binding Tips and Failsafe (BNF Basic)

- The included receiver has been specifically programmed for operation of this aircraft. Refer to the receiver manual for correct setup if the receiver is replaced.
- Keep away from large metal objects while binding.
- Do not point the transmitter's antenna directly at the receiver while binding.
- The orange LED on the receiver will flash rapidly when the receiver enters bind mode.
- Once bound, the receiver will retain its bind settings for that transmitter until you re-bind.
- If the receiver loses transmitter communication, the failsafe will activate. Failsafe moves the throttle channel to low throttle. Pitch and roll channels move to actively stabilize the aircraft in a descending turn.
- If problems occur, refer to the troubleshooting guide or if needed, contact the appropriate Horizon Product Support office.

## Transmitter and Receiver Binding / Enable or Disable SAFE Select (BNF Basic)

The BNF Basic version of this airplane includes SAFE Select technology, enabling you to choose the level of flight protection. SAFE mode includes angle limits and automatic self leveling. AS3X+ mode provides the pilot with a direct response to the control sticks. SAFE Select is enabled or disabled during the bind process.

With SAFE Select disabled the aircraft is always in AS3X+ mode. With SAFE Select enabled the aircraft will be in SAFE Select mode all the time, or you can assign a switch to toggle between SAFE Select and AS3X+ modes.

Thanks to SAFE Select technology, this aircraft can be configured for full-time SAFE mode, full-time AS3X+ mode, or mode selection can be assigned to a switch.

**IMPORTANT:** Before binding, read the transmitter setup section in this manual and complete the transmitter setup table to ensure your transmitter is properly programmed for this aircraft.

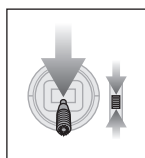
**IMPORTANT:** Move the transmitter flight controls (rudder, elevators, and ailerons) and the throttle trim to neutral. Move the throttle to low before and during binding. This process defines the failsafe settings.

You can use either the **bind button** on the receiver case **OR** a conventional **bind plug** to complete the binding and SAFE Select process.

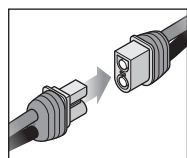
**SAFE Select can also be enabled via Forward Programming.**

### Using The Bind Button...

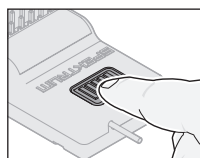
#### To Enable SAFE Select



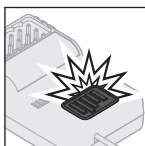
Lower Throttle



Connect Power



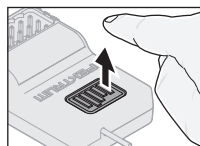
Press and Hold Bind Button



Orange Flashing LED



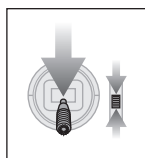
Bind TX to RX



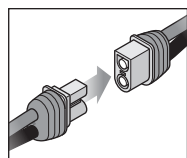
Release Bind Button

**SAFE SELECT ENABLED:** The control surfaces cycle back and forth **twice** with a slight pause at neutral position every time the receiver is powered on.

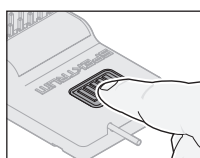
#### To Disable SAFE Select



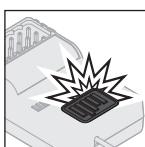
Lower Throttle



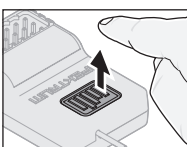
Connect Power



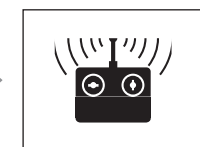
Press and Hold Bind Button



Orange Flashing LED



Release Bind Button

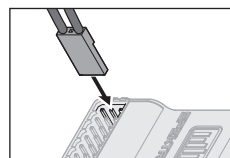


Bind TX to RX

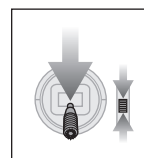
**SAFE SELECT DISABLED:** The control surfaces cycle back and forth **once** every time the receiver is powered on.

### Using The Bind Plug...

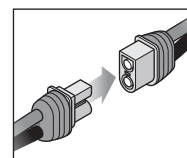
#### To Enable SAFE Select



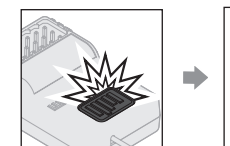
Install Bind Plug



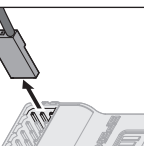
Lower Throttle



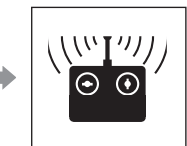
Connect Power



Orange Flashing LED



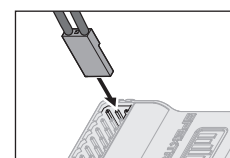
Remove Bind Plug



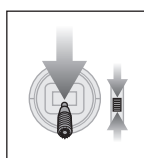
Bind TX to RX

**SAFE SELECT ENABLED:** The control surfaces cycle back and forth **twice** with a slight pause at neutral position every time the receiver is powered on.

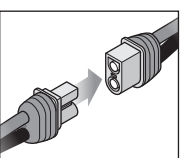
#### To Disable SAFE Select



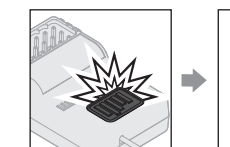
Install Bind Plug



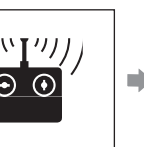
Lower Throttle



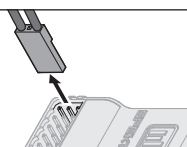
Connect Power



Orange Flashing LED



Bind TX to RX



Remove Bind Plug

**SAFE SELECT DISABLED:** The control surfaces cycle back and forth **once** every time the receiver is powered on.

## Smart Technology Telemetry

The included receiver has Spektrum Smart Technology, which provides telemetry information (e.g., battery voltage). Smart Technology requires a compatible transmitter. Keep the transmitter firmware up-to-date.

