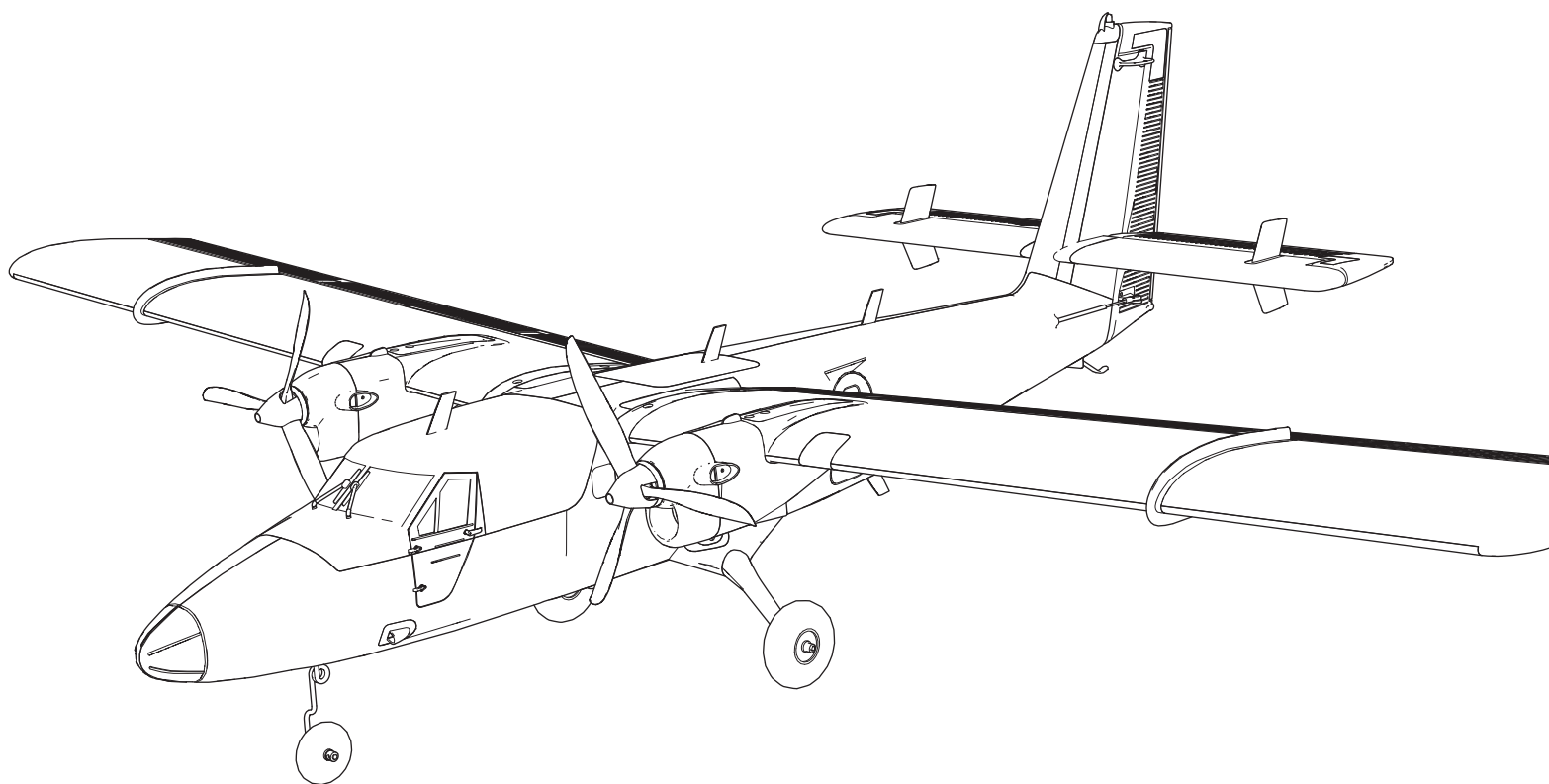


# Twin Otter 1.4m



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.



EFL32050



EFL32075

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

462494.2  
Updated 7/25

**HORIZON**<sup>®</sup>  
H O B B Y

## 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>	57.08" (1.45m)
<b>Length</b>	41.10" (1044mm)
<b>Weight</b>	Without Battery: 58.8oz (1666g) With Recommended 4S 2200mAh Flight Battery: 66.8oz (1895g)

## Included Equipment

<b>Receiver</b> ( <i>BNF only</i> )	Spektrum™ AR631+ 6-Channel AS3X+/SAFE Telemetry Receiver (SPM-1031)
<b>ESC</b>	Avian 25-Amp Dual Smart Lite Brushless ESC, 3S-4S: IC3 (SPMXAE0225A)
<b>Motor</b>	2830-950Kv Brushless Outrunner Motor, 14-Pole (SPMXAM4500)
<b>Propeller</b>	8 x 6.5 3-Blade Propeller CW and CCW (EFLP080653B, EFLP080653BCC)
<b>Servos</b>	(2) A336 9g Servos (Ailerons) (2) A336 9g Servos (Flaps) (1) A336 9g Servo (Elevator) (1) A370 9g Metal Geared Servo (Rudder/Nose Wheel)

## Recommended Equipment

<b>Transmitter</b>	NX7e+ 14-Channel DSMX Transmitter Only (SPMR7110)
<b>Flight Battery</b>	4S 2200mAh 14.8V Smart G2 LiPo 30C; IC3 (SPMX224S30)
<b>Charger</b>	Smart S1200 G2 AC Charger, 1x200W (SPMXC2020)

## Optional Batteries

SPMX27004S30	2700mAh 4S 14.8V Smart LiPo Battery 30C; IC3
SPMX324S50	3200mAh 4S 14.8V Smart G2 LiPo 50C; IC3

## Included Hardware

5	M2.5 x 10mm Machine Screws	Landing Gear Cover
4	M2 x 6 Countersunk Self Tapping Screw	Upper Landing Gear Strut Fairings
4	M2 x 4 Countersunk Self Tapping Screw	Lower Landing Gear Strut Fairings
2	M3 x 8mm Countersunk Machine Screws	Horizontal Stabilizer
2	M4 x 14 Countersunk Machine Screws	Wings (Front)
2	M4 x 10 Countersunk Machine Screws	Wings (Rear)
4	M3 x 12mm Machine Screws	Float Mount Brackets
2	M2.2 x 10 Self Tapping Screw	Float Diagonal support
2	M2 x 8mm Washerhead Self Tapping Screw	Nose Gear Strut
2	M2 x 8mm Self Tapping Screw	Wing Strut (Top)
2	M2 x 12mm Self Tapping Screw	Wing Strut (Bottom)

## Required Tools

- #1 Phillips screwdriver
- Ball link pliers (BLH100)

Auto Transmitter Setup *BNF*

The receiver installed in the aircraft contains an AS3X+/SAFE 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.

To 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 Twin Otter 1.4m into the active model and renames it Twin Otter 1.4m EFL32050.

**NOTICE:** Confirming will override any previously saved transmitter setups for the currently selected model.

- 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 Modes Active with Flap System

The imported file activates Flight Modes, setting them to the Flap switch (**D**). It also changes the trim setting from Common, to Flight Mode. This allows aileron, elevator, and rudder trims to be separately adjusted for each flap setting. In-flight trim for all three axes is now independent, which provides the ability to precisely trim the model for each flap position.

Trim for each Flight Mode Switch (**D**) position:

- POS 0: Trim all three axes for flaps up (normal)
- POS 1: Trim all three axes for partial flaps (take-off)
- POS 2: Trim all three axes for full flaps (landing)

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.

Smart Transmitter File

The receiver contains a pre-loaded Smart Transmitter file.

Rx Version: EFL32050 (1.0.0)

Do you want to the load the file from the receiver

SKIP

LOAD

NOTICE

This WILL overwrite ALL current model settings.

If stock BNF model hardware has changed, the receiver's file may not work properly- Do not use without checking everything.

Do you want to the load the file from the receiver

BACK

CONFIRM



## Manual Transmitter Setup *BNF*

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

**SAFE Select is best enabled via Forward Programming.** SAFE® Select technology can be assigned to any open switch (2 or 3 position) controlling a channel (5–9) on your transmitter. Refer to the safe select designation section of this manual to assign safe select to your desired transmitter switch.

For the first flight, set the flight timer to 6 minutes when using a 4S 2200mAh LiPo battery. Adjust the time after the initial flight.

