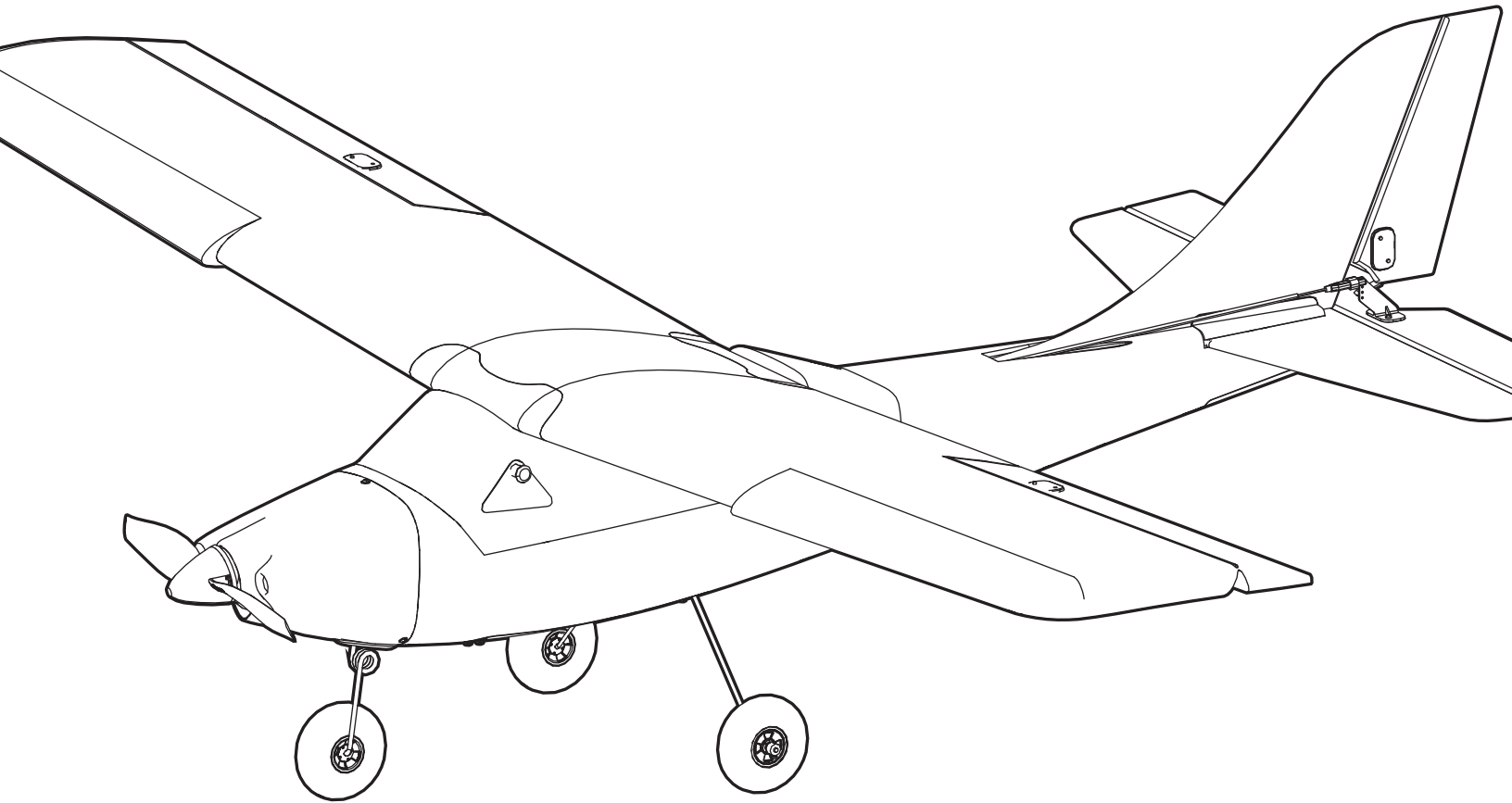


# Apprentice® S 2 1.2m



HBZ31000, HBZ31500

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

## NOTICE

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Horizon Hobby, LLC. For up-to-date product literature, visit [www.horizonhobby.com](http://www.horizonhobby.com) or [www.towerhobbies.com](http://www.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.



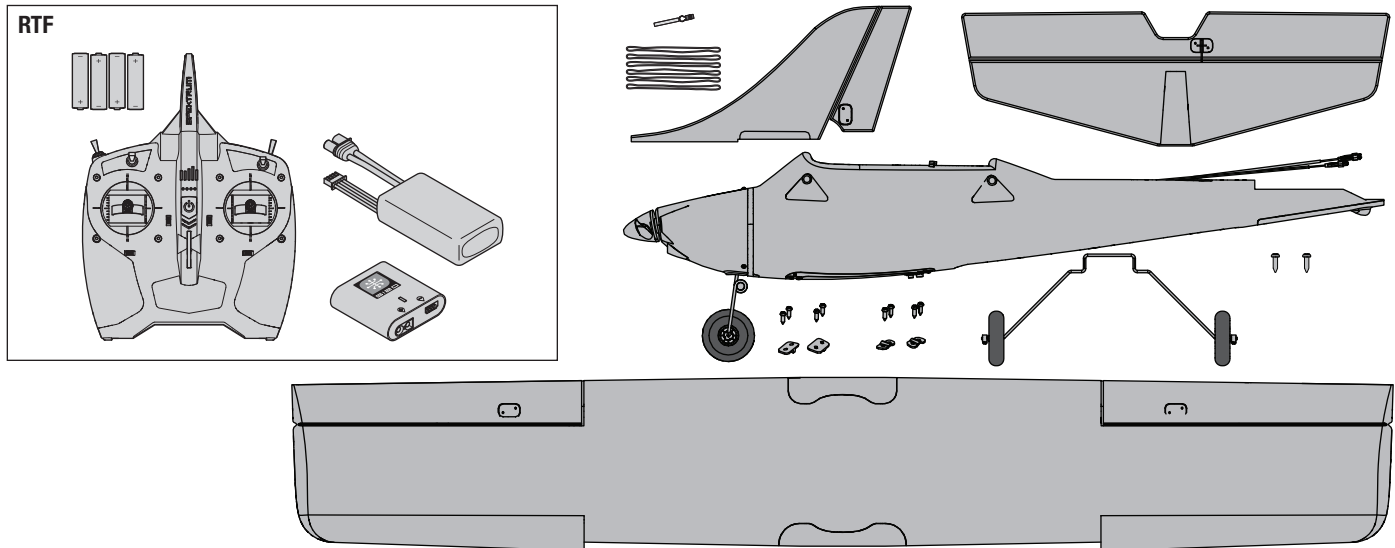
**WARNING AGAINST COUNTERFEIT PRODUCTS:** If you ever need to replace your Spektrum receiver found in a Horizon Hobby product, always purchase from Horizon Hobby, LLC or a Horizon Hobby authorized dealer to ensure authentic high-quality Spektrum product. Horizon Hobby, LLC disclaims all support and warranty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

As of this printing, you are required to register with the FAA if you own this product.

For up-to-date information on how to register with the FAA, please visit <https://registermyuas.faa.gov/>.

For additional assistance on regulations and guidance on UAS usage, visit [knowbeforeyoufly.org/](http://knowbeforeyoufly.org/).

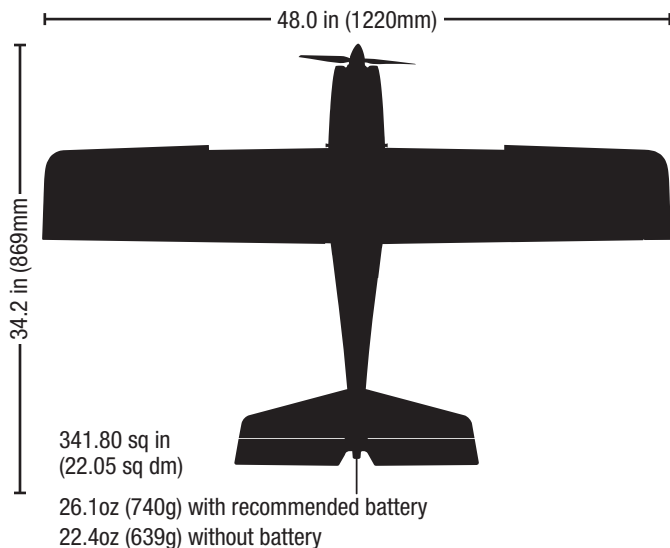
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## Specifications



|   | <b>RTF</b><br>READY-TO-FLY | <b>BNF</b>           |
|---|----------------------------|----------------------|
| <b>Motor:</b> 2832-1300Kv 14-pole (SPMXAM1900)                                | Installed                  | Installed            |
| <b>ESC:</b> 30-Amp Telemetry Capable ESC (EFLA1030FB)                         | Installed                  | Installed            |
| <b>Servos:</b> Ailerons (SPMSA381), Elevator and Rudder/nose wheel (SPMSA382) | Installed                  | Installed            |
| <b>Receiver:</b> AR631 6CH AS3X/SAFE Receiver (SPMAR631)                      | Installed                  | Installed            |
| <b>Battery:</b> 1300mAh 3S 11.1V Smart 30C LiPo;IC3 (SPMX13003S30M)           | Included                   | Required to Complete |
| <b>Battery Charger:</b> Smart S120 USB-C Charger, 1x20W (SPMXC1020)           | Included                   | Required to Complete |
| <b>Transmitter:</b> Spektrum™ DXS Transmitter                                 | Included                   | Required to Complete |

# Charging Warnings

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

- **NEVER LEAVE CHARGING BATTERIES UNATTENDED.**
- **NEVER CHARGE BATTERIES OVERNIGHT.**
- By handling, charging or using the included Li-Po battery, you assume all risks associated with lithium batteries.
- If at any time the battery begins to balloon or swell, discontinue use immediately. If charging or discharging, discontinue and disconnect. Continuing to use, charge or discharge a battery that is ballooning or swelling can result in fire.
- Always store the battery at room temperature in a dry area for best results.
- Always transport or temporarily store the battery in a temperature range of 40–120° F (5–49° C). Do not store battery or aircraft in a car or direct sunlight. If stored in a hot car, the battery can be damaged or even catch fire.
- Always charge batteries away from flammable materials.

- Always inspect the battery before charging and never charge dead or damaged batteries.
- Always disconnect the battery after charging, and let the charger cool between charges.
- Always constantly monitor the temperature of the battery pack while charging.
- **ONLY USE A CHARGER SPECIFICALLY DESIGNED TO CHARGE LI-PO BATTERIES.** Failure to charge the battery with a compatible charger may cause fire resulting in personal injury and/or property damage.
- Never discharge Li-Po cells to below 3V under load.
- Never cover warning labels with hook and loop strips.
- Never charge batteries outside recommended levels.
- Never attempt to dismantle or alter the charger.
- Never allow minors under the age of 14 to charge battery packs.
- Never charge batteries in extremely hot or cold places (recommended between 40–120° F or 5–49° C) or place in direct sunlight.

## Charge the Flight Battery

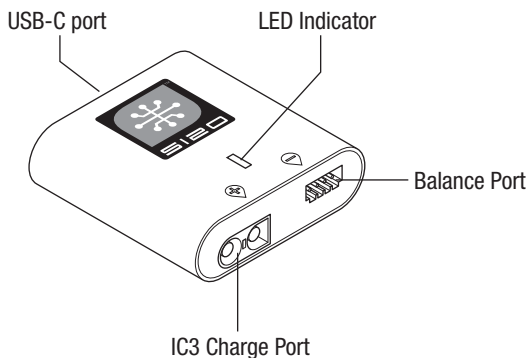
The recommended battery for the aircraft, included with the RTF version, is an 11.1V, 1300mAh 3S 30C Smart Technology LiPo battery with an IC3® connector (SPMX22003S30). If using a different battery, the battery should be of similar capacity, dimensions and weight to fit in the fuselage. The aircraft electronic speed control is equipped with an IC3 device connector. Ensure the battery chosen is compatible. Always ensure the model balances at the recommended center of gravity (CG) with the chosen battery. Follow your chosen battery and battery charger instructions to charge the flight battery.