### To View Smart Telemetry:

1. Verify the transmitter is bound to the receiver.
2. Power ON the transmitter.

3. Power ON the aircraft.
4. The Smart logo appears under the battery logo on the homepage. A signal bar appears in the top left corner of the screen.
5. Scroll past the servo monitor to view the Smart Technology screens.

For more information about compatible transmitters, firmware updates, and how to use the Smart Technology on your transmitter, visit [www.SpektrumRC.com](http://www.SpektrumRC.com).

## SAFE® Select Technology

When flying in SAFE Select, the aircraft returns to level flight any time the aileron and elevator controls are at neutral. Applying aileron or elevator control causes the airplane to bank, climb or dive, and the amount of stick movement determines the aircraft attitude. Holding full control pushes the aircraft to, but not beyond, the predetermined pitch and roll limits.

When flying through a turn in SAFE Select, it is normal to hold the control stick deflected with moderate aileron input. To fly smoothly in SAFE Select, avoid frequent control changes. Do not attempt to correct for minor deviations. Holding deliberate control inputs in SAFE Select commands the aircraft to fly at a specific angle, and the aircraft makes corrections to maintain that flight attitude.

Return the elevator and aileron controls to neutral before switching from SAFE Select to AS3X+. If you do not neutralize controls when switching into AS3X+, the control inputs used for SAFE Select will be excessive, and the aircraft will react immediately.

### SAFE and AS3X+ Mode Differences

Flight speed and battery charge status may affect aircraft performance.

Control Input	Aircraft in SAFE Select	Aircraft in AS3X+
Neutral	Self levels	Flies at present attitude
Partial	Banks or pitches to a moderate angle; maintains attitude	Pitches or rolls slowly
Full	Banks or pitches to predetermined limits; maintains attitude	Pitches or rolls rapidly

## SAFE Select Switch Designation

SAFE Select technology can be assigned to any open switch (2 or 3 position) controlling a channel (5–20) on the transmitter. Once assigned to a switch, SAFE Select ON offers the flexibility to choose SAFE Select or AS3X+ while in flight. If the aircraft is bound with SAFE Select OFF, the aircraft operates in AS3X+.

**IMPORTANT:** Before assigning a 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 100% travel.

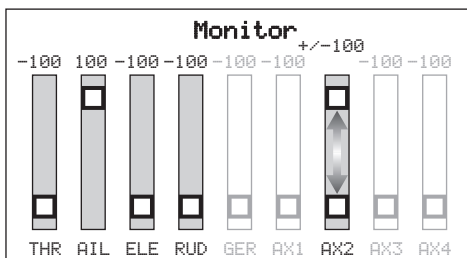
**CAUTION:** Keep all body parts well clear of the rotor and keep the aircraft securely restrained in case of accidental throttle activation.

**TIP:** SAFE Select can be assigned to any unused channel from 5 to 20. See the transmitter manual for more information about assigning a switch to a channel.

**TIP:** While assigning the switch, use a radio channel monitor to confirm that the four primary channels are showing 100% travel.

**TIP:** Use a radio channel monitor to verify:

1. The assigned switch for SAFE Select is active.
2. The switch is driving a channel between 5–20.
3. The channel travels 100% in each direction.



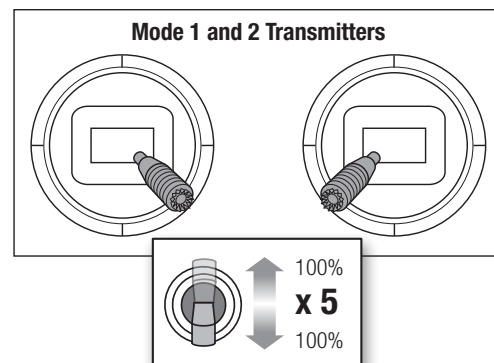
This example of the channel monitor shows the stick positions for switch assignment, the switch selection on Aux2, and  $\pm 100\%$  travel on the switch.

**TIP:** If you have trouble assigning a SAFE Select switch, verify the four primary channels are not reversed.

### Assigning a Switch

1. Power ON the transmitter.
2. Power ON the aircraft.
3. Hold both transmitter sticks to the bottom inside corners, and toggle the desired switch 5 times (1 toggle = full up and down). The control surfaces of the aircraft will move, indicating the switch is selected.

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



## Forward Programming

Assign the SAFE Select channel through forward programming on your compatible Spektrum transmitter.

For more information about setting SAFE Select and using Forward Programming, please refer to the following link for a detailed video:

<https://www.youtube.com/watch?v=o-46P066cik>



### Forward Programming SAFE Select Setup

DX series, NX series, iX series	1. Begin with the transmitter bound to the receiver.
	2. Power ON the transmitter.
	3. Assign a switch for SAFE Select that is not already in use for another function. Use any open channel between 5 and 20.
	4. Set switch H (throttle cut) to prevent accidental motor operation.
	5. Power ON the aircraft. A signal bar appears on the transmitter main screen when the telemetry information is received.
	6. Go to the FUNCTION LIST (Model Setup).
	7. Select Forward Programming; Select Gyro Settings, Choose SAFE Select to enter the menu.
	8. Set SAFE Select Ch: To the channel you have chosen for SAFE Select.
	9. Set AS3X+ and SAFE ON or OFF for each switch position.

## Integrated ESC Telemetry

**BNF:** This aircraft includes telemetry between the ESC and receiver, which can provide information including RPM, voltage, motor current, throttle setting (%), and FET (speed controller) temperature.

**PNP:** The ESC in this aircraft is capable of delivering telemetry information over the throttle connection when paired with a Smart compatible Spektrum telemetry receiver. It will function with a normal PWM servo signal for common radio control systems.