### DX Series Transmitter Setup

1. Power ON your transmitter, click on scroll wheel, roll to **System Setup** and click the scroll wheel. Choose 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 **1 AIL 1FLAP**
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**  
Set **High Rates: 100%, Expo 10% - Low Rates 70%, Expo 5%**
9. Set **Throttle Cut: Switch: Switch H, Position: -100%**
10. Set the values in the flap menu  
Set **SWITCH D**  
Set **POS 0:**      **100% Flap**              **0% Elevator**  
Set **POS 1:**      **25% Flap**                **16% Elevator**  
Set **POS 2:**      **-50% Flap**              **25% Elevator**  
Set **SPEED:**      **2.0s**

\* The settings provided above for the DX6 and DX6e do not allow for the use of a SAFE® Select switch. To use a SAFE Select switch on these systems see the *SAFE Select Switch Designation* section for transmitter setup and operation information.

### NX Series Transmitter Setup

1. Power ON your transmitter, click on scroll wheel, roll to **System Setup** and click the scroll wheel. Choose yes.
2. Go to **Model Select** and choose **<Add New Model>** near the bottom of the list. Select **Airplane Model Type** by choosing the airplane, 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 **1 AIL 1FLAP**
5. Select **<Main Screen>**, Click the scroll wheel to enter the **Function List**
6. Set **D/R (Dual Rate) and Expo: Aileron**  
Set **Switch: Switch F**  
Set **High Rates: 100%, Expo 10% - Low Rates: 70%, Expo 5%**
7. Set **D/R (Dual Rate) and Expo: Elevator**  
Set **Switch: SWITCH C**  
Set **High Rates: 100%, Expo 10% - Low Rates 70%, Expo 5%**
8. Set **Throttle Cut: Switch: Switch H, Position: -100%**
9. Set the values in the flap menu  
Set **SWITCH D**  
Set **POS 0:**      **100% Flap**              **0% Elevator**  
Set **POS 1:**      **25% Flap**                **16% Elevator**  
Set **POS 2:**      **-50% Flap**              **25% Elevator**  
Set **SPEED:**      **2.0s**

## Dual Rates

**Attempt your first flights in low rate. For landings, 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.

## Exponential

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

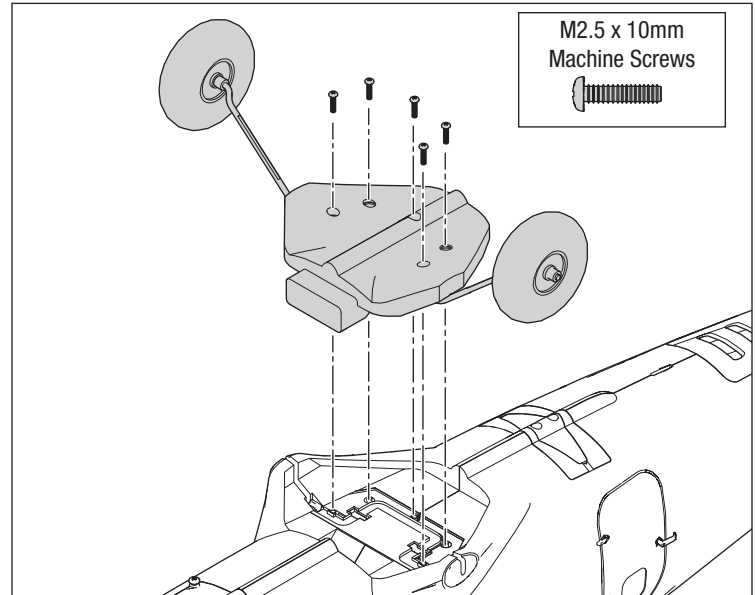
### iX Series Transmitter Setup

1. Power ON your transmitter and begin once the Spektrum Airware app is open. Select the orange pen icon in the upper left corner of the screen, 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 **Model Setup** menu. Select **Aircraft Type** The system asks for permission to **Turn Off RF**, select **PROCEED**. Touch the screen to select wing. Select **1 Ail 1 Flap**.
7. Go to the **Model Adjust** menu.
8. Set **Dual Rates and Expo: Select Aileron**  
Set **Switch: Switch F**  
Set **High Rates: 100%, Expo 10% - Low Rates: 70%, Expo 5%**
9. Set **Dual Rates and Expo: Select Elevator**  
Set **Switch: SWITCH C**  
Set **High Rates: 100%, Expo 10% - Low Rates 70%, Expo 5%**
10. Set **Throttle Cut: Switch: Switch H, Position: -100%**
11. Set the values in the flap menu  
Set **SWITCH D**  
Set **POS 0:**      **100% Flap**              **0% Elevator**  
Set **POS 1:**      **25% Flap**                **16% Elevator**  
Set **POS 2:**      **-50% Flap**              **25% Elevator**  
Set **SPEED:**      **2.0s**

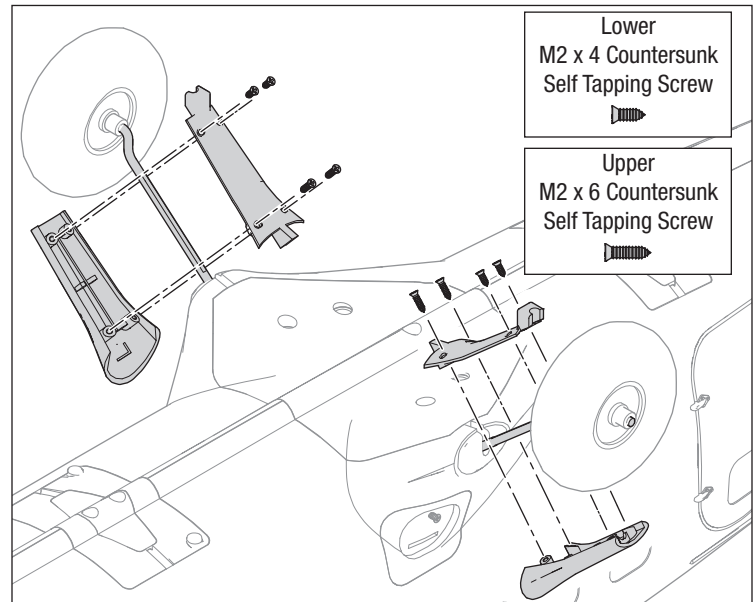
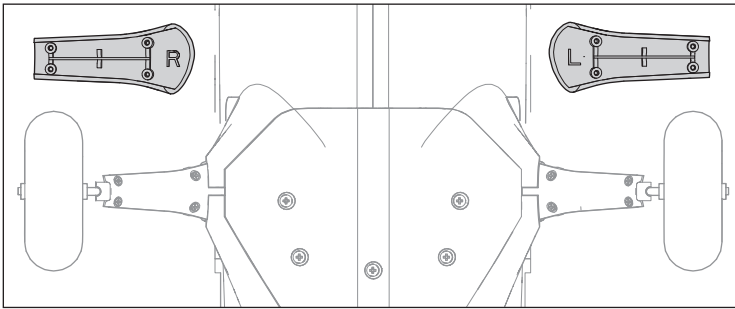
## Model Assembly

### Landing Gear Installation

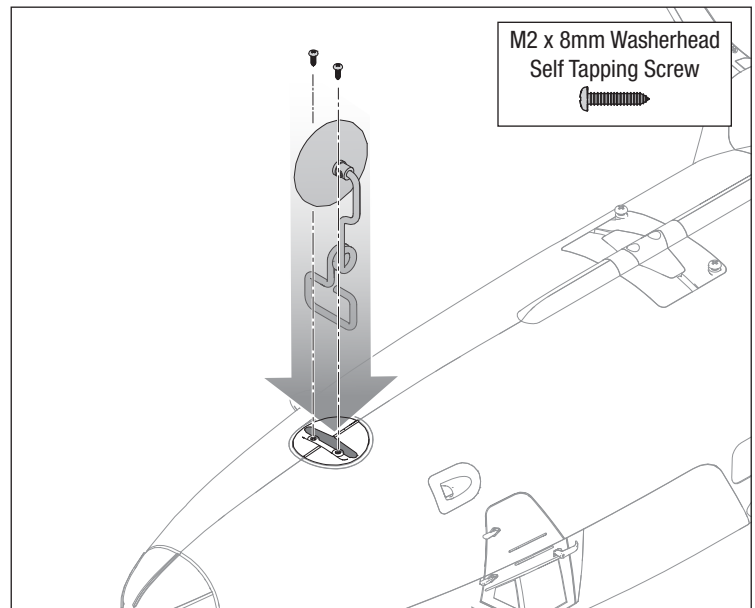
1. Mount the landing gear assembly to the fuselage with five M2.5 x 10mm machine screws.