### RTF Smart Technology Battery and S120 Charger, Specifications and Operation

The Spektrum S120 Smart Technology battery charger included with the RTF version of the aircraft is compatible only with Spektrum Smart 2-3 cell LiPo batteries or 6-7 cell NiMH batteries. It is not compatible with any other battery chemistries or non-Smart batteries.

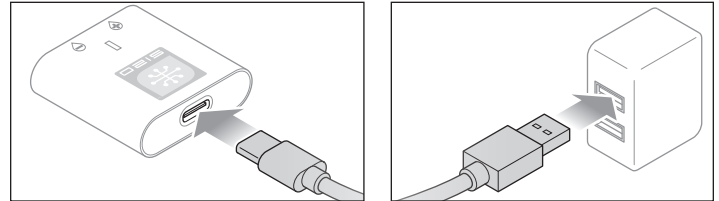
A USB power supply is required for use. A USB-C QC type power supply is recommended for the fastest charge times.

| S120 Specifications          |   |
|------------------------------|---|
| Input                        | USB Type C, power supply not included               |
| Input Voltage                | 5V-12V  |
| Charge Power                 | 18W max (dependant on power supply)                 |
| Compatible USB Power Adaptor | 5V/1A, 5V/2A, USB Quick Charge (QC) 2.0/3.0         |
| Battery Connector            | IC3® and balance connector                          |
| Battery Types                | LiPo, NiMH ( <i>Spektrum Smart Batteries only</i> ) |
| Cell Count                   | 2-3 cell LiPo, 6-7 cell NiMH                        |
| Max Output Voltage           | 13.05V  |
| Max Output Current           | Up to 2A  |



To charge the included flight battery:

1. Using the supplied Type-C USB cable, connect the S120 charger to a USB power supply (*not included*).



2. Insert the Spektrum Smart Battery IC3 connector (A) into the charger IC3 port, and insert the battery balance lead (B) into the charger balance port. Both the IC3 and balance connectors must be connected for the charging process to begin. The battery may be disconnected from the charger at any time to stop the charging process.
3. Disconnect the IC3 and balance connectors when the charge and balance cycles are complete, as indicated by the LED.
4. The LED indicator will glow solid red to indicate a charging error. Follow the operation steps to ensure proper connection is used to charge the battery.

Refer to the LED indicator table for charger status.

**IMPORTANT:** Connecting a non-Smart battery will cause a charge error and the S120 will not recognize or charge the battery.

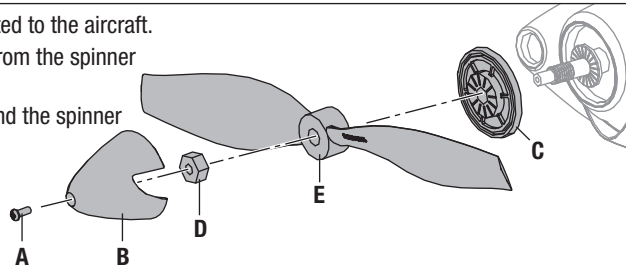
| LED Indicator                                      |                                    |              |
|--|------------------------------------|--------------|
| <b>Power On</b>                                    | USB 5V: White LED                  |              |
|  | USB Quick Charge 2.0/3.0: Blue LED |              |
| <b>LiPo:</b> Purple LED<br><b>NiMH:</b> Yellow LED | Battery Capacity                   |              |
|  | Less Than 25%                      | Single Flash |
|  | 25% – 75%                          | Double Flash |
|  | 76% – 99%                          | Triple Flash |
| <b>Charge Complete</b>                             | Green LED (Solid)                  |              |
| <b>Error</b>                                       | Red LED (Solid)                    |              |



**WARNING:** Before proceeding further, remove the propeller and spinner from the motor shaft. Never attempt to program the radio components, assemble the aircraft or perform maintenance of any kind without removing the propeller. Serious injury could result if the motor starts inadvertently with the propeller still attached.



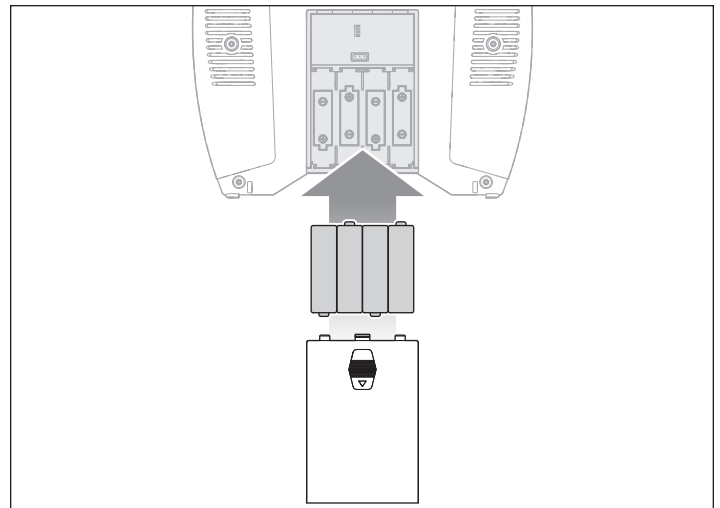
1. Ensure the flight battery is NOT connected to the aircraft.
2. Remove the screw (A) and spinner (B) from the spinner backplate (C).
3. Remove the hex nut (D), propeller (E), and the spinner backplate from the collet.



## Installing the Transmitter Batteries (RTF)

- CAUTION:** NEVER remove the transmitter batteries while the model is powered on. Loss of model control, damage or injury may occur.
- CAUTION:** If using rechargeable batteries, charge only rechargeable batteries. Charging non-rechargeable batteries may cause the batteries to burst, resulting in injury to persons and/or damage to property.
- CAUTION:** Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to national regulations.

1. Remove the battery cover from the bottom of the transmitter.
2. Install four AA batteries as shown.
3. Install the battery cover.



## Turning the Transmitter ON and OFF

Press and hold the power button to power the transmitter ON. The RGB LED indicator will illuminate Orange when the transmitter is ON and transmitting. To power the transmitter OFF, press and hold the power button for 5 seconds.

## Transmitter Layout

### Explanation of DXS Transmitter LEDs, Switches and Modes for the Apprentice.

**Trainer/Bind/Panic Button :** This button is used as both the trainer and bind button as well as the Panic button for your Apprentice S 2. For complete binding instructions, refer to the binding section below. When using the trainer function, connect the trainer cord (SPM6805) into the trainer port in both the instructor and the student transmitters. The instructor transmitter must be powered ON and bound to the receiver. The student transmitter must be powered OFF. Any time you press and hold the trainer button on the instructor, it will give control authority to the student. Releasing the trainer button returns control to the instructor.

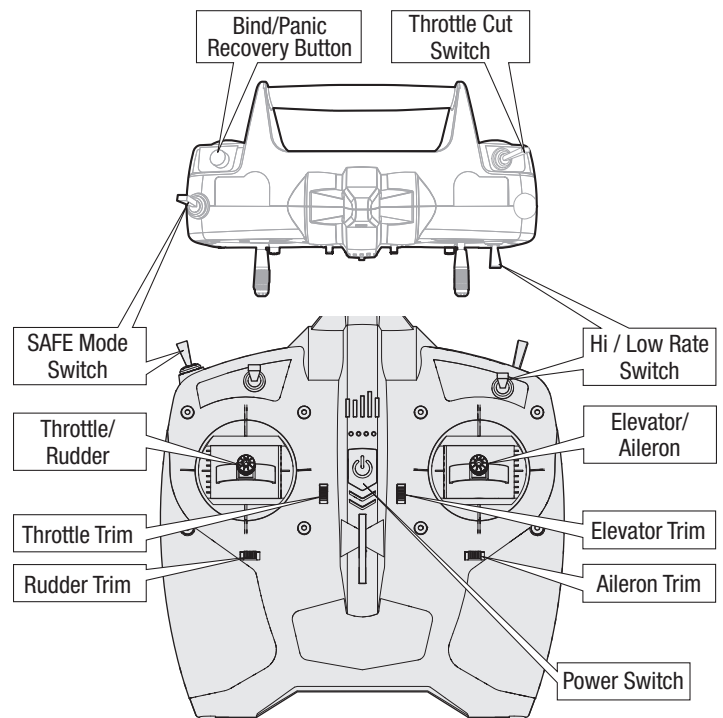
**IMPORTANT:** The student transmitter must always have the same settings as the instructor. See Flight Training section for setup of other Spektrum transmitters.

**Hi/Lo Rate Switch:** This switch supports high and low rate functions on aileron, elevator and rudder channels. In the upper, or "HI" position, servo travel is 100% on these channels. In the lower, or "LO," position, servo travel decreases to 70%. This switch lets you quickly change control rates from high for aggressive maneuvers to low for smooth, precise maneuvers. When learning to fly, use low rate.

**Safe Mode Switch :** This switch is used to select the SAFE Flight mode. For other conventional receivers, this switch controls a servo connected to the Channel 5/Gear port.

**Throttle Cut Switch :** This switch is used to arm and disarm the throttle control.

**LEDs :** Flashing with beeps Bind mode when Trainer (Bind) switch is held and the transmitter is powered on (see Binding instructions). Pulsates with one low tone beep every 2 seconds (when transmitter battery voltage drops below 4.7 volts). Replace the batteries immediately. If this happens while flying, land your aircraft as soon and as safely as possible.

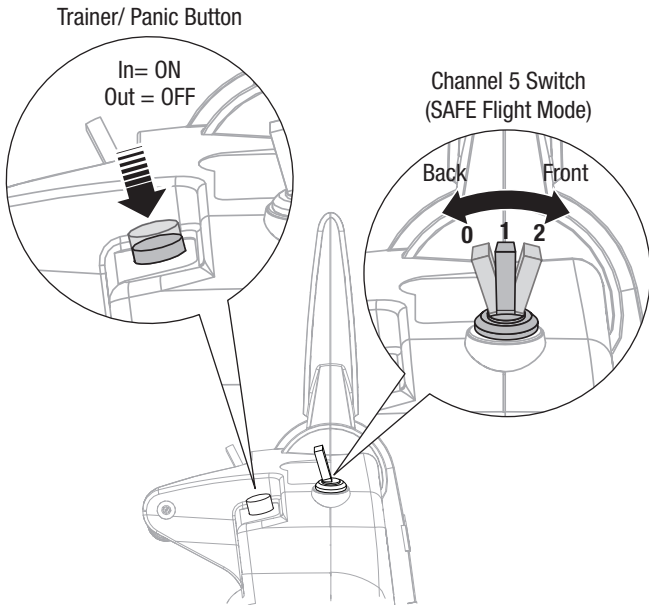


# Sensor Assisted Flight Envelope (SAFE) Technology

You control the help SAFE® technology provides while you learn to fly. As your flying skills grow, decrease SAFE technology assistance. Change aircraft response at any time by moving the Channel 5 (SAFE Flight mode) switch on your transmitter.

**IMPORTANT:** These instructions are for the included DXS transmitter (or similar transmitters) with a 3-position switch for Channel 5. If you fly this aircraft with a Spektrum transmitter other than the included DXS, refer to Optional Transmitter Setup and Receiver Setup.

| SAFE Flight Modes | Channel 5 Switch Position |
|-------------------|---------------------------|
| Beginner Mode     | Position 0                |
| Intermediate Mode | Position 1                |
| Experienced Mode  | Position 2                |



## Panic Recovery Mode

If you get into distress while flying in any mode, press and hold the Panic / Trainer button and move the control sticks to their neutral position. The SAFE technology will return the aircraft to a stable attitude, if the aircraft is at a sufficient height with no obstacles in its path. Release the Panic Button to turn off Panic mode and return the current SAFE flight mode. If you get into trouble and need to go back to Beginner mode for maximum stability, remember to fully move back the Channel 5 switch.