For more information about compatible transmitters, firmware updates, and how to

### Telemetry Setup

DX series, NX series, iX series	1. Begin with the transmitter bound to the receiver.
	2. Power ON the transmitter.
	3. Set switch H (throttle cut) to prevent accidental motor operation.
	4. Power ON the aircraft. A signal bar appears on the transmitter main screen when the telemetry information is received.
	5. Go to the FUNCTION LIST (Model Setup)
	6. Select TELEMETRY: Smart ESC
	7. Set Total Cells: 3 or 4 based on battery choice
	8. Set LVC Alarm: 3.4V Set Alarm: Voice/Vibe
	9. Set pole count: 6 pole

## Battery Installation and ESC Arming

### Battery Selection

We recommend a Spektrum 2200mAh 14.8V 4S 30C Smart LiPo battery (SPMX224S30) for this aircraft. Refer to the **Optional Parts List** for additional batteries. If you select a different battery, ensure that it is within the range of capacity, dimension, and weight to fit in the fuselage. Balance the model at the recommended CG.

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

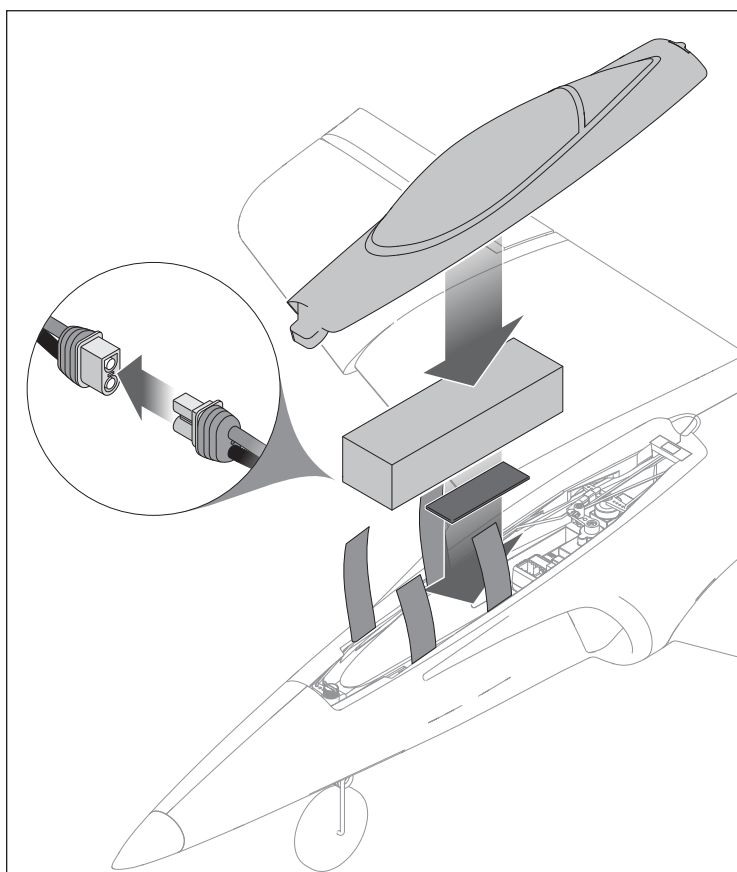
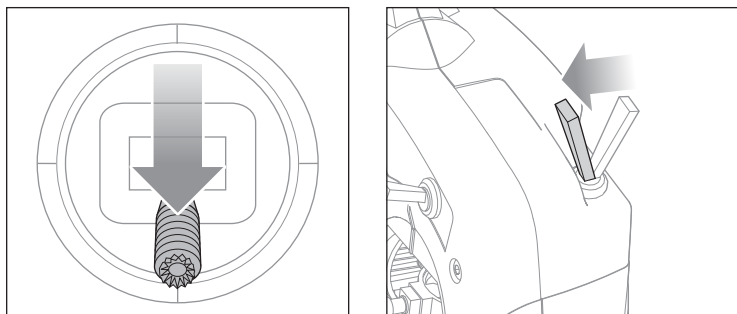
**⚠ WARNING:** Activate throttle cut before powering ON the ESC.

1. Place the aircraft on its landing gear/belly on a flat surface.
2. Lower the throttle to the lowest position. Ensure the throttle trim is centered.
3. Power ON the transmitter, and wait 5 seconds.
4. Apply the loop side (soft side) of the optional hook and loop tape to the bottom of the battery. Apply the hook side to the battery tray.
5. Remove the battery hatch.
6. Install the fully charged battery in the front of the battery compartment as shown. Secure the battery using the hook and loop straps.
7. Connect the battery to the ESC. Complete the bind sequence if you haven't already do so.
8. Keep the aircraft level, immobile and away from wind to initialize the system.

Once armed:

- The ESC sounds a series of tones (number of tones correspond to the battery cell count).
- The control surfaces cycle once for AS3X+ and twice for SAFE Select technology if it is powered ON.
- The receiver LED illuminates.

9. Reinstall the battery hatch.



## Control Direction Test

Power ON the transmitter, and connect the battery. Use the transmitter to operate the aileron, elevator and rudder controls. View the aircraft from the rear when checking the control directions.



**WARNING:** Activate throttle cut from transmitter before powering on the ESC.

### Elevator

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

### Ailerons

1. Move the aileron stick to the left. The left aileron should move up and the right aileron down, 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.

### 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.

If the control surfaces do not respond as shown, **DO NOT FLY**. Refer to the Troubleshooting Guide for more information. If you need more assistance, contact the appropriate Horizon Hobby Product Support department. If the aircraft responds as shown, continue to the Flight Control section.

	Transmitter Command	Control Surface Response
Elevator		
Aileron		
Rudder		

## AS3X+ Control Response Test (BNF Basic)

This test ensures that the AS3X+ control system is functioning properly. Assemble the aircraft and bind your transmitter to the receiver before performing this test.