2. Install each landing gear fairing with two M2 x 6mm self tapping screws in upper position next to fuselage, and two M2 x 4mm self tapping screws in lower position next to the wheels.  
Note the fairings have an L and R marking for Left and Right inside the top parts of the fairings, as shown below.

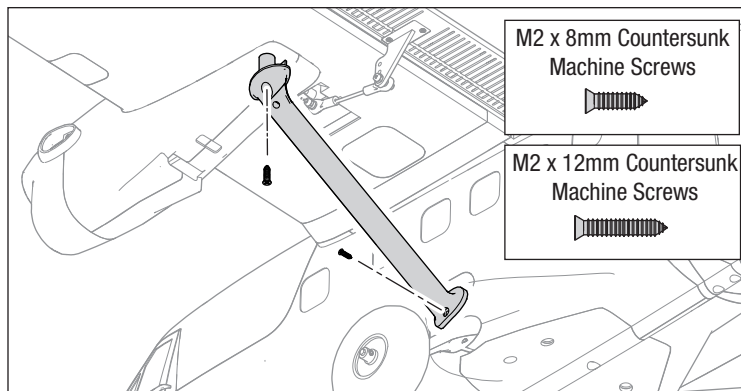
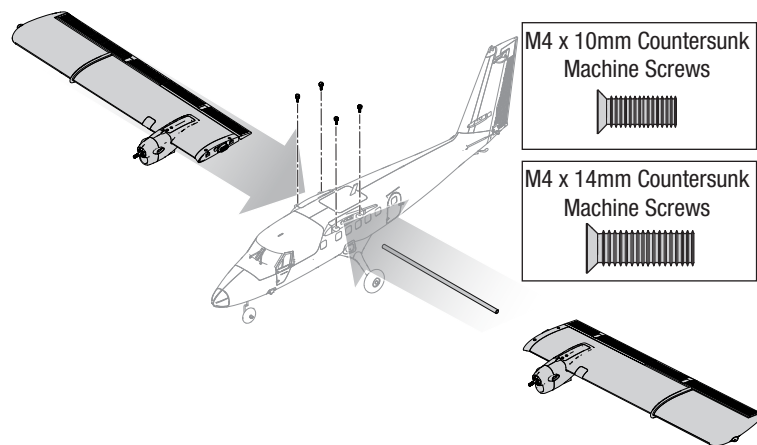


3. Insert the nose wheel assembly into the pivot block, and secure it with two M2 x 8mm washer-head screws.



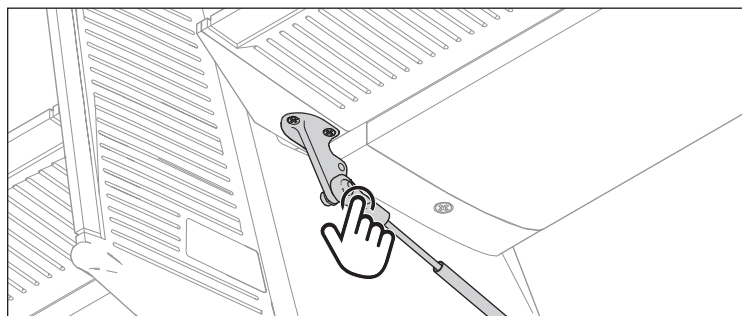
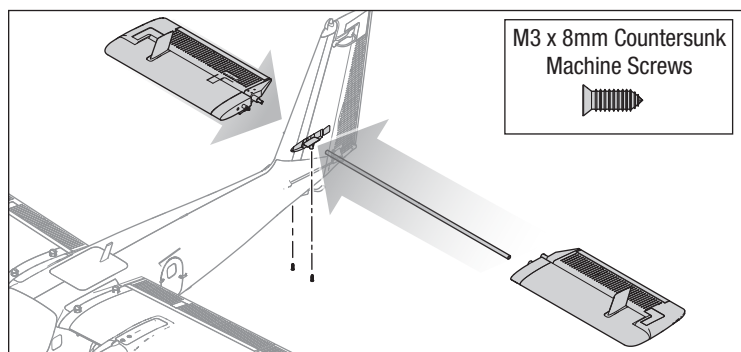
## Wing Installation

1. Install the wing joiner into the fuselage.
2. Install the wing halves onto the wing joiner.
3. Secure the wings with M4 x 14mm counter sunk screws in the front holes and M4 x 10mm counter sunk screws in the rear holes.
4. Install the wing struts with the rounded edge facing forward.
5. Secure each wing strut in place with an M2 x 8mm countersunk self tapping screw at the top of the strut on the wing, and an M2 x 12mm countersunk self tapping screws on the fuselage at the bottom.



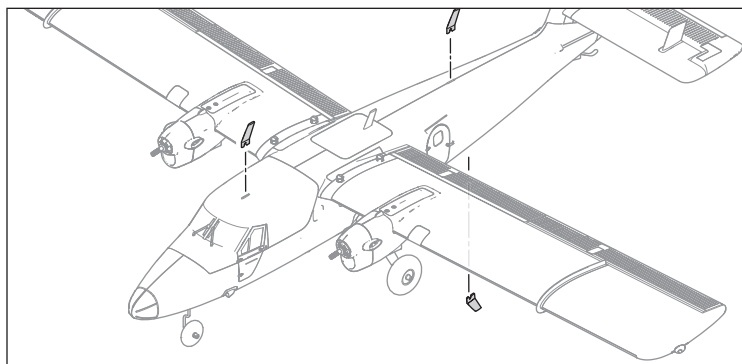
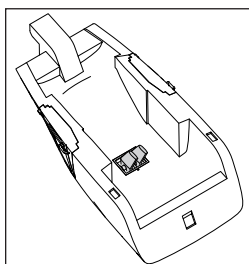
## Horizontal Stabilizer Installation

1. Insert the tail joiner into the fuselage.
2. Install the horizontal stabilizer halves onto the tail joiner
3. Secure in place with two M3 x 8mm countersunk self tapping screws.
4. Connect the elevator ball link.



## Scale Antenna Installation

1. The non-functional scale antennas can store inside the battery hatch for transportation.
2. Press the antennas into position until they snap into place.



## General Binding Tips and Failsafe *BNF*

- 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 / Enabling and Disabling SAFE Select *BNF*

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.

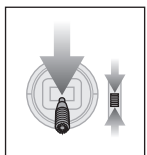
**IMPORTANT:** Move the transmitter flight controls (rudder, elevators, and ailerons) and the throttle trim to neutral. Move the throttle to low before and during binding. This process defines the failsafe settings.

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

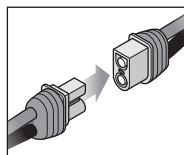
SAFE Select can also be activated via Forward Programming in compatible transmitters.

### Using The Bind Button...

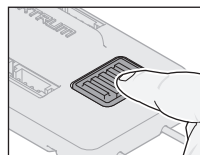
#### To Enable SAFE Select



Lower Throttle



Connect Power



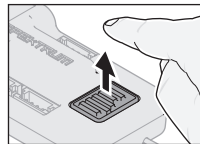
Press and hold Bind Button



Orange Flashing LED



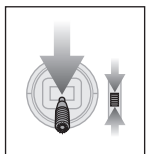
Bind Tx to Rx



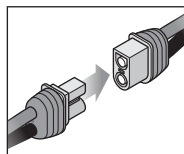
Release Bind Button

**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.

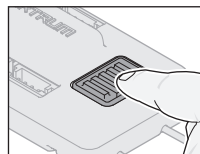
#### To Disable SAFE Select



Lower Throttle



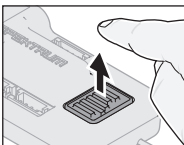
Connect Power



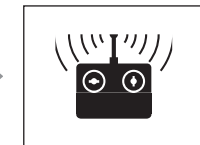
Press and hold Bind Button



Orange Flashing LED



Release Bind Button

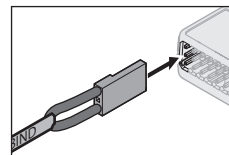


Bind Tx to Rx

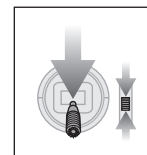
**SAFE SELECT DISABLED:** The control surfaces cycle back and forth **once** every time the receiver is powered on.