### SAFE Technology makes this aircraft a better learning tool, but you must set yourself up for success in flying:

- SAFE technology is designed as flight assistance, not an autopilot. The pilot is always in control and required to fly the aircraft at all times
- Follow the instructions provided in this manual to maintain your aircraft in top flying condition
- Seek qualified model flying instruction through your local model flying club. A qualified flight instructor can propel your advancement in this hobby
- Wind and environment can affect SAFE technology flight performance
- Ensure you have no distractions so you benefit from every moment of flight time
- You must still fly the aircraft away from obstacles and at an altitude that will allow for a safe recovery

## Activating SAFE Technology

SAFE technology is not active until you advance the throttle past 25%. Once the SAFE technology is active, the control surfaces may move on the aircraft. This is normal. The SAFE technology will remain active until the ESC is turned off.

## Understanding Oscillation

In some flight conditions, you may see oscillation. If oscillation occurs, decrease the airspeed. If oscillation still persists, refer to the Troubleshooting Guide for more information.

**CAUTION:** Flying in level forward flight and calm wind conditions at full throttle in any mode or long high-speed dives may result in strong oscillation that can damage the aircraft.

If there is oscillation in any mode, decrease throttle immediately. If oscillation persists, refer to the Troubleshooting Guide.

**CAUTION:** Beginner, Intermediate, and Panic modes are intended for the training environment. Flying continuous high-G maneuvers (such as loops) in Experienced mode for an extended period of time may lead to inconsistent flight envelope and Panic mode behavior. If this occurs, land in Experienced mode and power cycle the receiver before flying again.

## Launch and Landing Assistance

Take off and landings can be better managed by using the Beginner mode. If the model is launched incorrectly, or is landing at a less than perfect attitude, pull and hold the Panic Switch. The model can correct and help to prevent a crash.

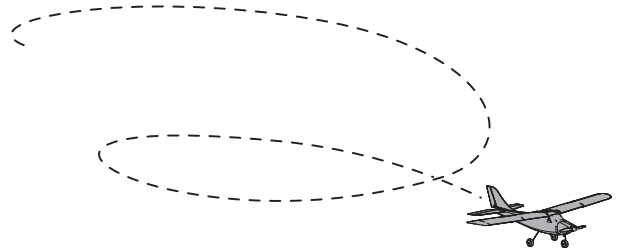
See the Take Off and Landing sections in this manual.

**IMPORTANT:** A level runway is required for takeoffs in Beginner mode due to throttle climb assistance.



## Failsafe

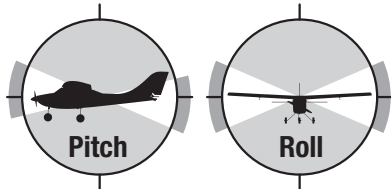
In the unlikely loss of radio connection, failsafe will place the aircraft in a descending circle to the ground, unless the radio connection is restored.



SAFE technology is a revolutionary flight training system designed to give you a stable platform for safely developing your flying skills. This is not an autopilot or self-guiding robot. The sensors and software in this system help you fly the aircraft where you want to go while decreasing the risk of an out-of-control crash. You can progress through the Beginner, Intermediate and Experienced flight modes as your skills increase, all with the confidence of an optional Panic recovery mode. At any time during a flight you can switch between the 3 flight modes or use Panic recovery to get your aircraft to a safe flying attitude.

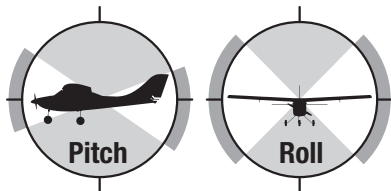
## SAFE Flight Modes

### Beginner Mode



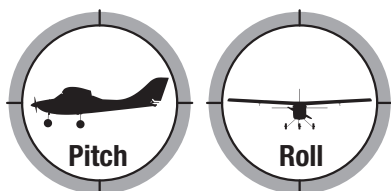
- Envelope limit: Pitch (nose up and down) and Roll (wing tips up and down) angles are limited to help you keep the aircraft airborne
- Self-leveling: when the pitch and roll controls are returned to neutral, the aircraft returns to level flight
- Stability assisted takeoff and landing
- Throttle based climb and descent

### Intermediate Mode



- Natural Flight Experience: Pitch and roll controls are increased. Self leveling is not active.
- Large Flight Envelope: The pilot is only prevented from entering extreme flight attitudes.

### Experienced Mode



- Natural Flight Experience: The pilot experiences natural AS3X flight for smooth handling and outstanding precision
- Unlimited Flight Envelope: No limit on Pitch and Roll angles (airframe limited)

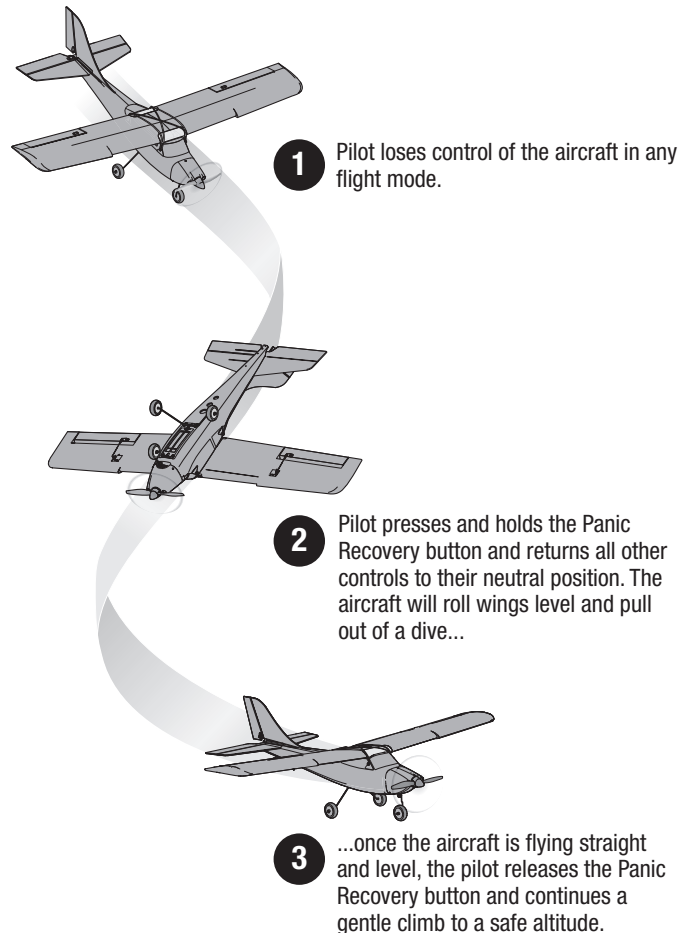
## Hi/Low Rate Switch (Dual Rates)

The included DSMX full range transmitter features a dual rates switch which lets you change between high and low control rates for the aileron, elevator and rudder.

When powered ON, this transmitter is automatically set to high-rate mode.

## Panic Recovery

- Immediate recovery to a safe flying attitude
- Return all transmitter controls to neutral for the quickest recovery
- This mode is intended to provide the pilot with the confidence to continue to improve their flight skills



**IMPORTANT:** Aircraft will recover to a safer attitude even if sticks are held. Some control input is still used with panic activated.

## AS3X® technology

Horizon Hobby has always made RC sport, scale and unique aircraft with the kind of performance experts appreciate. Now the exclusive Artificial Stability 3 aXis (AS3X) system helps take performance expectations in aircraft a quantum leap higher. Based on the successful use of MEMS sensor technology within the AS3X Stabilization System essential to Blade® ultra micro flybarless helicopters, the specifically tuned AS3X System for airplanes helps invisibly correct for turbulence, torque and tip stalls when encountered. Furthermore, the outstanding control agility delivers an ultra smooth, locked-in feel that obeys your every command with performance that's natural feeling. It's so gratifying, in fact, that it's as though you're the RC pilot of an expertly tuned, giant-scale aircraft. AS3X will change the way you'll want to fly now and in the future. To see what we mean, go to [www.E-fliteRC.com/AS3X](http://www.E-fliteRC.com/AS3X).

### High-rate mode

In high-rate mode, the controls can reach their maximum values. This mode is typically preferred by experienced pilots for maximum control authority.

### Low-rate mode

In low-rate mode, the controls are reduced to approximately 70% of their maximum values. This mode is typically preferred by (and best for) beginner pilots or others interested in smoother and more easily controlled flight.

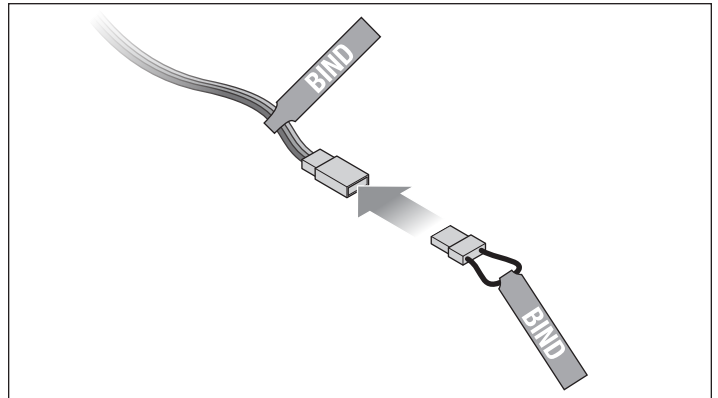
## Binding

The receiver must be bound to your transmitter before it will operate. Binding is the process of teaching the receiver the specific code of the transmitter so it will only connect to that specific transmitter.

The included RTF transmitter is bound to the aircraft at the factory. If you need to re-bind for any reason, follow the binding procedure as shown.

An extension is installed in the flight controller bind port so binding may be done through the battery door in the bottom of the aircraft without having to remove the wing assembly. Simply insert the bind plug in the open end of the extension marked "BIND" to enter bind mode.

1. Install a bind plug in the bind port extension.
2. Connect the flight battery to the ESC. The orange receiver LED starts to flash continuously, indicating the receiver is in bind mode.
3. Power on the transmitter while holding the transmitter bind button or switch. Refer to your transmitter's manual for specific binding instructions.
4. The bind process is complete when the orange LED on the receiver is solid.
5. Remove the bind plug from the bind port extension.



## Assembly

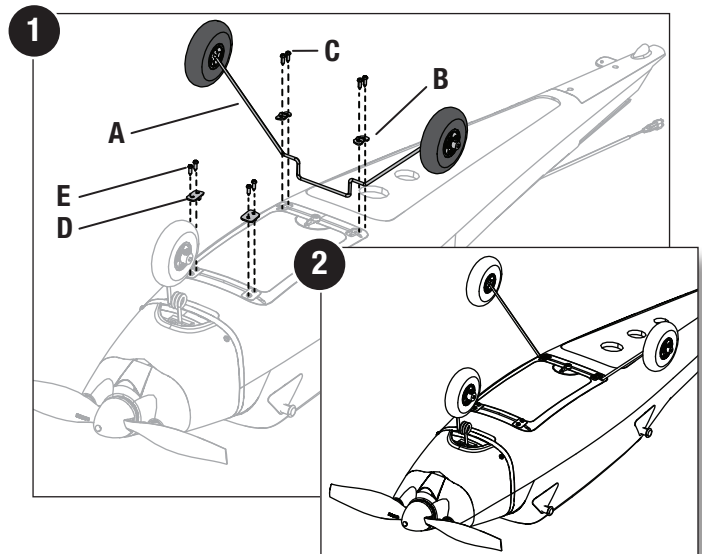


For video assistance regarding assembly, visit the Apprentice product page at [www.horizonhobby.com](http://www.horizonhobby.com)

### Landing Gear Installation

1. Install the main landing gear assembly (A) into the slot on the bottom of the fuselage.
2. Place the 2 landing gear brackets (B) into location as shown, noting the Right and Left indicators.
3. Secure the landing gear assembly into place using 4 screws (C).
4. Install the front straps (D) using the 4 screws (E) to ensure that they do not become lost. The front straps are required to install the optional Float Set and Mounting Wires (HBZ7390).