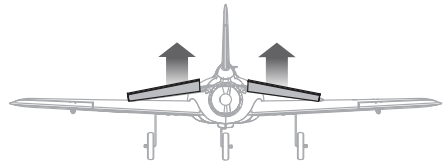

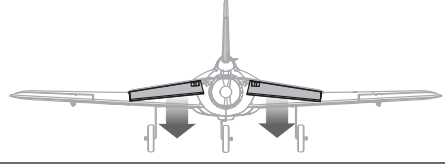
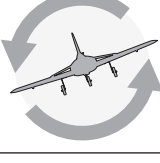
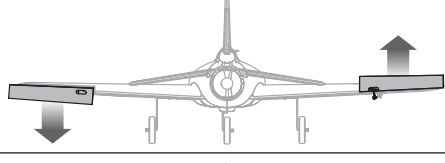
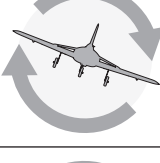
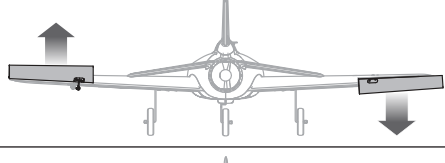
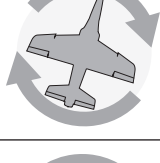
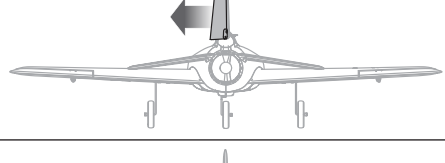
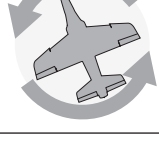
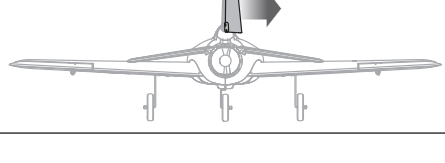
1. Raise the throttle just above 25%, then lower the throttle to activate AS3X+.

**CAUTION:** Keep all body parts, hair and loose clothing away from the intake nacelles and rotor, as these items could become entangled.

2. Move the entire aircraft as shown and ensure the control surfaces move in the direction indicated in the graphic. If the control surfaces do not respond as shown, do not fly the aircraft. Refer to the receiver manual for more information or visit [www.SpektrumRC.com](http://www.SpektrumRC.com).

Once the AS3X+ system is active, control surfaces may move rapidly. This is normal. AS3X+ remains active until the battery is disconnected.

Due to different effects of torque, lift, and drag some aircraft require trim changes with different speeds and throttle settings. Pre-loaded receiver mixes compensate for these changes. The mixes become active the first time the throttle is raised above 25%. The control surfaces may be offset slightly at different throttle settings after the first time throttle is raised. Trim the plane in flight at 80–100% throttle for best results.

	Aircraft Movement	AS3X+ Reaction
Pitch		
		
Roll		
		
Yaw		
		

## Control Surface Centering and Adjusting a Clevis

**Before the first flights, or after repair, make sure the flight control surfaces are centered.** Adjust the linkages mechanically if the control surfaces are not centered. Transmitter sub-trims may not correctly center the aircraft control surfaces due to the mechanical limits of linear servos.

1. Make sure the control surfaces are neutral with the transmitter controls and trims are centered. Always set the transmitter sub-trim to zero.
2. Power on the aircraft in AS3X+ mode, and leave the throttle at zero.
3. Observe each control surface, and verify they are mechanically centered.

### To adjust control surfaces:

1. Slide the retaining sleeve off the clevis.
2. Remove the clevis.
3. Rotate the clevis to adjust the pushrod length.
4. Insert the clevis in the correct hole.
5. Slide the retaining sleeve onto the clevis to secure it.

### Centering Controls After First Flights

**For best performance with AS3X+, do not use excessive trim.** If the aircraft requires excessive transmitter trim (4 or more clicks of trim per channel), return the transmitter trim to zero and adjust the linkages mechanically so that the control surfaces are in the flight trimmed position.

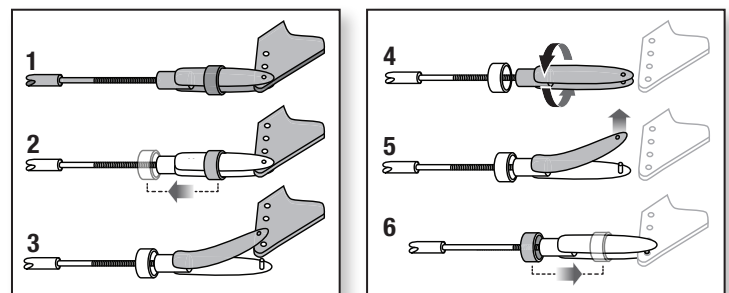
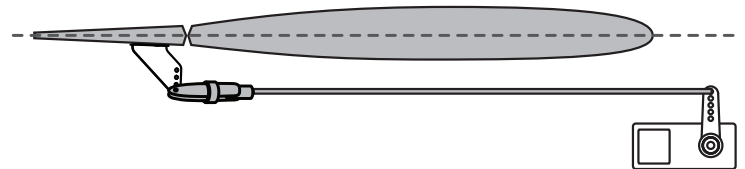


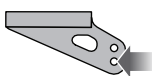



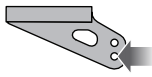


Illustration for visual reference only.

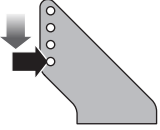
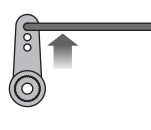
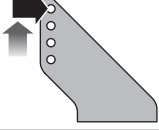
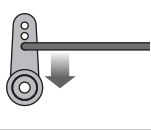
## Control Horn and Servo Arm Settings

The table to the right shows the factory settings for the control horns and servo arms. Fly the aircraft at factory settings before making changes.

If you adjust the linkage positions for more control throw and experience control surface oscillation in flight:

- return the linkage to the original position, or
- activate advanced menus in forward programming and reduce gain on that control surface.