### Using The Bind Plug...

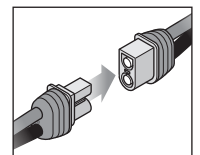
#### To Enable SAFE Select



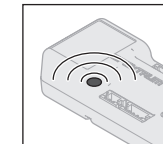
Install Bind Plug



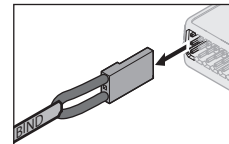
Lower Throttle



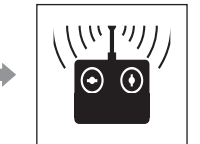
Connect Power



Orange Flashing LED



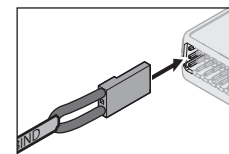
Remove Bind Plug



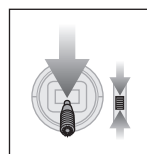
Bind Tx to Rx

**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.

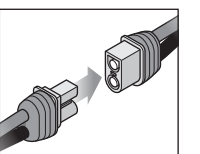
#### To Disable SAFE Select



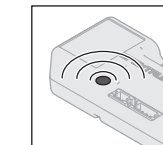
Install Bind Plug



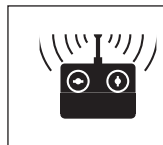
Lower Throttle



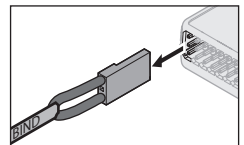
Connect Power



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.

## SAFE® Select Switch Designation *BNF*

Once SAFE Select is enabled, you can choose to fly in SAFE mode full-time, or assign a switch. Any switch on any channel between 5 and 9 can be used on your transmitter.

If the aircraft is bound with SAFE Select disabled, the aircraft will be in AS3X mode exclusively.

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

**IMPORTANT:** To be able to assign a switch, first verify:

- The aircraft was bound with SAFE Select enabled.
- Your choice for the SAFE Select switch is assigned to a channel between 5 and 9 (Gear, Aux1-4), and travel is set at 100% in each direction.
- The aileron, elevator, rudder and throttle direction are set to normal, not reverse.
- The aileron, elevator, rudder and throttle are set to 100% travel. If dual rates are in use, the switches need to be in the 100% position.

See your transmitter manual for more information about assigning a switch to a channel.

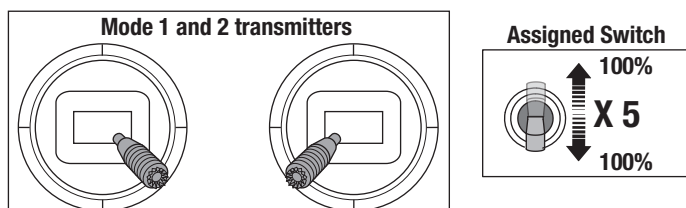
**TIP:** If a SAFE Select switch is desired for your 6 function aircraft, and you are using a 6 channel transmitter, the SAFE Select switch channel will have to be shared with either channel 5 or 6 of the transmitter. This does not apply to the NX6. Please refer to your NX6 instruction manual for further details.

## Assigning a Switch

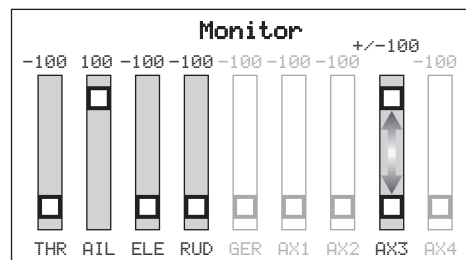
1. Power on the transmitter.
2. Power on the aircraft.
3. Hold both transmitter sticks to the inside bottom corners, and toggle the desired switch 5 times quickly (1 toggle = full up and down).
4. The control surfaces of the aircraft will move, indicating the switch has been selected.

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

## SAFE Select Switch Assignment Stick Positions



**TIP:** Use the channel monitor to verify channel movement.



This example of the channel monitor shows the stick positions for assigning a switch, the switch selection on Aux3, and +/- 100% travel on the 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>

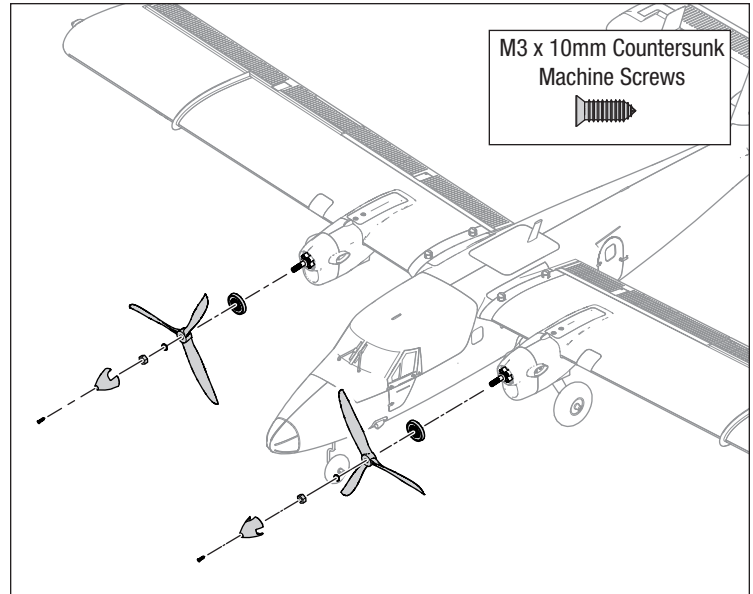
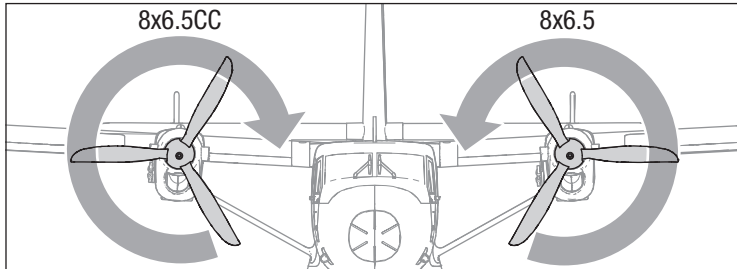
Forward Programming SAFE Select Setup	
DX series, NX series, iX series	1. Begin with the transmitter bound to the receiver.
	2. Power ON the transmitter.
	3. Assign a switch for SAFE Select that is not already in use for another function. Use any open channel between 5 and 9 (Gear, Aux7-11).
	4. Set switch H (throttle cut) to prevent accidental motor operation.
	5. Power ON the aircraft. A signal bar appears on your transmitter's main screen when the telemetry information is being 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 the SAFE Select channel to the same as the switch assigned in Step 3.
	9. Set AS3X+ and SAFE On or Off as desired for each switch position.



## Propeller Installation

1. Note the correct propeller and direction of rotation for each side, as shown in the front view diagram below.
2. Install the spinner backplate, propeller and washer.
3. Securely tighten the prop nut with a 10mm or adjustable wrench.
  - a. The left wing has a normal rotation propeller nut.
  - b. The right wing uses reverse thread on the propeller nut.
3. Secure the spinner in place with the M3 x 10mm countersunk machine screw.

FRONT VIEW



## Battery Installation and ESC Arming

A 4S 2200mAh 30C LiPo battery with an IC3 connector (SPMX224S30 or SPMX22004S30) is recommended. A 3S or 4S 2200–3200mAh LiPo battery with an IC3 or EC3 connector is required, 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 Spektrum LiPo battery packs to fit in the fuselage.

**NOTICE:** Always verify the model balances within the recommended CG range before flying. Attempting to fly the model with an aft CG will cause the model to be unstable.