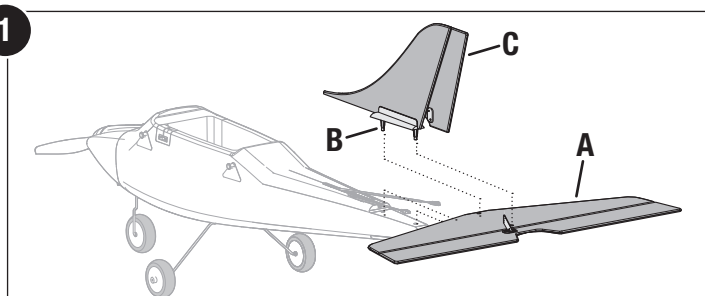
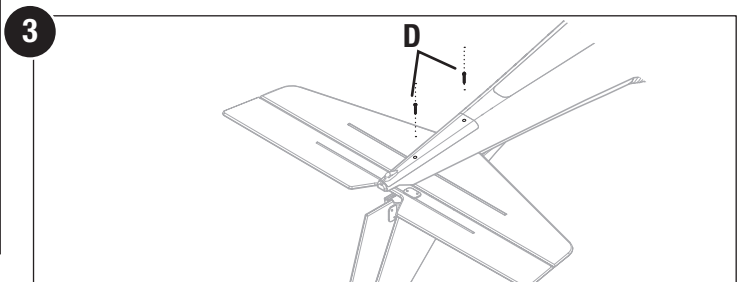
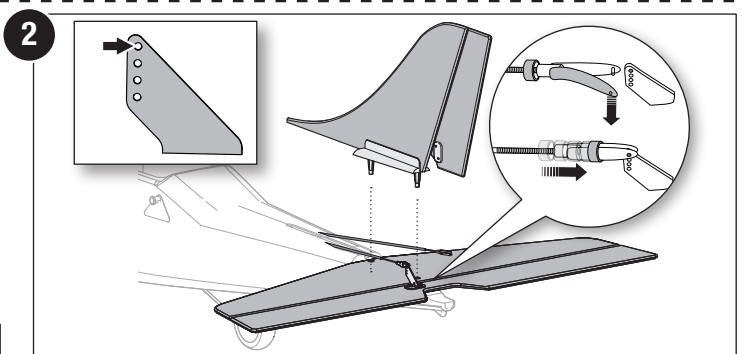
**IMPORTANT:** Do Not use the propeller that is included with the float set.



### Tail Installation

1. Install the horizontal tail (A) on the fuselage under the linkages as shown.
2. Carefully insert the 2 pins (B) of the vertical fin (C) through the horizontal tail holes into the fuselage holes.
3. Under the fuselage, install the 2 screws (D) into the fuselage and the vertical fin pins. Tighten the screws, but do not break the plastic.
4. Connect the respective clevises in the outermost holes in the rudder and elevator control horns. Refer to the clevis adjustment instructions to center the rudder and elevators.

Disassemble in reverse order.





### Wing Installation

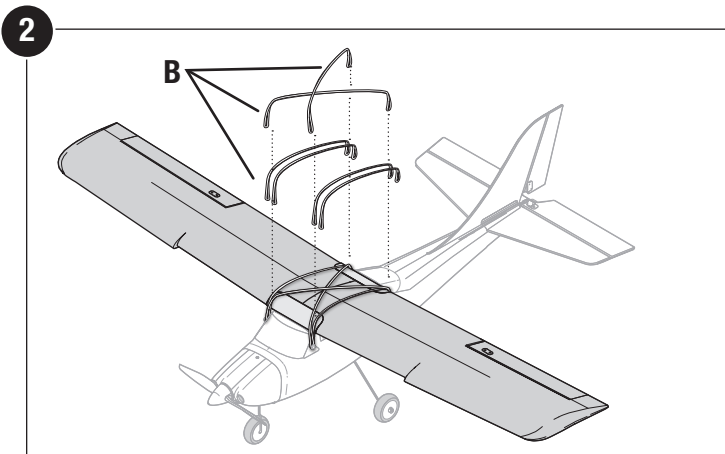
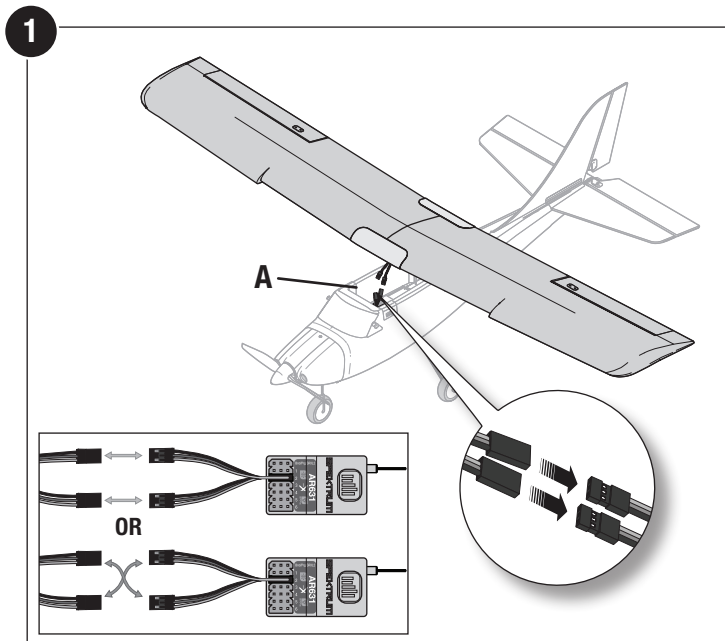
1. Connect the aileron servo connectors to the included Y-harness (A) in the fuselage. The left and right servos can be connected to either side of the Y-harness. Ensure the Y-harness is connected to port 2 of the receiver.
2. Install the wing on the fuselage.

**CAUTION:** DO NOT crush or otherwise damage the wiring when attaching the wing to the fuselage.

3. Install 6 rubber bands (B) on the front and back rods to complete the installation.

Disassemble in reverse order.

**IMPORTANT:** Correct operation of the SAFE system requires connection of both ailerons to the included Y-harness and port 2 of the receiver.



### Control Horn and Servo Arm Settings

**NOTICE:** Moving a linkage to another position may block the servo arm or affect SAFE technology functionality.

The Illustration shows the factory hole settings in servo arms and control horns.

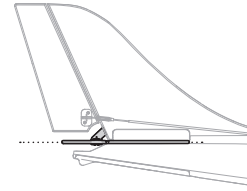
|       | Elevator | Ailerons | Rudder |
|-------|----------|----------|--------|
| Arms  |          |          |        |
| Horns |          |          |        |

## Control Surface Centering And Clevis Installation On A Control Horn

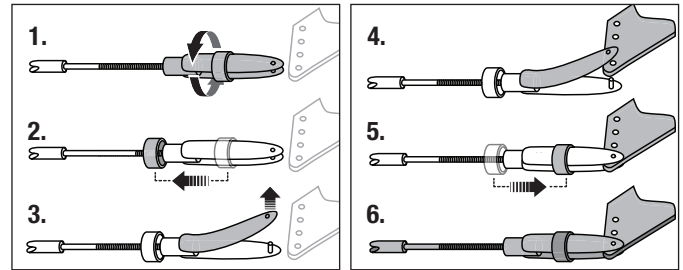
Always check to ensure your control surfaces (Rudder, Elevator and Ailerons) are centered with the rest of the surface before every flight.. If the control surfaces are not centered, centering can be achieved by following the steps below:

- Pull the tube from the clevis to the linkage.
- Carefully spread the clevis, then insert the clevis pin into the correct hole in the control horn.
- Move the tube to hold the clevis on the control horn.

**IMPORTANT:** All trimming and control tests should be done before throttle is advanced, in Experienced Mode.



Turn the clevis on the linkage to change the length of the linkage between the servo arm and the control horn.



## Installing the Flight Battery and Arming Electronic Speed Control (ESC)

**CAUTION:** Always disconnect the Li-Po flight battery from the aircraft receiver when not flying to avoid over-discharging the battery.

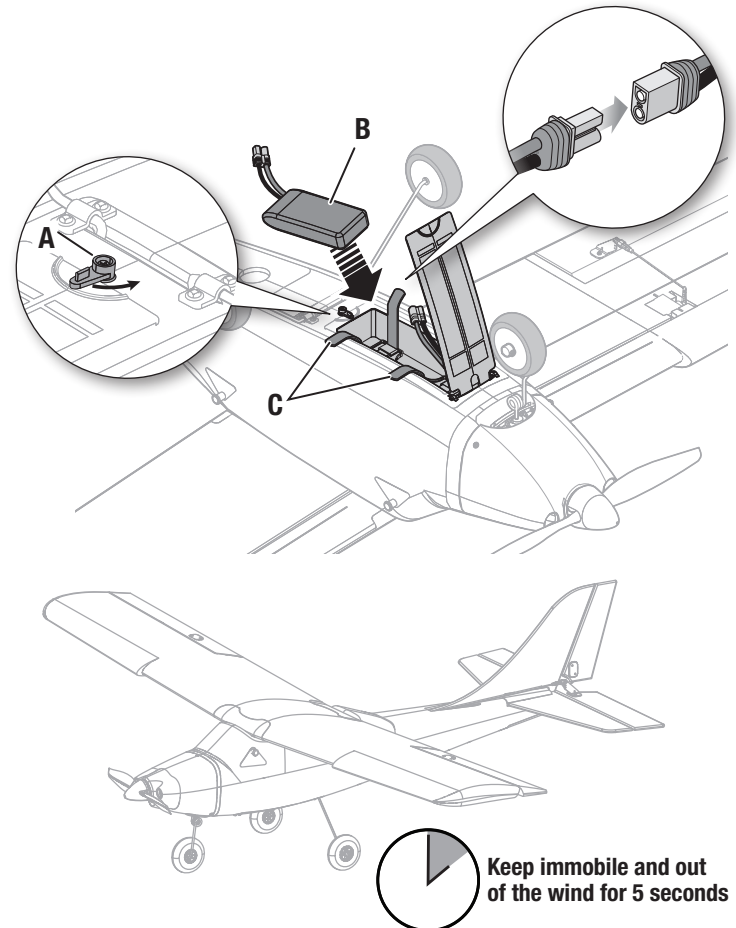
**CAUTION:** Always keep hands away from the propeller. When armed, the motor will turn the propeller in response to any throttle movement.

1. Rest the aircraft on a flat surface with the landing gear facing up.
2. Turn the latch (A) and open the battery hatch.
3. Lower the throttle and throttle trim, then power on the transmitter for at least 5 seconds.
4. Center and secure the flight battery (B) in the battery compartment using the hook and loop straps (C) so that the aircraft has a balanced Center of Gravity (CG).

**IMPORTANT:** Before flying, refer to the “Verifying Your Aircraft’s Center of Gravity (CG)” section for details about final battery placement.

5. Connect the flight battery in the aircraft, then replace the battery hatch and turn the latch.
6. Put the aircraft on its landing gear, on level ground and must be kept immobile while the SAFE system initializes.
7. After the SAFE system initializes, the control surfaces will move back and forth, then come to neutral to indicate the SAFE system has initialized and is ready to operate.