Factory Setting	Control Horns	Servo Arms
Elevator		
Rudder		
Aileron		
Nose Gear		

Tuning	Control Horns	Servo Arms
More Control Throw		
Less Control Throw		

## Dual Rates and Control Throws

Program the transmitter to set the rates and control throws based on your experience level. These values have been tested and are a good starting point to achieve a successful first flight.

After flying, adjust the values for the desired control response.

	High Rate	Low Rate
Aileron	▲ = 11mm ▼ = 11mm	▲ = 7mm ▼ = 7mm
Elevator	▲ = 8mm ▼ = 11mm	▲ = 5mm ▼ = 8mm
Rudder	▶ = 20mm ◀ = 20mm	▶ = 14mm ◀ = 14mm

## Center of Gravity

**WARNING:** Install the battery, but do not connect it to the ESC while checking the CG. Personal injury may result.

The CG location is 63mm (± 7mm) back from the leading edge of the wing at the fuselage.

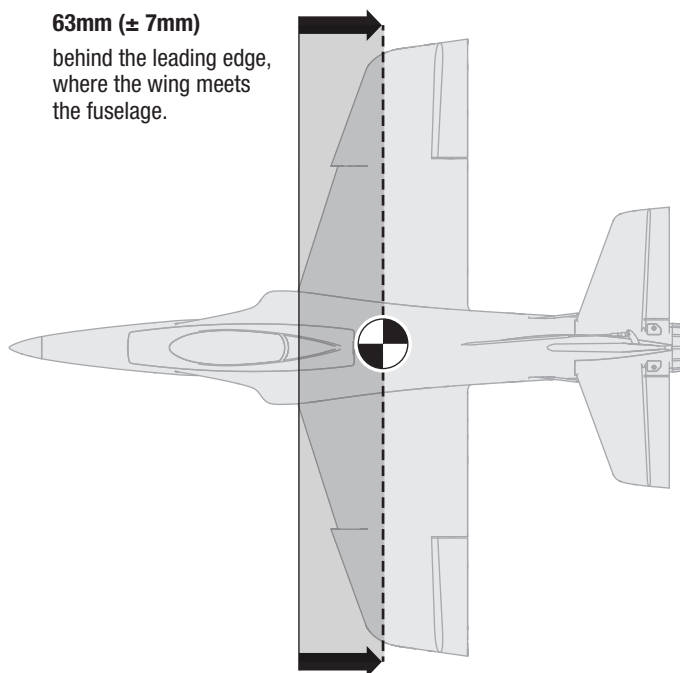
Move the battery pack forward or back in the battery compartment to adjust the CG location.

**4S 2200mAh battery position** – The battery is installed all the way back in the battery tray.

Balance the aircraft inverted on your fingertips adjacent to the fuselage.

- If the nose goes down, move the flight battery back until the aircraft is level.
- If the nose goes up, move the flight battery forward until the aircraft is level.

63mm (± 7mm)  
behind the leading edge,  
where the wing meets  
the fuselage.



## In-Flight Trimming

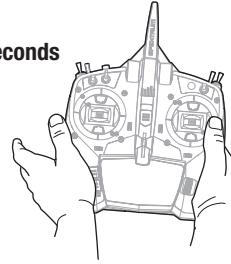
During your first flight, trim the aircraft for level flight at 80–100% throttle. Make small trim adjustments with the transmitter trim switches to achieve straight and level flight.

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.

If more than a small amount of trim is needed (3–4 clicks), refer to the Control Surface Centering section to manually adjust the control linkages.

3 Seconds



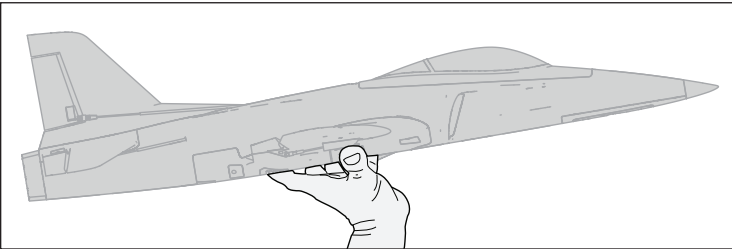
## Hand Launching

**NOTICE:** We recommend hand launching in SAFE Mode, into the wind at 100% power, in high rates.

When hand launching in SAFE mode, the control unit will sense the force of the launch and automatically enable the Hand Launch Assist feature.

### Grip

Hold the aircraft in the molded finger recesses, near the center of gravity, as shown.



### Follow Through

Use an overhand throw, and launch with wings level and the nose of the model slightly upwards. Follow through with your hand launch by pointing your fingers at the airplane after the throw. Avoid an arcing throw which can pull the nose down at release.

## Post Flight

Disconnect the flight battery from the ESC (required for safety and battery life).

Power OFF the transmitter.

Remove the flight battery from the aircraft.

Recharge the flight battery.

### Hand Launch Assist Mode

The aircraft is equipped with Hand Launch Assist Mode. When this feature is active, the control unit will apply the necessary control input to establish a preset climb angle and level the wings. It returns to SAFE mode shortly after launch.

To activate Hand Launch Assist Mode:

1. Verify SAFE Select is enabled.
2. Place the model in SAFE mode.
3. Advance the throttle above 70%.
4. Hand launch the model normally.

The acceleration of throwing the model automatically activates the assist mode, leveling the wings and setting the model in a positive climb attitude.

5. After a few seconds of flight, the system automatically disengages and reverts to SAFE mode.

The system automatically resets after landing when the throttle is reduced below 5%, and the model is stationary for more than 5 seconds.

Repair or replace all damaged parts.

Store the flight battery apart from the aircraft and monitor the battery charge.

Make note of the flight conditions and flight plan results, planning for future flights.

## Optional Thrust Reversing

The Avian™ Smart ESC in this aircraft is equipped with thrust reversing, but it must be enabled before it will function. Reversing the motor can be helpful when taxiing or for shortening ground roll after a landing. Flipping the designated switch reverses motor rotation, throttle will still control motor speed.