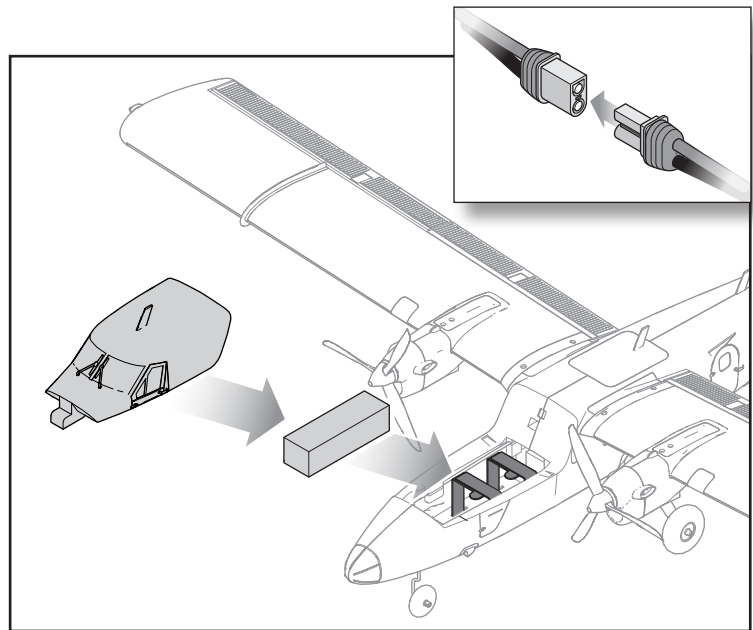
Flying with batteries heavier than the recommended maximum size (4S 3200mAh, 385g) is not recommended. Doing so can result in reduced performance, including:

- Increased takeoff distance
- Reduced climb rate
- Higher stall speed
- Increased landing distance
- Difficulty achieving correct center of gravity
- Greater structural loads and possible damage

1. Lower the throttle to the lowest settings. Power on the transmitter, then wait 5 seconds.
2. Remove the battery hatch.
3. For added security, apply the loop side (soft side) of the hook and loop tape to the bottom of your battery, and the hook side to the battery tray.
4. Install a fully charged battery in the battery compartment.
5. Secure using the hook and loop straps.
6. Connect the battery to the ESC (the ESC is now armed).

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

7. Keep the aircraft immobile and away from wind or the system will not initialize.
  - The motors will emit two even tones when the battery is connected and the ESC has a throttle signal.
  - The motor will then emit a series of slow single tones to indicate the number of cells in the LiPo pack connected to the ESC (three beeps indicates a three-cell LiPo pack. Four beeps indicates a four-cell LiPo pack).
  - Two ascending tones indicate the ESC is armed.
  - The orange LED will illuminate on the receiver when it is initialized.



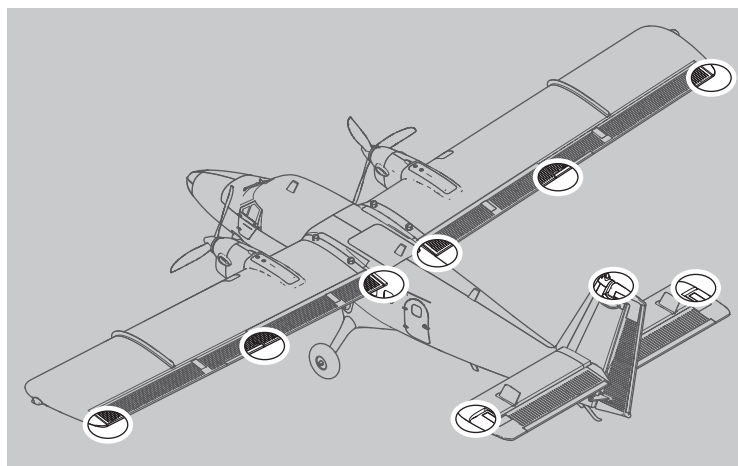
8. Reinstall the battery hatch.

ESC Error Tone	Tone Meaning	Possible problem
Continuously repeating single tone	Abnormal throttle signal	Transmitter and receiver not bound
		Throttle lead damaged or not plugged into receiver
		Throttle lead plugged into receiver backward
	Throttle signal not at low position	Throttle stick not at low position
		Throttle travel reduced below 100%
		Throttle reversed
		Throttle trim raised

## Control Surface Centering

After assembly and transmitter setup, confirm that the control surfaces are centered. The model must be powered, bound to the transmitter in AS3X+ mode, with the throttle left at zero. When enabled, SAFE mode is active at power up. AS3X+ mode is activated when the throttle is raised above 25% for the first time after being powered on. It is normal for the control surfaces to respond to aircraft movement if the aircraft is in AS3X+ or SAFE modes.

1. Verify the trims and subtrims on your transmitter are zero
2. Power the model in AS3X+ mode and leave the throttle at zero, enable throttle cut.
3. Look at the tip of each control surface and verify it is mechanically centered.
4. If adjustment is required, turn the ball link to change the length of the linkage between the servo arm and the control horn.



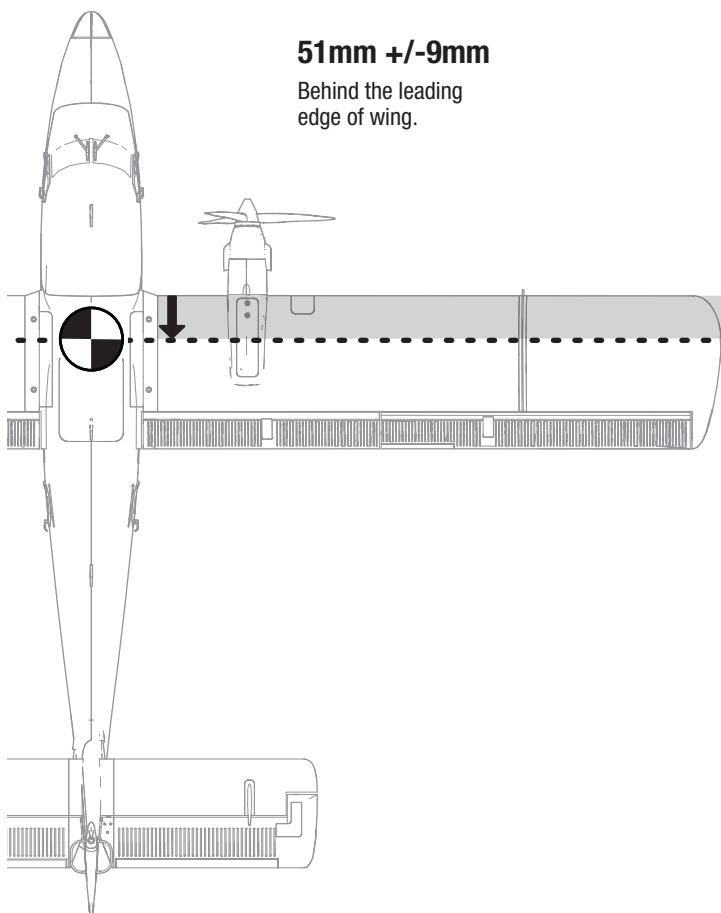
## Center of Gravity (CG)

The Center of Gravity (CG) location is measured from the leading edge of the wing. The CG will be affected by batteries of different cell counts and capacities. Always verify the CG is within the recommended range (42-60mm) before flight. Check the CG with model upright.

**CAUTION:** Install the battery but do not arm the ESC while checking the CG. Personal injury may result.

**51mm +/-9mm**

Behind the leading edge of wing.





## Smart™ Technology Telemetry

### Smart Technology Electronic Speed Control (ESC)

This aircraft is equipped with an exclusive Smart technology electronic speed control that can provide a variety of real-time power system related telemetry data while you fly, including motor RPM, current, battery voltage and more to compatible Spektrum AirWare™ equipped transmitters.

When powered on, the ESC will send the below information to the flight control and the information will be displayed on the transmitter telemetry screen.

- RPM\*
- Voltage
- Current
- Throttle
- FET Temperature
- BEC Temperature

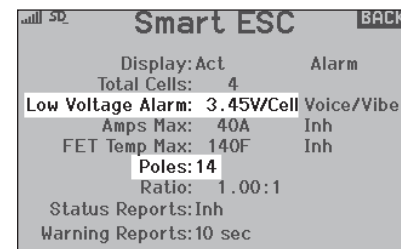
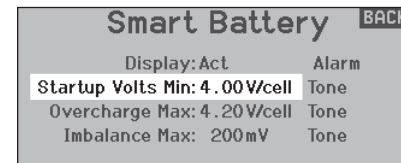
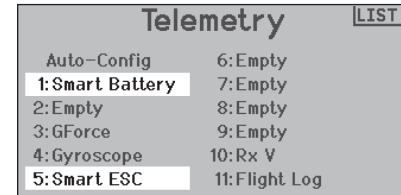
\* During binding the transmitter will perform an auto configuration which will populate the telemetry page. You may need to change the telemetry values on those pages to suit this aircraft and your needs.