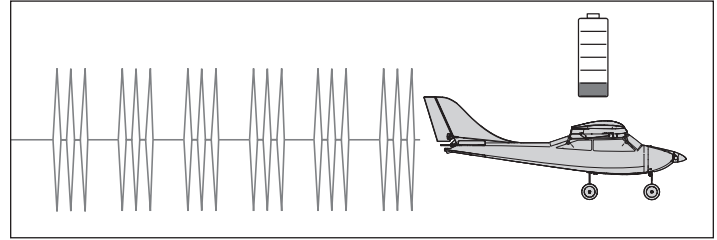
**IMPORTANT:** All trimming and control test should be done before the throttle is advanced, in Experienced Mode.



## LVC (Low Voltage Cutoff)

LVC is a feature built into your ESC to protect the battery from over-discharge. When the battery charge is too low, LVC limits power supplied to the motor. The aircraft will begin to slow and you will hear the motor pulse. When the motor power decreases, land the aircraft immediately and recharge the flight battery. Disconnect and remove the Li-Po battery from the aircraft after use to prevent trickle discharge. Charge your Li-Po battery to about half capacity before storage. During storage, make sure the battery charge does not fall below 3V per cell.

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



### Battery Precautions for Flight

- Keep the aircraft close until you are familiar with the flight time.
- Do not fly to LVC (motor pulsing) repeatedly. This may result in battery damage.
- Always disconnect and remove the flight battery when finished flying.

**TIP:** Monitor your aircraft battery's voltage before and after flying by using a Li-Po Cell Voltage Checker (SPMXBC100, sold separately).

## Center of Gravity (CG) Verification

An aircraft with a correct CG has its weight balanced at a calculated point for safe and stable flight.

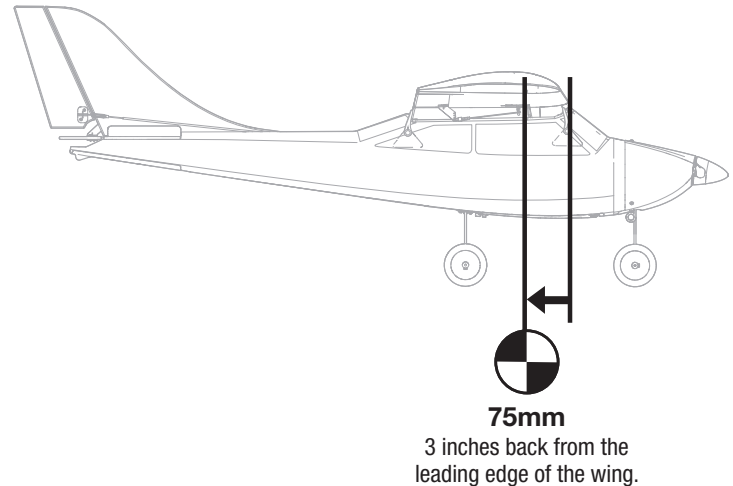
After installing the battery (in the recommended position) and before powering on the ESC, verify the CG by supporting the aircraft 75.0mm (approximately 3 inches) back from the front edge of the wing, as shown.

**TIP:** Balance the aircraft on your fingertips near the fuselage under the wings.

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

When flying with correct CG in beginner mode, the aircraft should climb gradually at full power and fly level at 50%–60% power with no elevator input. If the aircraft CG is too far forward (nose heavy), up elevator is required to fly level at 50%–60% power. If the aircraft CG is too far aft (tail heavy), down elevator is required to fly level.

Adjust the battery position as needed.

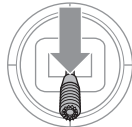
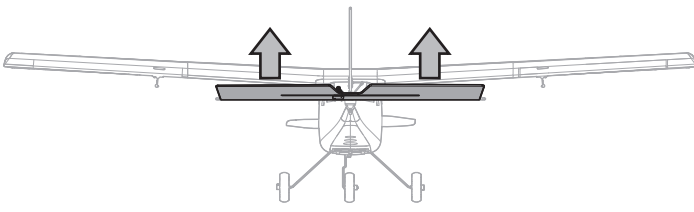

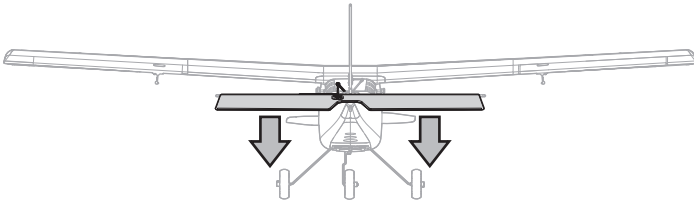
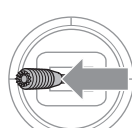
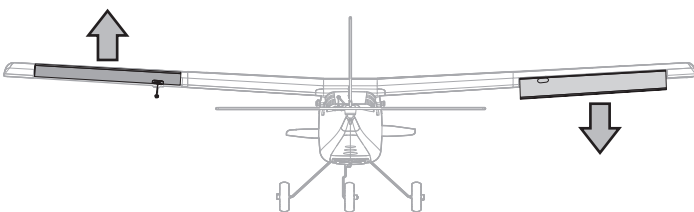
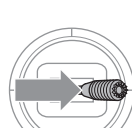
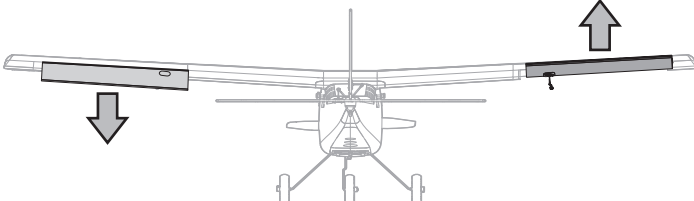
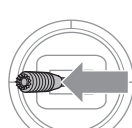
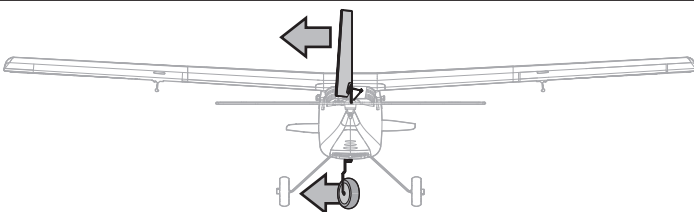
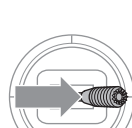
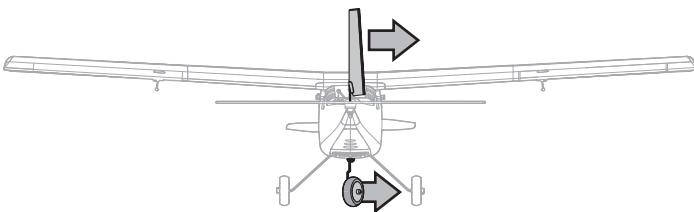


# Control Direction Test

**IMPORTANT:** All trimming and control test should be done before throttle is advanced and in Experienced Mode.

Power on the transmitter. Make sure the throttle is at 0% and that throttle trim is fully lowered on the transmitter. Power on the model. Make sure the control surfaces (rudder, elevator and ailerons) are at neutral or 0 degrees. Ideally, centering trim will center the surfaces. Refer to Control Centering instructions

to adjust control surfaces. Move the transmitter control sticks so the model's rudder, elevator and ailerons move as shown (illustrations show a view from the rear of the aircraft). If your model does not respond correctly, DO NOT FLY! See the Troubleshooting Guide in this manual for more information. If you need more assistance, contact the appropriate Horizon product support department.

|          |   | Transmitter Command  | Control Surface Response |
|----------|---|--|--------------------------|
| Elevator |    |    |                          |
|          |    |    |                          |
| Ailerons |    |   |                          |
|          |  |  |                          |
| Rudder   |  |  |                          |
|          |  |  |                          |

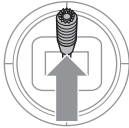



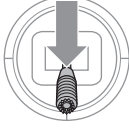


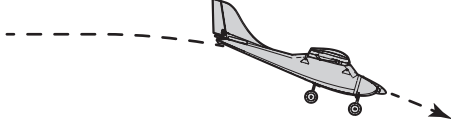
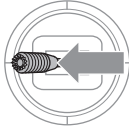
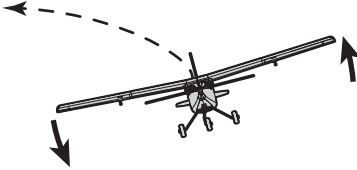
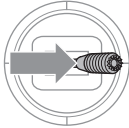
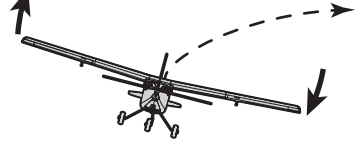
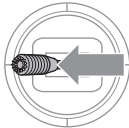
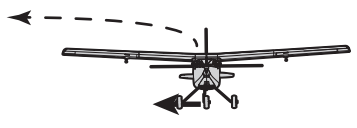
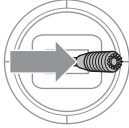
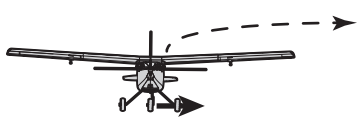
## Flight Control

**TIP:** For the first flights, make sure Flight Mode switch is set to Beginner mode, the best flight mode to help you learn to fly.

For smooth control of your aircraft, always make small control moves. All directions are described as if you were sitting in the aircraft.

For example, when the aircraft's nose is pointing toward you, left steering (rudder) will turn the aircraft left (your right while holding the transmitter).

- Flying faster or slower: When your aircraft is stable in the air, push the throttle stick up to make the aircraft go faster, and pull the throttle stick back to slow down. The aircraft will climb when the throttle is increased.
- Elevator up and down: Push the elevator stick forward to make the aircraft go down and pull the elevator stick back to go up.
- Banking right and left: Move the aileron stick right to make the aircraft drop the wing (bank) to the right and move the aileron stick left to bank left.
- Steering right and left: Move the rudder stick right to make the aircraft go right and move the rudder stick left to go left.

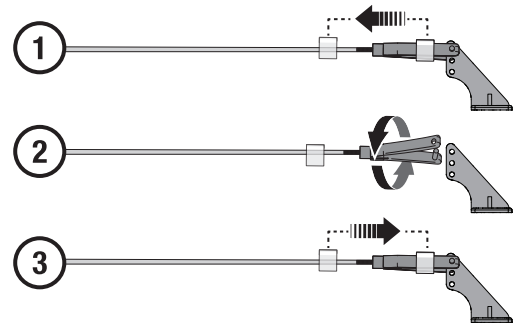
|          | Transmitter Command   | Aircraft Response  |
|----------|---|--|
| Throttle |    |    |
|          |    |    |
| Elevator |    |    |
|          |   |   |
| Aileron  |  |  |
|          |  |  |
| Rudder   |  |  |
|          |  |  |

# Trimming the Aircraft

## Manually Adjusting Trim

It is recommend that the SAFE flight mode switch is set to Experienced mode (position 2) before manually adjusting trim. Perform manual adjustment of trim before increasing the throttle above 25% or the control surfaces will move when the aircraft is moved. Return any trim setting on the transmitter to neutral by pushing the trim slider to the middle position, then adjusting the clevis on that control surface to position it the same as it was with the trim slider offset.

1. Remove the clevis from the control horn.
2. Turn the clevis (as shown) to lengthen or shorten the pushrod.
3. Close the clevis onto the control horn and slide the tube towards the horn to secure the clevis.



## Adjusting Trim in flight

If your aircraft does not fly straight and level at half throttle with the sticks at center, fly into the wind and adjust the aircrafts trim by moving the digital trim buttons.