**WARNING:** Never attempt to use thrust reversing in flight. Applying reverse thrust while in flight will result in loss of control and possibly a crash. Crash damage is not covered under warranty.

**IMPORTANT:** The motor will draw more current in reverse as the rotor becomes less efficient and creates more drag. This can reduce flight time.

**IMPORTANT:** Thrust reversing requires a Spektrum receiver with Smart Throttle (including the AR637TA+ and AR631+) and a Spektrum transmitter with a minimum of 7 channels. The Avian ESC is also backwards compatible with conventional receivers (PWM output signal) for normal operation, but reversing functions are only available with Smart Throttle technology.

### Thrust Reversing Setup

#### Transmitter

On the transmitter, select an open channel (not already in use), and assign it to an open switch. Use a different channel for thrust reversing and SAFE Select. Motor reversing is assigned to Aux 2/Channel 7, by default, in the Smart ESC. If SAFE Select and the ESC are assigned to the same channel, the motor will reverse in flight.

**WARNING:** Do not assign thrust reversing and SAFE Select to the same channel. Doing so will reverse the motor when SAFE Select is enabled during flight, resulting in a crash.

#### ESC

Set up the transmitter according to the setup chart, and bind your transmitter to the airplane. The airplane must be powered on and bound to the transmitter to access the Smart ESC programming.

As an alternative, program the ESC with the Smart ESC Programming Box (SPMXCA200, optional, not included).

#### ESC Reversing Setup

DX series, NX series, iX series	1. Begin with the transmitter bound to the receiver.
	2. Power ON the transmitter.
	3. Set switch H (throttle cut) to prevent accidental motor operation.
	4. Set elevator and aileron to high rate.
	5. Set Flight Mode to AS3X+ (The menu will not open if the Flight Mode is set to SAFE).
	6. Power ON the aircraft. A signal bar appears on the transmitter main screen when the telemetry information is being received.
	7. From the main screen navigate to the last screen past the telemetry screens, the Avian Programming menu (Avian Prog).
	8. All configuration in the Avian Programming menu is done by moving the elevator and aileron stick. Follow the on-screen prompts to access the menu. Move the stick up or down to move the cursor, left or right to select a value or return to the cursor, and up or down to change a value when it is selected.
	9. Set BRAKE TYPE: Reverse
	10. Set BRAKE FORCE: 7
	11. Set THRUST REV: Select the channel you designated for thrust reversing in your transmitter. CH7 is the selection by default, but do not use this default option if you are using Aux2/Ch7 for SAFE Select.
	12. Select EXIT W/ SAVE to save your selections.

## Power Components Service

**CAUTION:** Always disconnect the flight battery before performing motor service.

### Disassembly

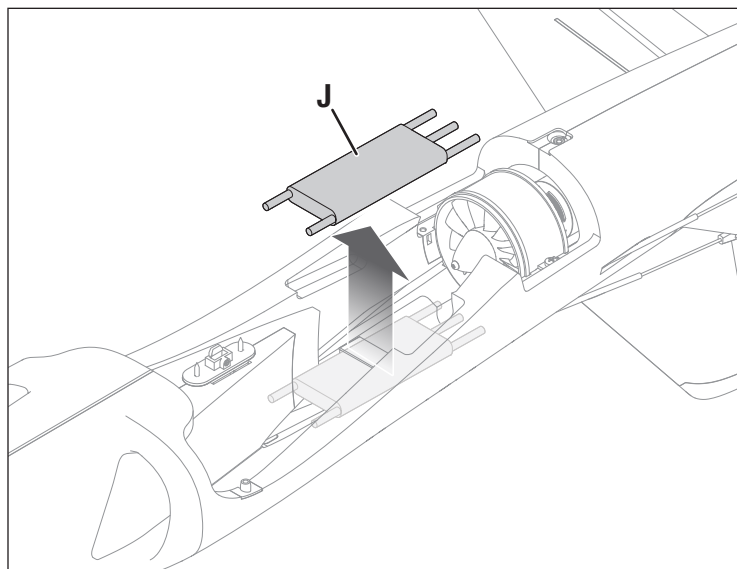
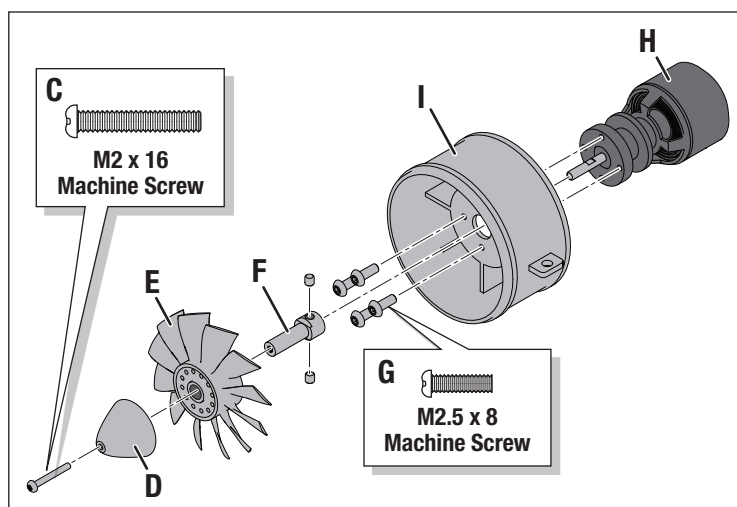
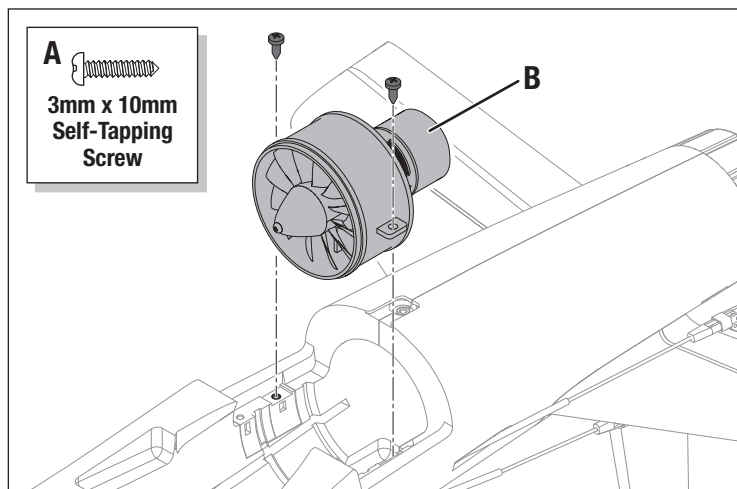
1. Remove the five 2.5mm x 10mm self-tapping screws, and carefully remove the wing.
2. Remove the two 3mm x 10mm self-tapping screws (A) from the fan unit mounting tabs.
3. Remove the fan unit (B) from the fuselage, and disconnect the motor leads from the ESC.