#### To enter the telemetry values:

(For iX series transmitters, you must select Save on each page)

1. Power on your transmitter.
2. Set the throttle cut to on.
3. Power on the aircraft and allow it to initialize.
4. In your transmitter, go to the **Function List** (**Model Setup** in iX series transmitters).
5. Select the **Telemetry** menu option.
6. Go to the **Smart Battery** menu option.
7. Scroll down to **Startup Volts**, enter **4.0V/cell**.
8. Return to the **Telemetry** menu.
9. Go to the **Smart ESC** menu option.
10. Scroll down to **Low Voltage Alarm**, enter **3.45V/cell**.
11. Scroll down to **Poles**, enter **14**.
12. Return to the main screen.

DX/NX screens shown below



### Telemetry Alarms

Smart Battery : Startup Voltage Minimum	4.0V
Smart ESC : Low Voltage Alarm	3.45V
Smart ESC : Motor Poles	14

## Dual Rates and Control Throws

Program your 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 successful first flight.

Increasing control throws beyond these values should be done with caution.

Larger control surface movements can result in unpredictable or erratic flight performance, and may result in a crash.

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 intermediate level pilots to help ensure a successful flight.

	Low Rate	High Rate
<b>Aileron</b>	14mm up/ 12mm Down	20mm up/ 18mm Down
<b>Elevator</b>	+/-11mm	+/-16mm
<b>Rudder</b>	+/-15mm	+/-22mm
<b>Flap</b>	Half ▼ = 10mm, Full ▼ = 20mm	

	Servo Arms	Control Horns
<b>Aileron*</b>		
<b>Elevator</b>		
<b>Rudder</b>		
<b>Nosewheel</b>		
<b>Flaps</b>		

\*The aileron servo arms are offset forward at neutral to provide aileron differential.

## Control Surface Direction

Switch 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.

### Elevator

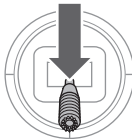
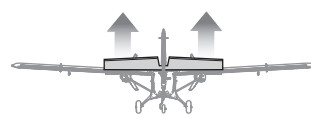

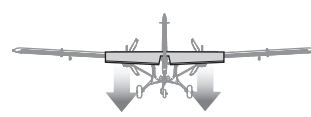
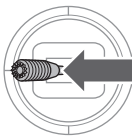
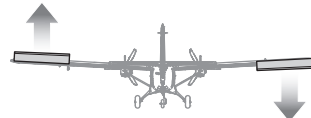
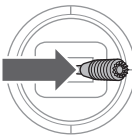

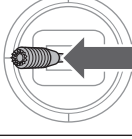

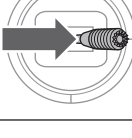

1. Pull the elevator stick back. The elevators should move up, which will cause the aircraft to pitch up.
2. Push the elevator stick forward. The elevators should move down, which will cause the aircraft to pitch down.

### 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.

	Transmitter command	Control Surface Response
Elevator		
		
Ailerons		
		
Rudder		
		

AS3X+® Control Response Test

**WARNING:** Do not perform any testing or maintenance with the propeller installed on the aircraft. Serious injury or property damage could result from the motor starting inadvertently.


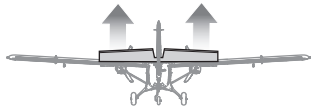






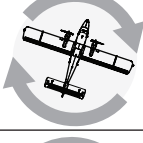



This test ensures that the AS3X+ control system is functioning properly. Assemble the aircraft and bind your transmitter to the receiver before performing this test.

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

**WARNING:** Keep all body parts, hair and loose clothing away from spinning motor, 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.

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

Aircraft movement		AS3X+ Reaction
Elevator		
		
Aileron		
		
Rudder		
		

Differential Thrust

The Twin Otter BNF Basic version is equipped with differential thrust. When the rudder is applied one motor will increase speed and the other will decrease speed to assist with yaw control. This assists in ground handling, takeoff and landing.

**IMPORTANT:** Differential thrust works with no extra setup on the BNF Basic package. For PNP users a Spektrum receiver with Smart throttle is required for differential thrust. Refer to SpektrumRC.com for more information.

For maximum control during takeoff and landing we recommend increasing the throttle trim (about 3-5 trim clicks), until the motors just start spinning. Then reduce the trim until the motors stop. With the trim set in this position rudder input will allow one motor to spin to maintain directional control even with the throttle at **idle**.

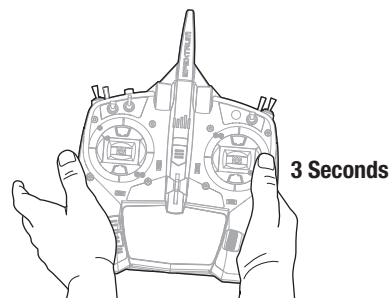
**CAUTION:** With the trim set in this position, throttle cut must be activated. If the aircraft is picked up and yawed without the trim lowered or throttle cut activated, a motor may power on unexpectedly, possibly causing injury or damage to the aircraft or property. Always make sure everything is clear of the propellers before handling the aircraft.

## In Flight Trimming

During your first flight, trim the aircraft for level flight at 3/4 throttle. 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 recommended that you fly at a designated RC flying field. Always avoid flying near houses, trees, wires and buildings. Avoid flying in areas where there are many people, such as 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 from 3/4 to full and steer with the rudder. As the airplane gains speed, gently pull back on the elevator and climb to a comfortable altitude.

### Flying

Fly the airplane and trim it for level flight at 3/4 throttle. After adjusting trim in flight do not touch the control sticks for 3 seconds. This allows the receiver to learn the correct settings to optimize AS3X+ performance.

### Landing

Make sure to land the aircraft into the wind. Start to slow the model down to an approach speed. 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.

## Post Flight Checklist

Disconnect the flight battery from the ESC
Power OFF the transmitter
Remove the flight battery from the aircraft
Recharge the flight battery

**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.

**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.

### Low Voltage Cutoff (LVC)

When a LiPo battery is discharged below 3V per cell, it will not hold a charge. The ESC protects the flight battery from over-discharge using Low Voltage Cutoff (LVC). Before the battery charge decreases too much, LVC removes power supplied to the motor. Power to the motor pulses, showing that some battery power is reserved for flight control and safe landing.

Disconnect and remove the LiPo battery from the aircraft after use to prevent trickle discharge. Charge your LiPo battery to about half capacity before storage. During storage, make sure the battery charge does not fall below 3V per cell. LVC does not prevent the battery from over-discharge during storage.

**NOTICE:** Repeated flying to LVC will damage the battery.

**TIP:** Monitor your aircraft battery's voltage before and after flying by using a Smart LiPo Battery Checker and Servo Driver (SPMXBC100, sold separately).

### Repairs

Thanks to the EPO 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 accelerator on your aircraft can damage paint. DO NOT handle the aircraft until accelerator fully dries.

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

## Receiver Installation (PNP)

The Spektrum AR631+ receiver is recommended for this airplane. If you choose to install another receiver, ensure that it is at least a 6-channel full range receiver. Refer to your receiver manual for correct installation and operation instructions.

**IMPORTANT:** A Smart compatible Spektrum receiver is required for thrust reversing, and telemetry information from the ESC.