**IMPORTANT:** All trimming and Control test should be performed when in Experienced Mode.

|          | Aircraft Drift | Required Trim |
|----------|----------------|---------------|
| Elevator |                |               |
|          |                |               |
| Aileron  |                |               |
|          |                |               |
| Rudder   |                |               |
|          |                |               |

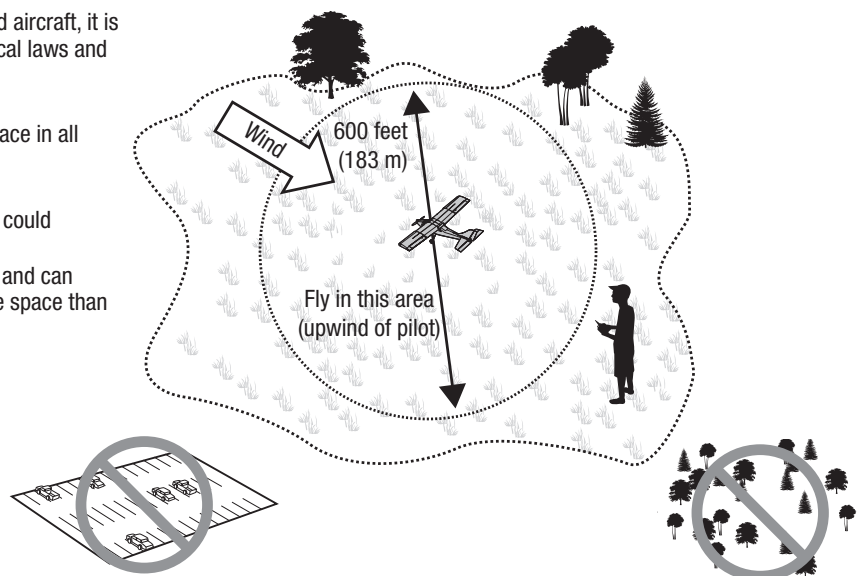
## Choose a Flying Field

In order to have the most success and to protect your property and aircraft, it is very important to select a place to fly that is very open. Consult local laws and ordinances before choosing a location to fly your aircraft.

### The site should:

- Have a minimum of approximately 600 feet (183m) of clear space in all directions.
- Stay clear of pedestrians.
- Stay free of trees, buildings, cars, power lines or anything that could entangle your aircraft or interfere with your line of sight.

Remember, your aircraft can reach significant speeds when flying and can cover ground quickly. Plan on flying in an area that gives you more space than you think you need, especially with first flights.



## Range Test

**CAUTION:** While holding the aircraft during the range test, always keep body parts and loose items away from the propeller. Failure to do so could cause personal injury.

Before each flying session, and especially with a new model, you should perform a range check. The DXS incorporates a range testing system. Placing the transmitter in RANGE CHECK mode reduces the output power, allowing a range check.

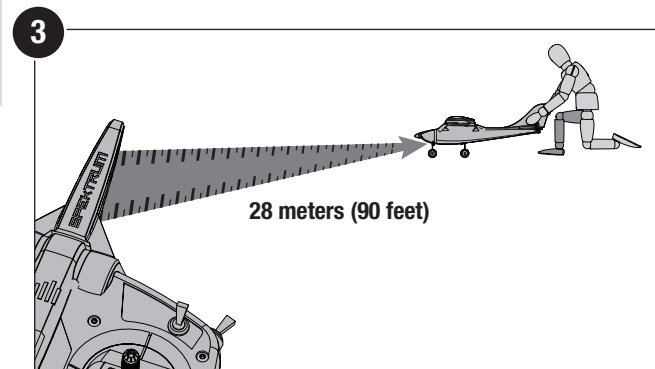
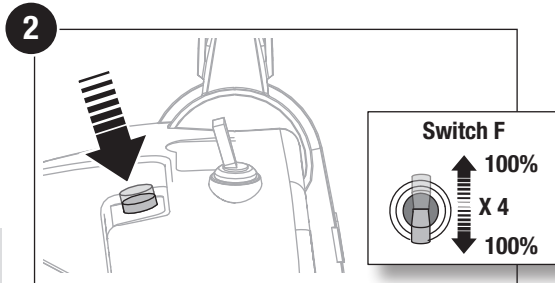
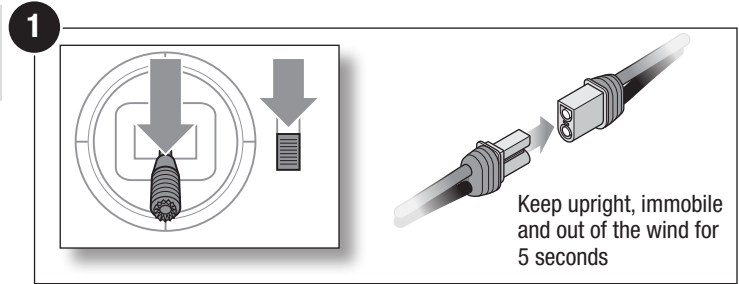
1. Power on the transmitter for 5 seconds or more with the throttle stick and trim low. Plug in the aircraft battery and keep the aircraft immobile for 5 seconds.
2. Press and hold switch **A** (Bind button) and toggle switch **F** four times within 10 seconds. The transmitter LEDs will flash orange and the alarm will sound. The system is in range check mode. Do not let go of the bind button until you are finished with the range check.

**IMPORTANT:** You must hold the BIND/Panic button during the entire range check process. Releasing the button will exit the range check mode.

3. With the system powered on and the model restrained on the ground\*, stand 28 meters (90 feet) away from the model.

**CAUTION:** In some aircraft, when the model is placed on the ground, the antenna(s) can be within inches of the ground. Close proximity of the antenna(s) to the ground can reduce the effectiveness of the range check. If you experience issues during the range check, restrain the model on a non-conductive stand or table up to 2ft (60cm) above the ground, then range check the system again.

4. Move the transmitter rudder, elevator, aileron and throttle controls to ensure they operate smoothly at 28 meters (90 feet).
5. If control issues exist, do not attempt to fly. Refer to the contact table at the end of this manual to contact Horizon Hobby product support. Also, see the Spektrum website for more information.



## Preflight Checklist

|  |
|--|
| 1. Find a safe and open area.                        |
| 2. Charge flight battery.                            |
| 3. Install fully charged flight battery in aircraft. |
| 4. Make sure linkages move freely.                   |
| 5. Perform Control Direction Test.                   |

|   |
|---|
| 6. Perform a Range Check.                   |
| 7. Plan flight for flying field conditions. |
| 8. Set a flight timer for 6-8 Min.          |
| 9. Have fun!                                |

## Flying Tips

- Start in beginner mode. As you learn and become more confident, change modes to advance.
- Resist the desire to fly at full throttle. Flying slowly at first allows for greater response time should anything go wrong.
- Always keep your aircraft in plain sight and up wind from you.
- Gain experience by first flying in large circles high off the ground. Once you feel comfortable, gradually progress to more advanced maneuvers.
- Do not attempt your first turn at low altitude. Higher altitudes allow for greater possibility of correction.
- Control stick movements are quite sensitive. Avoid pushing the control sticks to their endpoints until you become more familiar with your aircraft.
- To recover from a nose dive, decrease throttle and release the aileron stick. Pull the elevator stick back a small amount to pull up the nose of the aircraft.
- If you feel you have lost control press and hold the Panic Button.

# Takeoff



For video assistance regarding assembly, visit the Apprentice product page at [www.horizonhobby.com](http://www.horizonhobby.com)

## Flying Conditions

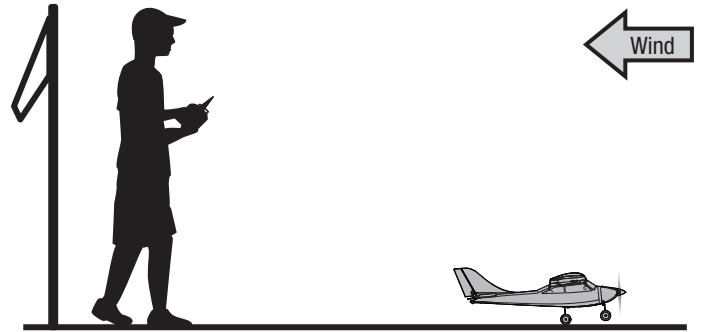
A good flying day is calm, with winds that are less than 5–7 mph (8–11 km/h). Flying in faster winds than this could make flying difficult and result in a crash. Wind near the ground can be less than the wind at the elevation where your aircraft flies.

## Ground Launch

Take off from the ground in Beginner mode is recommended for first flights, however, if the ground is not hard and level, get help to hand launch your aircraft.

1. Place the aircraft on its landing gear in a large, open area with smooth asphalt or concrete. The aircraft's nose should point into the wind (in no greater than 5–7 mph (8–11 km/hr) wind).
2. Stand behind your aircraft so you can see the rudder, ailerons and elevator.
3. Slowly move the throttle stick to FULL (100%) while gently pulling back on the elevator stick. Use the rudder to keep the aircraft's nose pointed into the wind while it leaves the ground.
4. With a full battery in calm wind, your aircraft should rise off the ground in approximately 20 feet (7 meters).

**TIP:** Take off in Beginner mode, increase throttle and keep the aircraft straight with the rudder control. The aircraft will rise from a level runway in a short distance. Obtain a steady climb to a safe altitude. Use Panic Switch if needed.



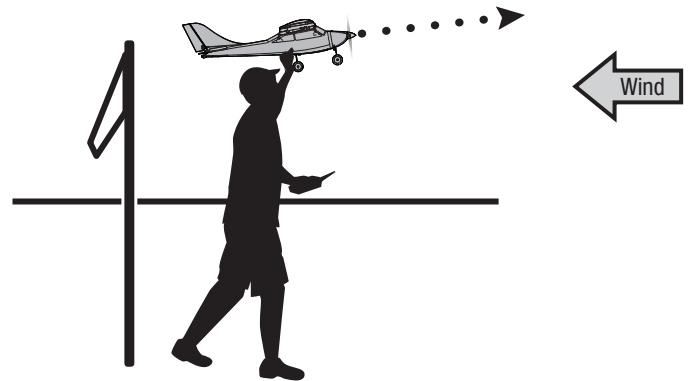
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## Hand Launch

When learning to fly, get help to hand-launch your aircraft so you can concentrate on flying. If you must hand-launch the aircraft alone, hold the model in your dominant hand and the transmitter in your other hand. An optional neck strap (SPMP610, sold separately) can help you hold the transmitter.

1. Grip the aircraft under the fuselage, behind the rear landing gear.
2. Carefully increase transmitter throttle control to FULL (100%).
3. Throw the aircraft slightly nose up and directly into the wind while keeping the wings parallel to the ground.

**TIP:** Hand launch in Beginner mode. The technology will keep the aircraft level and in a climb. Obtain a safe and steady climb to a safe altitude.

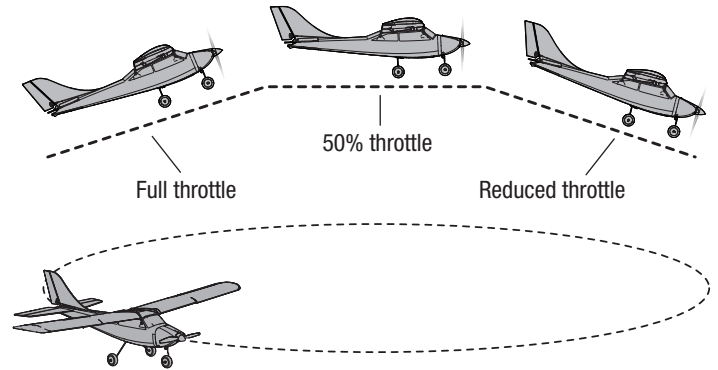




## Flying

Let the aircraft climb at full throttle, into the wind, until the aircraft gets about 200 feet (61 meters) above the ground, then decrease the throttle to half (50%). Try to make only small and gentle movements of the control sticks so you can see how the aircraft responds. Your aircraft is designed to climb and turn well. Flying with the nose pointed toward you is one of the hardest things to do when learning to fly.

To practice piloting the aircraft with the nose pointed toward you, try flying in large circles high off the ground.



## Landing

The aircraft can fly for approximately 6 or more minutes on one battery charge. This flight time is based on the recommended flying style shown in this manual.