**TIP:** Label or mark the ESC and motor wires for reassembly. If a motor/ESC wire is reversed, the rotor will not operate in the correct direction.

4. Use a Phillips screwdriver to remove the M2 x 16 machine screw (C) from the rotor spinner.
5. Remove the spinner (D) from the rotor.
6. Remove the rotor (E) and motor shaft adapter (F).
7. Remove the four M2.5 x 8 machine screws (G) to remove the motor (H) from the fan shroud (I).
8. Open the hook and loop strap and disconnect the throttle lead from the receiver.
9. Remove the ESC (J) from the fuselage, taking note of the power and throttle leads routes through the fuselage.

### Assembly

- Assemble in reverse order.
- Ensure the spinner is fully connected for safe operation.
- Carefully tuck the motor/ESC plugs under the EDF unit before tightening the housing in the fuselage.
- Ensure no wiring is pinched.
- Correctly align and connect the motor wires with the ESC wires.
- Ensure the ESC is installed correctly and secured to the fuselage using the hook and loop strap.
- Ensure the front of the rotor is installed facing the aircraft nose.
- Align and install wing using five self-tapping wing screws.



## Servo Service

Control Surface	Replacement Servo	Description	Replacement Adhesive
Aileron	SPMSA345	A345 9g Sub-Micro Digital Servo, 230mm Lead	Deluxe Materials Foam 2 Foam (DLMAD34)
Elevator	SPMSA345SL	A345 9g Sub-Micro Digital Servo, 60mm Lead	
Rudder			

## Troubleshooting Guide AS3X+

Problem	Possible Cause	Solution
Oscillation	Damaged rotor or nose cone	Replace rotor or nose cone
	Imbalanced rotor	Balance the rotor
	Motor vibration	Replace parts or correctly align fan unit or other 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 rotor, nose cone, 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 ball link 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
Excessive rotor noise or excessive vibration	Damaged rotor, nose cone, collet or motor	Replace damaged parts
	Impeller is out of balance	Balance or replace rotor
	Impeller nut is too loose	Tighten the rotor nut
Reduced flight time or aircraft under-powered	Flight battery charge is low	Completely recharge flight battery
	Flight battery damaged	Replace flight battery and follow flight battery instructions
	Flight conditions may be too cold	Make sure battery is not cold before use (Do not apply heat to the battery)
	Battery capacity too low for flight conditions	Replace battery or use a larger capacity battery
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
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 (Model-Match™ 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 low	Use recommended battery

## Replacement Parts

Part #	Description
EFL02351	Canopy Hatch
EFL02355	50mm Rotor with Spinner
EFL02356	Rotor Motor Shaft
EFL02357	50mm EDF Unit
EFL02358	Main Landing Gear Set
EFL02359	Nose Gear with Wheel
EFL02361	Nose Gear Cover w/Screws
EFL02362	Hands-Free Plug Mount
EFL02363	Fuselage Wing Mount Plates
EFL02365	Linkage Set w/Clevis
EFL02368	Battery Straps w/Mounting Plates
EFL-3498	Nose Gear Support Shaft
EFL-3499	Fuselage
EFL-3500	Wing
EFL-3501	Tail Cone
EFL-3502	Decal Sheet
EFL-3503	Horizontal Stabilizer
EFL-3759	Screw Set
SPM-1031	AR631+ 6 Channel AS3X+ & SAFE Receiver
SPMX-1135	2628-4000Kv Brushless 6-Pole Outrunner Motor
SPMSA345	A345 9g Sub-Micro Digital Servo; 230mm Lead
SPMSA345SL	A345 9g Sub-Micro Digital Servo; 60mm Lead
SPMSA3451	SA345 Servo Arms with Screws
SPMXAE30A	Avian 30-Amp Smart Lite Brushless ESC, 2S-4S: IC3

## Recommended Parts

Part #	Description
SPMR7120	NX7e+ Black Edition 14 Channel Transmitter Only
SPMX224S30	14.8V 2200mAh 4S 30C Smart G2 LiPo Battery: IC3
SPMXC2090	S100 1x100W USB-C Smart Charger

## Optional Parts

Part #	Description
SPMR14010	iX14+ 20 Channel Transmitter Only
SPMR8210	NX8+ 20 Channel DSMX Transmitter Only
SPMX22004S30	14.8V 2200mAh 4S 30C Smart LiPo Battery: IC3
SPMXBC200	XBC200 Smart LiPo Battery Checker & Servo Tester
SPMXC2050	S155 55W AC G2 Smart Charger
SPMXCA500	Smart Lipo Bag, 18 x 7 x 7 cm

## Hardware

Location	Description	Quantity
Hands-Free Plug	2mm x 8mm Self-Tapping Flat Head Screw	4
Nose Gear Wheel Collar	M3 x 3 Set Screw	1
Wheel Collar	M3 x 3 Set Screw	3
Nose Gear Steering Arm	M2 x 6 Thumbscrew	1
Horizontal Stabilizer	2mm x 8mm Self-Tapping Screw	2
Nose Gear Plate	2mm x 8mm Self-Tapping Screw	6
Wing	2.5mm x 10mm Self-Tapping Screw	5
EDF Mount	3mm x 8mm Self-Tapping Screw	2
Rotor Spinner	M2 x 16 Machine Screw	1
Motor Mount	M2.5 x 8 Machine Screw	4
Elevator Servo Arm Connector	M3 x 3 Set Screw	1
Tail Cone	2mm x 6mm Self-Tapping Screw	2

## Important Federal Aviation Administration (FAA) Information



Use the QR code below to learn more about the Recreational UAS Safety Test (TRUST), as was introduced by the 2018 FAA Reauthorization Bill. This free test is required by the FAA for all recreational flyers in the United States. The completed certificate must be presented upon request by any FAA or law enforcement official.