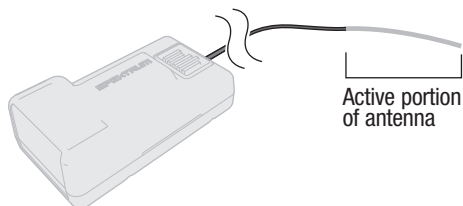
### Installation (AR631+ shown)

1. Mount the receiver parallel to the length of the fuselage as shown. Use double-sided servo tape.



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

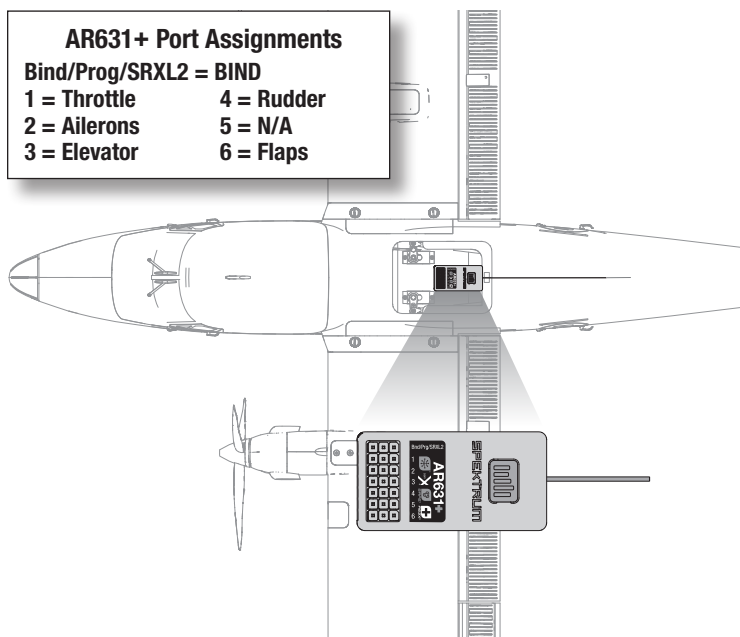
2. Route the antenna into the tube at the bottom of the fuselage.
3. Attach the appropriate control surfaces to their respective ports on the receiver using the chart in the illustration.



### AR631+ Port Assignments

Bind/Prog/SRXL2 = BIND

- |              |            |
|--------------|------------|
| 1 = Throttle | 4 = Rudder |
| 2 = Ailerons | 5 = N/A    |
| 3 = Elevator | 6 = Flaps  |



## Thrust Reversing (Optional)

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 the ground roll after landing. Activating the designated switch reverses motor rotation, throttle will still control motor speed.



**CAUTION:** 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:** Thrust reversing requires a Spektrum receiver with Smart Throttle and a Spektrum transmitter with a minimum of 7 channels. The Avian ESC is 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, or button. Use different channels for thrust reversing and SAFE Select. Motor reversing is assigned to Aux 7/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.



**CAUTION:** 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, it is possible to program the ESC with the Smart ESC Programming Box (SPMXCA200, optional, not included).

**IMPORTANT:** Do not power the motor on before attempting to enter ESC programming, the programming menu is locked once the motor is powered on. If you need to enter ESC programming after the motor has been powered, you must power cycle by disconnecting the battery and plugging it in again.

### 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. Choose left or right ESC. Reverse setting must be done on both sides, one at a time.
	10. Set BRAKE TYPE: Reverse
	11. Set BRAKE FORCE: 7
	12. 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 Aux7/Ch7 for SAFE Select.
	13. Select EXIT W/ SAVE to save your selections

**IMPORTANT:** Reverse ESC setup must be done for both the left and right ESC, and the same channel must be selected for reversing control.

## Motor Service

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

### Disassembly

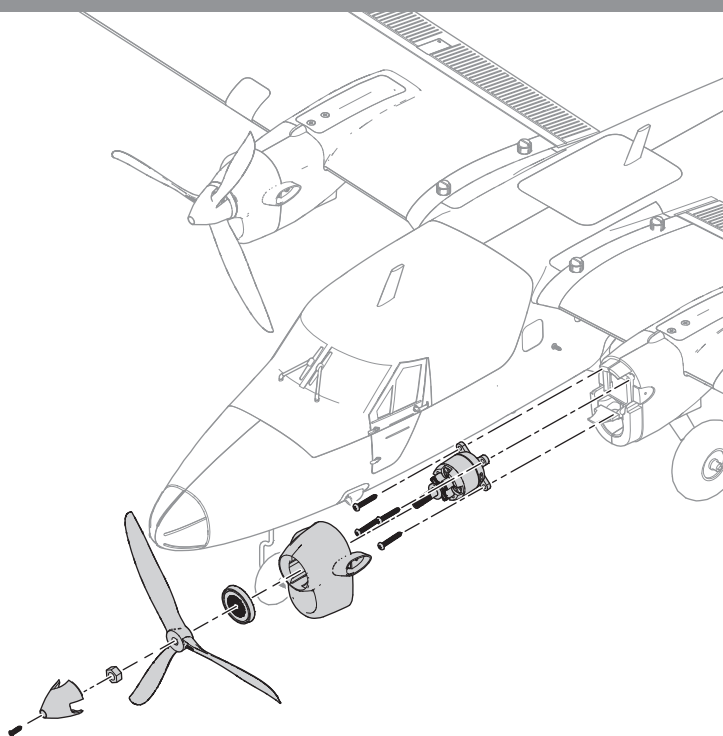
1. Remove the M3 x 10mm screw from the spinner cone and remove the spinner.
2. Remove the propeller nut with a 10mm wrench. Remove the washer, propeller and spinner backplate from the motor shaft.
3. Remove the two M2 x 8mm screws from inside the dummy exhausts and remove the cowling from the motor nacelle.
4. Remove the four M3 x 10mm screws and the motor with X-mount from the nacelle.
5. Disconnect the motor wires from the ESC wires.
6. Remove the four M3 x 6mm Phillips head machine screws and motor from the X-mount.

### Assembly

Assemble in reverse order.

- Correctly align and connect the motor wire colors with the ESC wires.
- Install the propeller with the size numbers facing forward. The propeller may require balancing.

**NOTICE:** If the propeller is not balanced it can cause vibration that could result in damage to the motor and/or mount. It can also cause the stabilization system to not operate correctly and/or decrease the life of the servos.





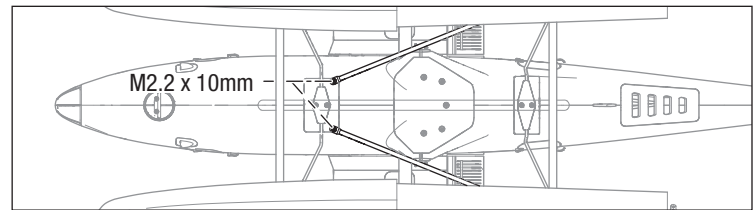
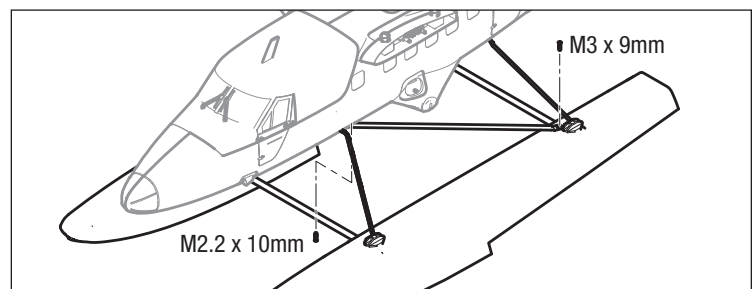
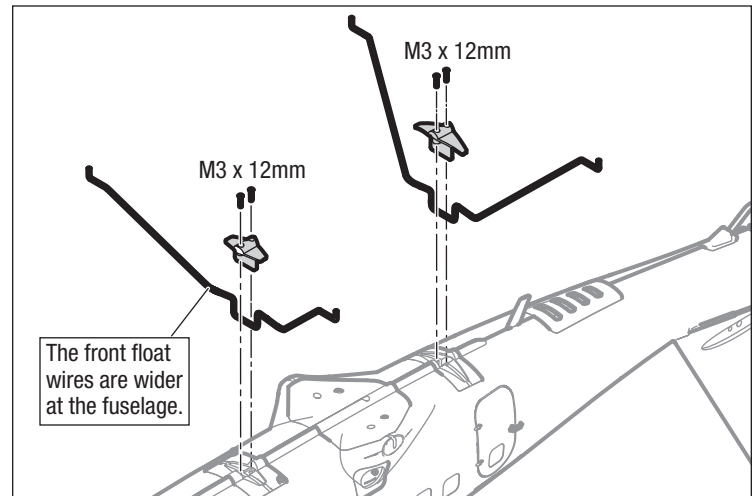
## Float Installation *(Optional, floats not included)*

### Float Set (EFL5261, sold separately)

1. Remove the water rudders from the floats assemblies.
2. Remove the two M2 x 8mm screws and remove the nose wheel assembly from the nose wheel steering bracket.
3. Remove the two M2 x 6mm self tapping screws in upper position next to fuselage, and two M2 x 4mm self tapping screws in lower position next to the wheels from each fairing.
4. Remove the five M2.5 x 12mm from the landing gear cover and remove the cover.
5. Remove the four M2 x 6mm screws from the landing gear straps, remove the landing gear, and reinstall the landing gear cover on the fuselage.
6. Remove the four M3 x 12mm screws from the float mount brackets.
7. Install the front and rear float wires with four M3 x 12mm screws and float brackets as shown with the wider float wires in the front. (These parts are included with the Twin Otter 1.4m)
8. Install the spreader bars between the floats as you bring the floats together.
9. Mount the floats on the front and rear float wires, secure with brackets and hardware included with float set.
10. Install the two diagonal struts from the fuselage front mount to the float rear mount with two M3 x 9mm on the float side and two M2.2 x 10mm on the fuselage side.