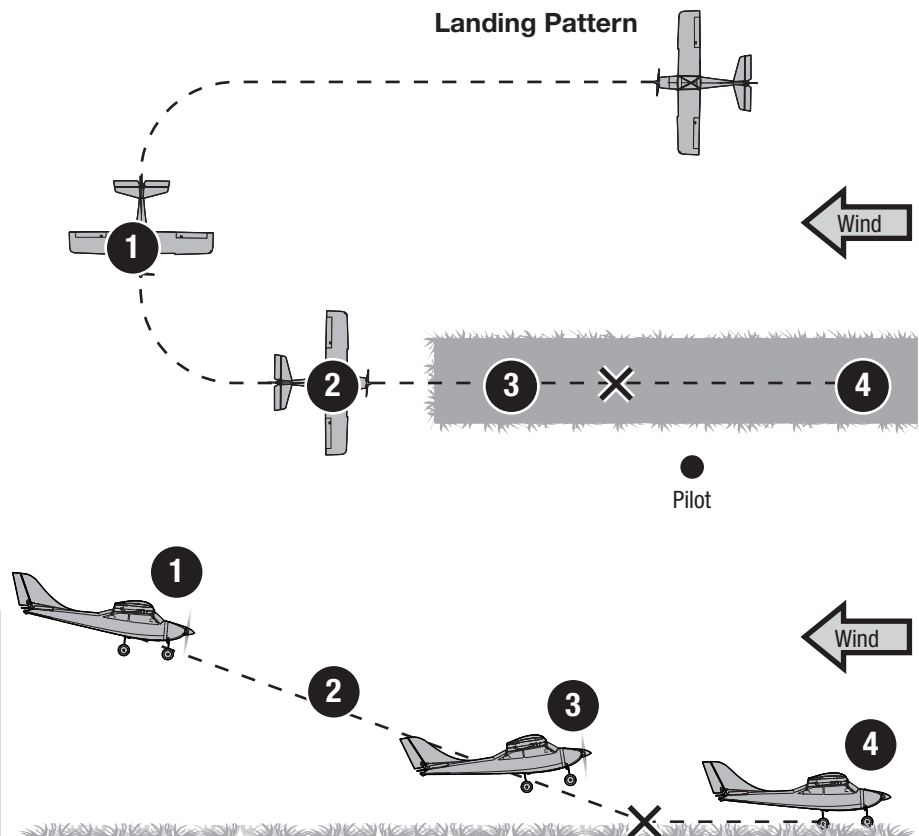
If the motor begins to pulse, the battery is getting low and you must land immediately.

1. Start your landing procedure by switching the flight mode switch to Beginner Mode.
2. Decrease the throttle and bring the aircraft's nose into the wind. Do not be afraid to fully reduce the throttle and let the aircraft glide unpowered.
3. While gliding into the wind, little or no elevator, aileron and rudder should be required. If you think the aircraft will land short of your target area, gently add a small amount of throttle.
4. Once the aircraft is 1 meter (3–4 feet) above ground, slowly pull back the elevator stick. At this speed, this should result in a "flare", causing the nose to rise without increasing altitude. The aircraft will lose speed so that the main gear lands first before the nose gear touches down.
5. Allow the aircraft to come to a stop.

**CAUTION:** Never catch a flying aircraft in your hands. Doing so could cause personal injury and damage to the aircraft.

**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:** Crash damage is not covered under warranty.

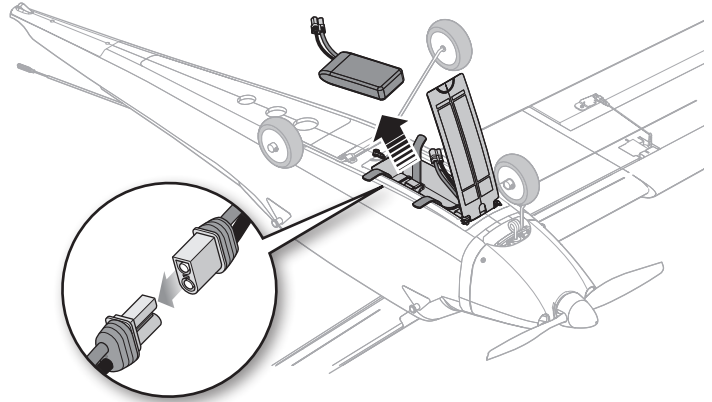


## Post Flight

**NOTICE:** When you are finished flying, never keep the aircraft in the sun. Do not store the aircraft in a hot, enclosed area such as a car. Doing so can damage the foam.

### Post Flight Checklist

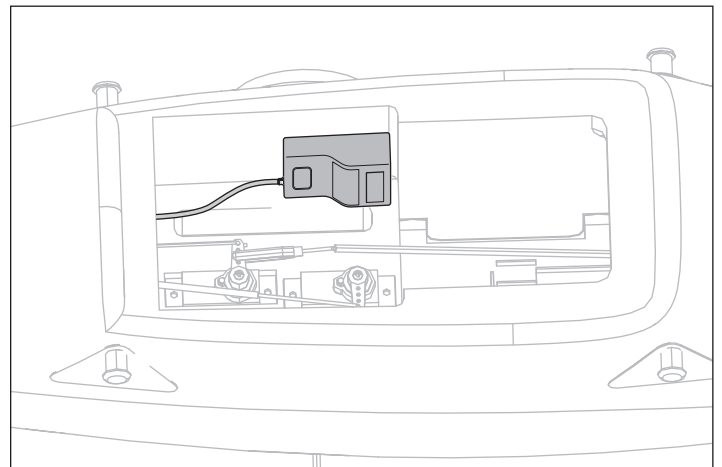
- |  |
|--|
| 1. Disconnect Flight Battery   |
| 2. Power off transmitter   |
| 3. Remove flight battery from aircraft   |
| 4. Recharge flight battery   |
| 5. Repair or replace all damaged parts   |
| 6. Store flight battery apart from aircraft and monitor the battery charge             |
| 7. Make note of flight conditions and flight plan results, planning for future flights |



## Service and Repairs

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

Thanks to the EPO foam material in the wing and fuselage of this aircraft, repairs to the foam can be made using virtually any adhesive (hot glue, regular CA (cyanoacrylate adhesive), epoxy, etc). However, use only foam-compatible CA, foam-compatible accelerant or epoxy on the vertical and horizontal tail material. 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 back of this manual.



## Service of Power Components

**CAUTION:** Always disconnect the flight battery from the model before removing the propeller.

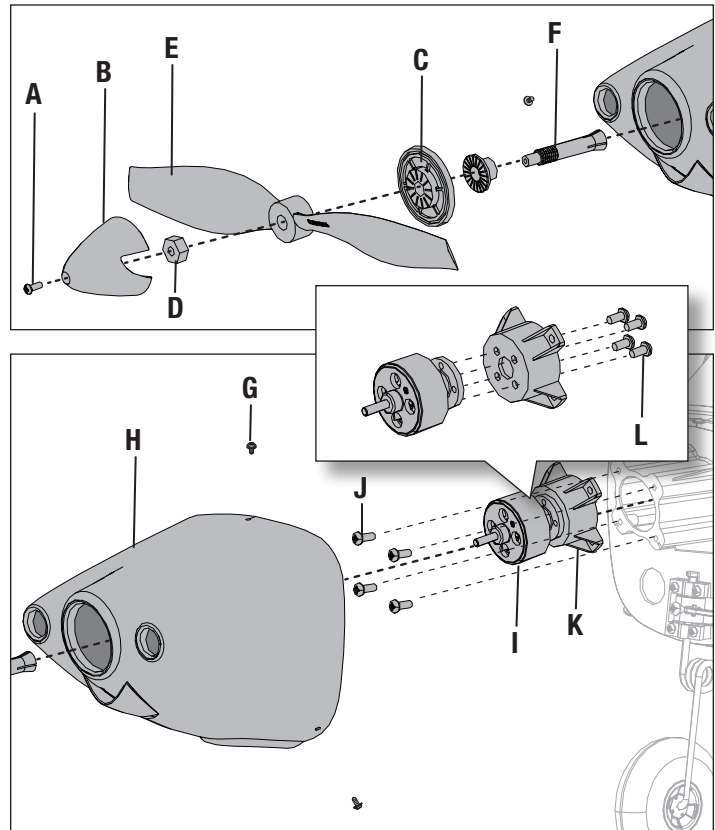
### Disassembly

1. Remove the screw (A) and spinner (B) from the spinner backplate (C).
2. Remove the hex nut (D), propeller (E), and the spinner backplate from the collet (F). A tool will be required to remove the hex nut.
3. Carefully remove 3 screws (G) and the cowling (H) from the fuselage.
4. Remove the collet from the motor (I).
5. Remove 4 screws (J) from the motor mount (K) and the fuselage.
6. Disconnect the motor connectors from the ESC connectors.
7. Remove 4 screws (L) to remove the motor from the motor mount.

Assemble in reverse order.

### Assembly Tips

- Correctly align and connect the motor wire colors with the ESC wires.
- The propeller size numbers (8.25 x 5.5) must face out from the motor for correct propeller operation.
- Ensure the spinner is fully connected to the spinner backplate for safe operation.



## Optional Floats (Water Takeoff and Landings)

**IMPORTANT:** We recommend flying with floats only once you have become able to fly comfortably in Experienced flight mode.

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

Optional floats and float mounting wires (HBZ7390) sold separately.

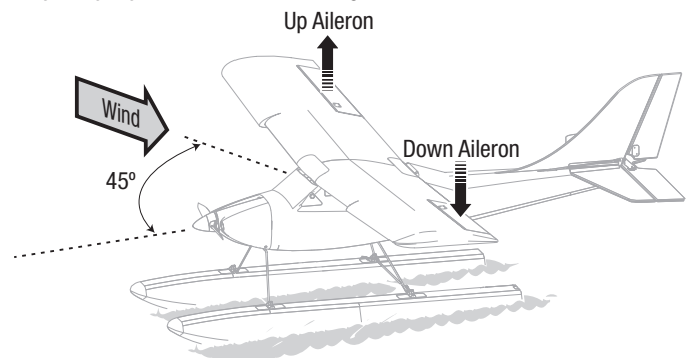
Always ensure the optional floats are secure on the fuselage before putting the aircraft in water.

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

To land this aircraft on water, fly the aircraft to a couple of feet off the surface of the water. Reduce throttle and add up elevator to flare the aircraft.

When taxiing, you must use throttle to move the aircraft forward, but steer with the rudder stick. The stick will turn both the aircraft rudder and a small rudder attached to the left float.

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



Taxi 45 degrees into the direction of the wind.

**CAUTION:** Never go alone to get a downed model in the water.

**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.

## Optional Transmitter Setup

If using any DSMX transmitter other than the included DXS (3 pos gear switch) the radio will have to be configured correctly for the SAFE system to work properly.

- SAFE Flight mode is selected using Channel 5 signal (high, middle, low)
- Panic mode is selected with Channel 6 signal (high, low)

Refer to your transmitter's manual for more information about transmitter setup.