If your model aircraft weighs more than .55lbs or 250 grams, you are required by the FAA to register as a recreational flyer and apply your registration number to the outside of your aircraft. To learn more about registering with the FAA, use the QR code below.



According to FAA regulation, all unmanned aircraft over .55lbs (250 grams) flying in United States airspace are required to either fly within an FAA-Recognized Identification Area (FRIA) or continually transmit an FAA-registered remote identification from a Remote ID broadcast module, such as the Spektrum™ Sky™ Remote ID module (SPMA9500). Use the QR code to learn more about the FAA Remote ID regulations.

## AMA National Model Aircraft Safety Code

### Effective January 1, 2018

A model aircraft is a non-human-carrying device capable of sustained flight within visual line of sight of the pilot or spotter(s). 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 related AMA guidelines, any additional rules specific to the flying site, as well as all applicable laws and regulations.

As an AMA member I agree:

- I will not fly a model aircraft in a careless or reckless manner.
- I will not interfere with and will yield the right of way to all human-carrying aircraft using AMA's See and Avoid Guidance and a spotter when appropriate.
- I will not operate any model aircraft while I am under the influence of alcohol or any drug that could adversely affect my ability to safely control the model.
- I will avoid flying directly over unprotected people, moving vehicles, and occupied structures.
- I will fly Free Flight (FF) and Control Line (CL) models in compliance with AMA's safety programming.
- I will maintain visual contact of an RC model aircraft without enhancement other than corrective lenses prescribed to me. When using an advanced flight system, such as an autopilot, or flying First-Person View (FPV), I will comply with AMA's Advanced Flight System programming.
- I will only fly models weighing more than 55 pounds, including fuel, if certified through AMA's Large Model Airplane Program.
- I will only fly a turbine-powered model aircraft in compliance with AMA's Gas Turbine Program.
- I will not fly a powered model outdoors closer than 25 feet to any individual, except for myself or my helper(s) located at the flightline, unless I am taking off and landing, or as otherwise provided in AMA's Competition Regulation.
- I will use an established safety line to separate all model aircraft operations from spectators and bystanders.

## 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](http://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](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](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.

10/15

## Contact Information

Country of Purchase	Horizon Hobby	Contact Information	Address
United States of America	Horizon Service Center (Repairs and Repair Requests)	<a href="http://servicecenter.horizonhobby.com/RequestForm/">servicecenter.horizonhobby.com/RequestForm/</a>	2904 Research Rd. Champaign, Illinois, 61822 USA
	Horizon Product Support (Product Technical Assistance)	<a href="mailto:productsupport@horizonhobby.com">productsupport@horizonhobby.com</a> 800-338-4639	
	Sales	<a href="mailto:websales@horizonhobby.com">websales@horizonhobby.com</a> 800-338-4639	
European Union	Horizon Technischer Service Sales: Horizon Hobby GmbH	<a href="mailto:service@horizonhobby.eu">service@horizonhobby.eu</a> +49 (0) 4121 2655 100	Hanskamping 9 D 22885 Barsbüttel, Germany

## FCC Information



Contains: **FCC ID: BRWSPMSR6200A**

**Supplier's Declaration of Conformity**

**EFL Habu 50mm PNP (EFL-3133) and EFL Habu 50mm BNF-Basic (EFL-3134):**

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](mailto:compliance@horizonhobby.com)  
Web: [HorizonHobby.com](http://HorizonHobby.com)

## IC Information

Contains: **CAN ICES-3 (B)/NMB-3(B)**

Contains IC: **6157A-SPMSR6200A**

This device contains license-exempt transmitter(s)/receivers(s) that comply with Innovation, Science, and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following 2 conditions:

1. This device may not cause interference.
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 Habu 50mm PNP (EFL-3133):** Hereby, Horizon Hobby, LLC declares that the device is in compliance with the following: EU EMC

Directive 2014/30/EU, RoHS 2 Directive 2011/65/EU, RoHS 3 Directive - Amending 2011/65/EU Annex II 2015/863.

**EFL Habu 50mm BNF-Basic (EFL-3134):** Hereby, Horizon Hobby, LLC declares that the device is in compliance with the following: EU Radio Equipment Directive 2014/53/EU, RoHS 2 Directive 2011/65/EU, RoHS 3 Directive - Amending 2011/65/EU Annex II 2015/863.

The full text of the EU declaration of conformity is available at the following internet address: <https://www.horizonhobby.com/content/support-render-compliance>.

### Wireless Frequency Range and Wireless Output Power:

2404–2476MHz  
5.58dBm

### EU Manufacturer of Record:

Horizon Hobby, LLC  
2904 Research Road  
Champaign, IL 61822 USA

### EU Importer of Record:

Horizon Hobby, GmbH  
Hanskampring 9  
22885 Barsbüttel Germany

### WEEE NOTICE:



This appliance is labeled in accordance with European Directive 2012/19/EU concerning waste of electrical and electronic equipment (WEEE). This label indicates that this product should not be disposed of with household waste. It should be deposited at an appropriate facility to enable recovery and recycling.





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