Disassemble in reverse order.

**IMPORTANT:** Although water rudders are included with the float set, they are not used on this aircraft and should be removed from the floats. Steering on the water is accomplished using differential motor thrust, which is controlled with the aircraft rudder.



## Flying From Water

Flying from water poses a higher risk because piloting errors or water conditions can cause the aircraft to become stranded. Only fly from the water when a level of comfort has been achieved flying the aircraft from the ground.

### Pre-Flight

Ensure the floats are secure on the fuselage before putting the aircraft in the water. Select an area to fly that does not have water currents, salt water, or debris. Look around the flight area and be aware of trees, docks, buoys, or other obstacles. Always fly with a spotter and avoid swimmers, boaters, people fishing, and people on the beach.

### Taxiing

When taxiing, use low throttle settings and the rudders to steer. Hold up elevator to keep the nose of the floats above the surface. Steer into the wind when turning, and crab into the wind if crosswind taxiing is required. When turning or crabbing into the wind, apply aileron against the wind to keep the upwind wing down and prevent the aircraft from being flipped over. Do not apply down elevator when the airplane is taxiing or during the takeoff run.

### On Step

As speed increases with throttle, the floats will rise out of the water and begin to plane on the surface of the water, riding "on step." The floats will come on step at a speed below flight speed, this is a transitional phase when the aircraft is not yet up to flight speed. This is considered a high speed taxi. Do not attempt to take off as soon as the aircraft comes on step. Use low to medium throttle and hold up elevator to manage speed on the water during a high speed taxi.

### Takeoff

To lift off from the water, set the flaps to the takeoff position, hold up elevator and accelerate the aircraft to bring it on step. Relax the up elevator as the airplane comes on step and accelerate to flight speed with full throttle. When the aircraft is travelling at a sufficient speed, pull back slightly on the elevator to rotate for liftoff.

### Landing

To land on the water, set the flaps to the landing position, and fly into the wind. Reduce the throttle to a low setting but keep some power during the approach. As the aircraft settles into ground effect, reduce the throttle fully and hold up elevator to flare. Hold up elevator through the touch down and as the airplane decelerates on the water.



**WARNING:** Never attempt to retrieve a downed aircraft by swimming unless you are sufficiently trained and/or there is another person available to respond in the case of an emergency.



**CAUTION:** Have a plan for retrieval in the event the airplane becomes stranded. Never retrieve a downed model in the water alone.



**CAUTION:** If at any time water splashes in the fuselage while flying from water, bring the airplane to shore, open the battery hatch and immediately remove any water that may have gotten in the fuselage. Leave the battery hatch open overnight to let the inside dry out and to prevent moisture damage to the electronic components. Failure to do so could cause the electronic components to fail, which could result in a crash.

**TIP:** Use a fishing pole with heavy line as a retrieval tool. Attach a tennis ball to the line, and throw the ball past a stranded aircraft to retrieve it.



## Troubleshooting Guide AS3X+ BNF Basic

Problem	Possible Cause	Solution
Oscillation	Damaged propeller or spinner	Replace propeller or spinner
	Imbalanced propeller	Balance the propeller
	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

## 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 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 the 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 (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 low	Use recommended battery

## Replacement Parts

Part #	Description
EFL32051	Wing: Twin Otter 1.4m
EFL32052	Fuselage: Twin Otter 1.4m
EFL32053	Horizontal Stabilizer: Twin Otter 1.4m
EFL32054	Battery Hatch: Twin Otter 1.4m
EFL32055	Spinner Set: Twin Otter 1.4m
EFL32056	Nacelle Set: Twin Otter 1.4m
EFL32057	Cowl Set: Twin Otter 1.4m
EFL32058	Pushrod Set: Twin Otter 1.4m
EFL32059	Propeller Adapter Set: Twin Otter 1.4m
EFL32060	Control Horn Set: Twin Otter 1.4m
EFL32061	Wheel Set: Twin Otter 1.4m
EFL32062	Screw Set: Twin Otter 1.4m
EFL32063	Wing Strut Set: Twin Otter 1.4m
EFL32064	Decal Set: Twin Otter 1.4m
EFL32065	Lighting Set: Twin Otter 1.4m
EFL32066	Servo Arm Set: Twin Otter 1.4m
EFL32067	Hands-Free Connector Set: Twin Otter 1.4m
EFL32068	Landing Gear Struts: Twin Otter 1.4m
EFL32069	Float Strut Set: Twin Otter 1.4m
EFL32070	Plastic Parts: Twin Otter 1.4m
EFL32071	Motor X Mount: Twin Otter 1.4m
EFL32072	Wing and Stabilizer Tubes: Twin Otter 1.4m
EFLP080653B	8 x 6.5 3-Blade Propeller CW
EFLP080653BCC	8 x 6.5 3-Blade Propeller CCW
SPM-1031	AR631+ 6 Channel AS3X+ & SAFE Receiver
SPMSA336	A336 9g Sub-Micro Servo
SPMSA370	A370 9g Sub-Micro Metal-Geared Servo
SPMXAE0225A	Avian 25-Amp Dual Smart Lite Brushless ESC, 3S-4S: IC3
SPMXAM4500	2830-950Kv Brushless Outrunner Motor, 14-Pole

## Recommended Items

Part #	Description
SPMX224S30	4S 2200mAh 14.8V Smart G2 LiPo 30C; IC3
SPMXC2020	Smart S1200 G2 AC Charger; 1x200W
SPMR7110	NX7e+ 14- Channel Transmitter Only

## Optional Items

Part #	Description
BLH100	Ball Link Pliers
SPMX224S30	2200mAh 4S 14.8V Smart G2 LiPo 30C; IC3
SPMX27004S30	2700mAh 4S 14.8V Smart LiPo Battery 30C; IC3
SPMX324S50	3200mAh 4S 14.8V Smart G2 LiPo 50C; IC3
SPMR8210	NX8+ 20-Channel DSMX Transmitter Only
SPMXCA300	Smart Lipo Bag, 16 x7.5 x 6.5 cm
SPMXBC100	XBC100 Smart Battery Checker & Servo Driver
SPMXC2040	Smart S1400 G2 AC Charger, 1x400W
ONXT1000	Ultimate Air/Surface Startup Tool Set
SPM6730	Smart Charger Case

## 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. Use the QR code to learn more about registering with the FAA.



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, or (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> 877-504-0233	
	Sales	<a href="mailto:websales@horizonhobby.com">websales@horizonhobby.com</a> 800-338-4639	
European Union	Horizon Technischer Service	<a href="mailto:service@horizonhobby.de">service@horizonhobby.de</a>	Hanskampring 9 D 22885 Barsbüttel, Germany
	Sales: Horizon Hobby GmbH	+49 (0) 4121 2655 100	


## FCC Information

Contains FCC ID: BRWSPMSR6200A

### Supplier's Declaration of Conformity

Twin Otter 1.4m BNF/PNP (EFL32050/EFL32075)

 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 IC: 6157A-SPMSR6200A

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

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:

**Twin Otter 1.4m BNF (EFL32050);** 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.

**Twin Otter 1.4m PNP (EFL32075);** 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.

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:

#### Receiver:

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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E-flite, Avian, DSM, DSM2, DSMX, Bind-N-Fly, BNF, the BNF logo, Plug-N-Play, AS3X+, SAFE, the SAFE logo, ModelMatch, IC3, and the Horizon Hobby logo are trademarks or registered trademarks of Horizon Hobby, LLC.

The Spektrum trademark is used with permission of Bachmann Industries, Inc.

All other trademarks, service marks and logos are property of their respective owners.

US 8,672,726. US 9,056,667. US 9,753,457. US 9,930,567. US 10,078,329. US 10,419,970. US 10,849,013. Other patents pending.

<https://www.horizonhobby.com/content/e-flite-rc>