If using a 2 pos switch for Safe flight modes only Beginner and Experienced modes will be active.

| Computerized Transmitter Setup  |  |
|---|--|
| Start all transmitter programming with a blank ACRO model (perform a model reset), then name the model.                                 |  |
| Set Dual Rates to   | HIGH 100%  |
|   | LOW 70%  |
| Set Servo Travel to   | 100%   |
| <b>DX6i</b>   | 1. Go to the SETUP LIST MENU<br>2. Set MODEL TYPE: ACRO  |
| <b>DX7S<br/>DX8</b>   | 1. Go to the SYSTEM SETUP<br>2. Set MODEL TYPE: AIRPLANE<br>3. Set WING TYPE: NORMAL, TAIL: NORMAL     |
| <b>DX6e<br/>DX6 (Gen2)<br/>DX7 (Gen2)<br/>DX8 (Gen2)<br/>DX9<br/>DX10t<br/>DX18<br/>DX20<br/>iX12<br/>iX20<br/>NX6<br/>NX8<br/>NX10</b> | 1. Go to the SYSTEM SETUP<br>2. Set MODEL TYPE: AIRPLANE<br>3. Set AIRCRAFT WING: NORMAL, TAIL: NORMAL |

## Trouble Shooting Guide for SAFE Technology

| Problem  | Possible Cause                   | Solution  |
|--|----------------------------------|---|
| Oscillation  | Flying over recommended airspeed | Reduce air speed  |
|  | Damaged propeller or spinner     | Replace propeller or spinner  |
|  | Imbalanced propeller             | Balance the propeller. For more information, view John Redman's propeller balancing video at <a href="http://www.horizonhobby.com">www.horizonhobby.com</a> |
|  | Motor vibration                  | Replace parts or correctly align all parts and tighten fasteners as needed  |
|  | Loose receiver                   | Total system failure. Align and secure receiver in fuselage   |
|  | Loose aircraft controls          | Tighten or otherwise secure parts (servo, arm, linkage, horn and control surface)   |
|  | Worn parts                       | Adjust gain to compensate for parts wear or replace worn parts (especially propeller, pivot points or servo)  |
| Trim is at extreme and aircraft does not fly straight or level | Irregular servo rotation         | Replace servo   |
|  | Trim is not at neutral           | If you adjust trim more than 4 clicks, adjust the clevis to mechanically remove trim  |

## Trouble Shooting Guide

| Problem  | Possible Cause   | Solution  |
|--|--|---|
| Aircraft will not respond to throttle but responds to other controls | Throttle not at lowest position 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  |
|  | Spinner is not tight or fully seated in place  | Tighten the spinner or remove the spinner and turn it 180 degrees   |
| 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 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 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 model was selected                             | Re-bind or select correct model in transmitter  |
|  | Flight battery charge is low   | Fully recharge flight battery   |
|  | BEC (Battery Elimination Circuit) of the ESC is damaged  | Replace ESC   |
| Controls reversed  | Transmitter settings are reversed  | Perform the Control Direction Test and adjust the controls on transmitter appropriately                       |
| Motor power pulses then motor loses power                            | ESC uses default soft Low Voltage Cutoff (LVC)   | Recharge flight battery or replace battery that is no longer performing                                       |
|  | Weather conditions might be too cold   | Postpone flight until weather is warmer   |
|  | Battery is old, worn out, or damaged   | Replace battery   |
|  | Battery C rating might be too small  | Use recommended battery   |
| Aircraft control surfaces do not move after switch is turned on      | Aircraft was moving during initialization  | Keep aircraft still during initialization   |

# 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)     | servicecenter.horizonhobby.com/<br>RequestForm/  | 2904 Research Rd<br>Champaign, Illinois, 61822<br>USA |
|                          | Horizon Product Support (Product Technical Assistance)   | productsupport@horizonhobby.com<br>877-504-0233  |   |
|                          | Sales  | websales@horizonhobby.com<br>800-338-4639        |   |
| European Union           | Horizon Technischer Service<br>Sales: Horizon Hobby GmbH | service@horizonhobby.eu<br>+49 (0) 4121 2655 100 | Hanskampring 9<br>D 22885 Barsbüttel, Germany         |

## FCC Information

### Contains FCC ID: BRWKATY1T BRWSPMSR6200A

This equipment complies with FCC and IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and/or antenna and your body (excluding fingers, hands, wrists, ankles and feet). This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

### Supplier's Declaration of Conformity

#### HBZ Apprentice S 2 RTF and BNF (HBZ31000, HBZ31500)

**FCC** 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-KATY1T 6157A-SPMSR6200A CAN ICES-3 (B)/NMB-3(B)

This device contains license-exempt transmitter(s)/receiver(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

### **CE** EU Compliance Statement:

**HBZ Apprentice S 2 RTF (HBZ31000)**; Hereby, Horizon Hobby, LLC declares that the device is in compliance with the following: Radio Equipment Directive (RED) 2014/53/EU; Low Voltage Directive (LVD) 2014/35/EU; 2014/30/EU EMC Directive; RoHS 2 Directive 2011/65/EU; RoHS 3 Directive - Amending 2011/65/EU Annex II 2015/863.

**HBZ Apprentice S 2 BNF (HBZ31500)**; Hereby, Horizon Hobby, LLC declares that the device is in compliance with the following: Radio Equipment Directive (RED) 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:**

#### **Transmitter:**

2402-2478MHz

17.7dBm

#### **Receiver:**

2404-2476MHz

5.58dBm

**NOTE:** This product contains batteries that are covered under the 2006/66/EC European Directive, which cannot be disposed of with normal household waste. Please follow local regulations.



### **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.



## Replacement Parts • Ersatzteile • Pièces de rechange • Pezzi di ricambio

|               | Description                         | Beschreibung                         | Description   | Descrizione                                |
|---------------|-------------------------------------|--------------------------------------|---|--|
| EFLA1030FB    | 30-Amp Telemetry Capable ESC        | 30-Ampere-telemetriefähiger Regler   | 30 ampères avec télémétrie                          | ESC con capacità di telemetria da 30 Amp   |
| HBZ3101       | Wing Set                            | Tragflächen Set                      | Ailes   | Set ala                                    |
| HBZ3102       | Fuselage                            | Rumpf ohne Einbauten                 | Fuselage  | Fusoliera                                  |
| HBZ3103       | Tail Set                            | Leitwerksset                         | Empennage   | Set coda                                   |
| HBZ3104       | Cowl                                | Motorhaube                           | Capot   | Capottina motore                           |
| HBZ3105       | Pushrod Set                         | Gestängeset                          | Tringlerie  | Set aste comandi                           |
| HBZ3106       | Nose Gear                           | Bugrad                               | Jambe de train avant                                | Carrello anteriore                         |
| HBZ3107       | Main Landing Gear                   | Hauptfahrwerk                        | Train d'atterrissage principal                      | Carrello principale                        |
| HBZ3108       | Firewall and Motor Mount            | Motorspant und Motorhalter           | Cloison pare feu et support moteur                  | Ordinata e supporto motore                 |
| HBZ3109       | Nose Gear Arm and Mounting Strap    | Bugrad und Montagesstreifen          | Bras et bride de fixation pour jambe de train avant | Bracci carrello anter. e supporti          |
| HBZ3110       | Battery Door                        | Akkuklappe                           | Trappe batterie                                     | Sportello batteria                         |
| HBZ3111       | Wheels 58mm (3)                     | Räder 58mm (3)                       | Roues 58mm (3)                                      | Ruote 58mm (3)                             |
| HBZ3114       | Spinner 34mm                        | Spinner 34mm                         | Planche de décoration                               | Ogiva 34mm                                 |
| HBZ3115       | Hardware Set                        | Kleinteile Set                       | Visserie  | Set viteria                                |
| HBZ3116       | Prop Adapter                        | Luftschaubenadapter                  | Adaptateur d'hélice                                 | Adattatore elica                           |
| HBZ3118       | Decal Sheet                         | Dekorbogenset                        | Planche de décoration                               | Set adesivi                                |
| SPMAR631      | AR631 6CH AS3X/SAFE Receiver        | AR631 6 Kanal AS3X Empfänger         | Récepteur AR631 6 voies avec AS3X                   | Ricevitore AS3X AR631 6 canali             |
| SPMR1010      | DXS Transmitter Only                | DXS Sender                           | Emetteur DXS  | DXS Trasmettitore                          |
| SPMSA381      | 9g Mini Servo: 400mm Lead           | Servo 9g, 400mm                      | Servo 9g, 400mm                                     | Servo 9g, 400mm                            |
| SPMSA382      | 14g Sub-Micro MG Servo, 240mm Lead  | 14g Servo Metallgetriebe             | Servo pignons métal 14g                             | Servo metallo, 14g                         |
| SPMX13003S30M | 1300mAh 3S 11.1V Smart 30C LiPo;IC3 | 1300mAh 3S 11.1V Smart 30C LiPo;IC3  | 1300mAh 3S 11.1V Smart 30C LiPo;IC3                 | 1300mAh 3S 11.1V Smart 30C LiPo;IC3        |
| SPMXAM1900    | 2832-1300kv 14-pole                 | 1300Kv Motor                         | Moteur, 1300Kv                                      | Motore, 1300Kv                             |
| SPMXC1020     | Smart S120 USB-C Charger, 1x20W     | S120 USB-C SMART-Ladegerät, 1 x 20 W | Chargeur SMART S120 USB-C, 1x20 W                   | Caricabatterie USB S120 USB-C SMART, 1x20W |

## Recommended Parts • Empfohlene Teile • Pièces recommandées • Parti consigliate

|              | Description                     | Beschreibung                         | Description                       | Descrizione                                |
|--------------|---------------------------------|--------------------------------------|-----------------------------------|--|
| SPMX22003S30 | 2200mAh 3S 11.1V Smart 30C; IC3 | 2200mAh 3S 11.1V Smart 30C; IC3      | 2200mAh 3S 11.1V Smart 30C; IC3   | 2200mAh 3S 11.1V Smart 30C; IC3            |
| SPMXC1020    | Smart S120 USB-C Charger, 1x20W | S120 USB-C SMART-Ladegerät, 1 x 20 W | Chargeur SMART S120 USB-C, 1x20 W | Caricabatterie USB S120 USB-C SMART, 1x20W |

## Optional Parts • Optionale Bauteile • Pièces optionnelles • Pezzi opzionali

|              | Description                            | Beschreibung                               | Description   | Descrizione                                |
|--------------|--|--|---|--|
| HBZ7390      | Super Cub LP Floats                    | Hobbyzone Schwimmersatz für Super Cub LP   | Flotteurs   | Super Cub LP Floats                        |
| HBZ3113      | Float Mounting Wires: MiniApprentice S | Schwimmerstreben: Mini Apprentice S        | Mini Apprentice S - Câbles d'installation flotteurs | Supporti galleggianti: Mini Apprentice S   |
| SPMR6775     | NX6 6 Ch Transmitter Only              | NX6 DSMX 6-Kanal Sender                    | Emetteur NX6 DSMX 6 voies                           | NX6 DSMX Trasmettitore 6 canali            |
| SPMX22003S30 | 2200mAh 3S 11.1V Smart 30C; IC3        | 2200mAh 3S 11.1V Smart 30C; IC3            | 2200mAh 3S 11.1V Smart 30C; IC3                     | 2200mAh 3S 11.1V Smart 30C; IC3            |
| SPMXBC100    | Smart Battery & Servo Tester           | SMART-Akku und Servotester                 | Batterie SMART et testeur de servo                  | Batteria SMART e tester servo              |
| SPMXC1070    | Smart S150 AC/DC Charger, 1x50W        | S150 AC/DC SMART-Ladegerät, 1 x 50 W       | Chargeur SMART S150 AC/DC, 1x50 W                   | Caricabatterie USB S150 AC/DC SMART, 1x50W |
| SPMXC2040    | Smart S1400 G2 AC Charger, 1x400       | S1400 AC SMART-Ladegerät, 1 x 400 W        | Chargeur SMART S1400 AC, 1x400 W                    | Caricabatterie USB S1400 AC SMART, 1x400W  |
| SPMXPSA3     | Smart PowerStage Aircraft 3S Bundle    | Smart PowerStage Bundle 3S für Flugmodelle | Ensemble "Powerstage" 3S Avion                      | Pacchetto aeromobili 3S Smart PowerStage   |



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US 8,672,726. US 9,056,667. US 9,753,457. US 10,078,329. US 9,930,567. US 10,419,970. US 10,849,013. CN201721563463.4. Other patents pending.

[www.horizonhobby.com](http://www.horizonhobby.com)  
HBZ31000, HBZ31500