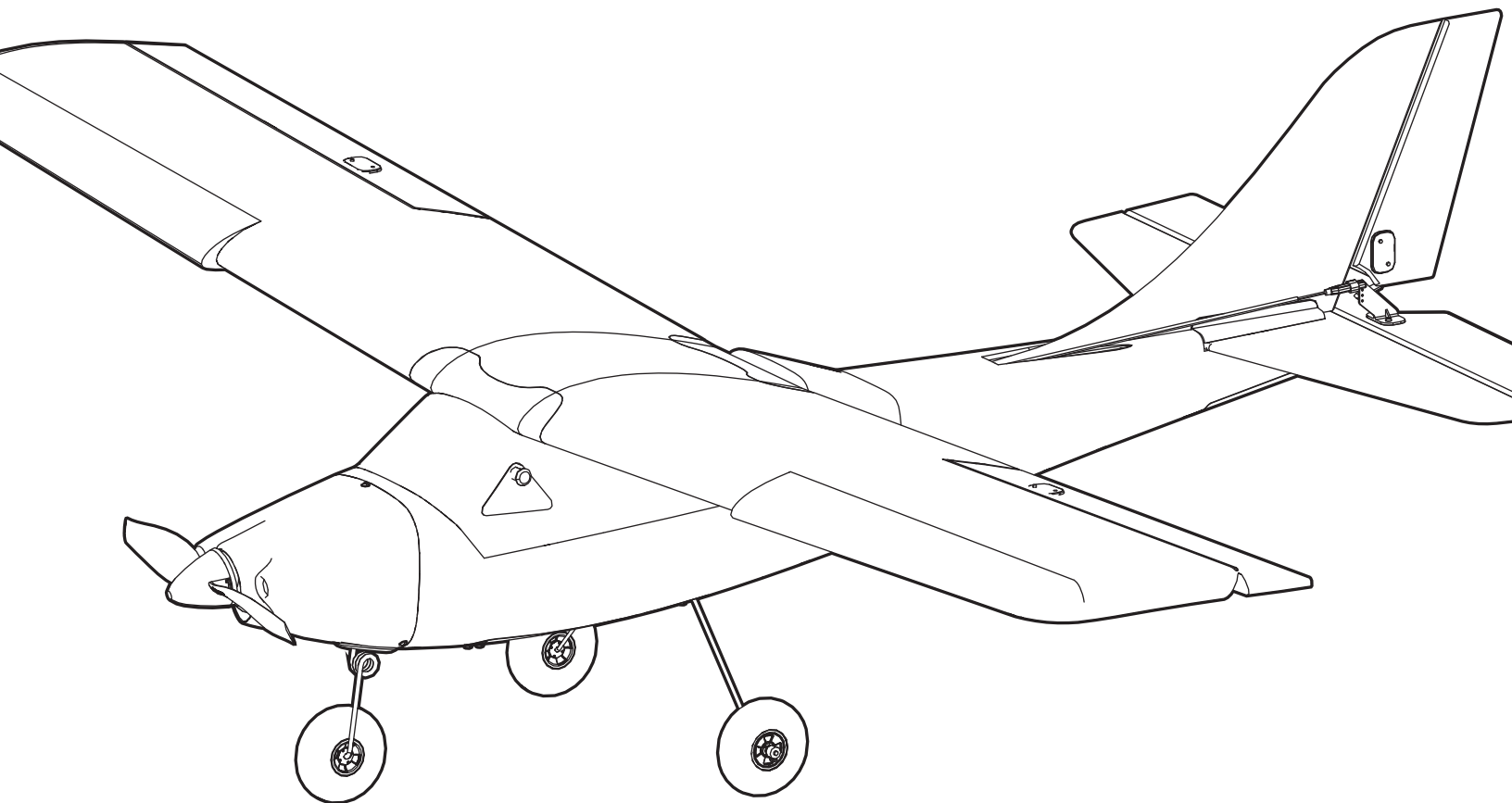# hobbyzone®

Apprentice® S 2 1.2m

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.

HBZ310001, HBZ315001

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

HORIZON® HOBBY

NOTICE
All instructions, warranties and other collateral documents are subject to change at the sole discretion of Horizon Hobby, LLC. For up-to-date product literature, visit www.horizonhobby.com or 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 tdoes 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 Hobby Zone® news.

Table of Contents

Specifications	
Wingspan	48" (1220mm)
Length	34.2" (869mm)
Weight	Without Battery: 22.4oz (639g) With Recommended 3S 1300mAh Flight Battery: 26.1oz (740g)

Included Equipment	
Transmitter	Spektrum™ DXS 2.4GHz (SPMR1010)
Transmitter Batteries	4 AA Alkaline
Receiver	Spektrum™ AR631 6CH AS3X/SAFE Receiver (SPMAR631)
ESC	30-Amp 3S/4S ESC with Telemetry (EFLA1030FB)
Motor	2832-1300Kv 14-pole (SPMXAM1900)
Propeller	8.25 x 5.5 (EFLP82555)
Servos	(2) Aileron, A381 9g Sub-Micro (SPMSA381) (1) Elevator, A382 14g Sub-Micro MG (SPMSA382) (1) Rudder/Nose wheel, A382 14g Sub-Micro MG (SPMSA382)

Required Equipment	
Flight Battery	3S 11.1V 1300mAh LiPo Battery with IC3® Connector
Battery Charger	3S LiPo Battery Compatible

Recommended Equipment	
SPMXPSA200	Smart G2 Air Powerstage 2

Optional Accessories	
HBZ3113	Float Mounting Wires: MiniApprentice
HBZ7390	Float Set: Super Cub LP
SPMR6775	NX6 6 Ch Transmitter Only
RFL1205	RealFlight Trainer Edition RC Flight Simulator
SPMWS2000	WS2000 Wireless Simulator USB Dongle
SPMXPSA3	Smart Powerstage Aircraft 3S Bundle
SPMXC1070	Smart S150 AC/DC Charger, 1x50W
SPMXBC100	SMART Battery & Servo Tester

Completion Guide

Scan the QR code to go to the product completion guide for information on the recommended Powerstage bundle as well as other compatible batteries and chargers.
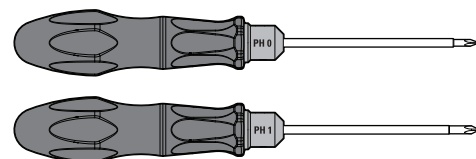
HBZ310001 *HBZ315001*

Required Tools

• Phillips Screwdrivers (PH#0, PH#1)

Apprentice® S 2 1.2m

Aircraft Components

Typical Control Components

Control Horn

Retaining Sleeve

Clevis

Pushrod

Servo Arm

Servo

Aileron

Aileron Servo

Elevator

Horizontal Stabilizer

Electronic Speed Control (ESC)

Receiver

Motor

Rudder Servo

Spinner

Elevator Servo

Flight Battery

Propeller

Vertical Stabilizer

Rudder

Aileron Servo
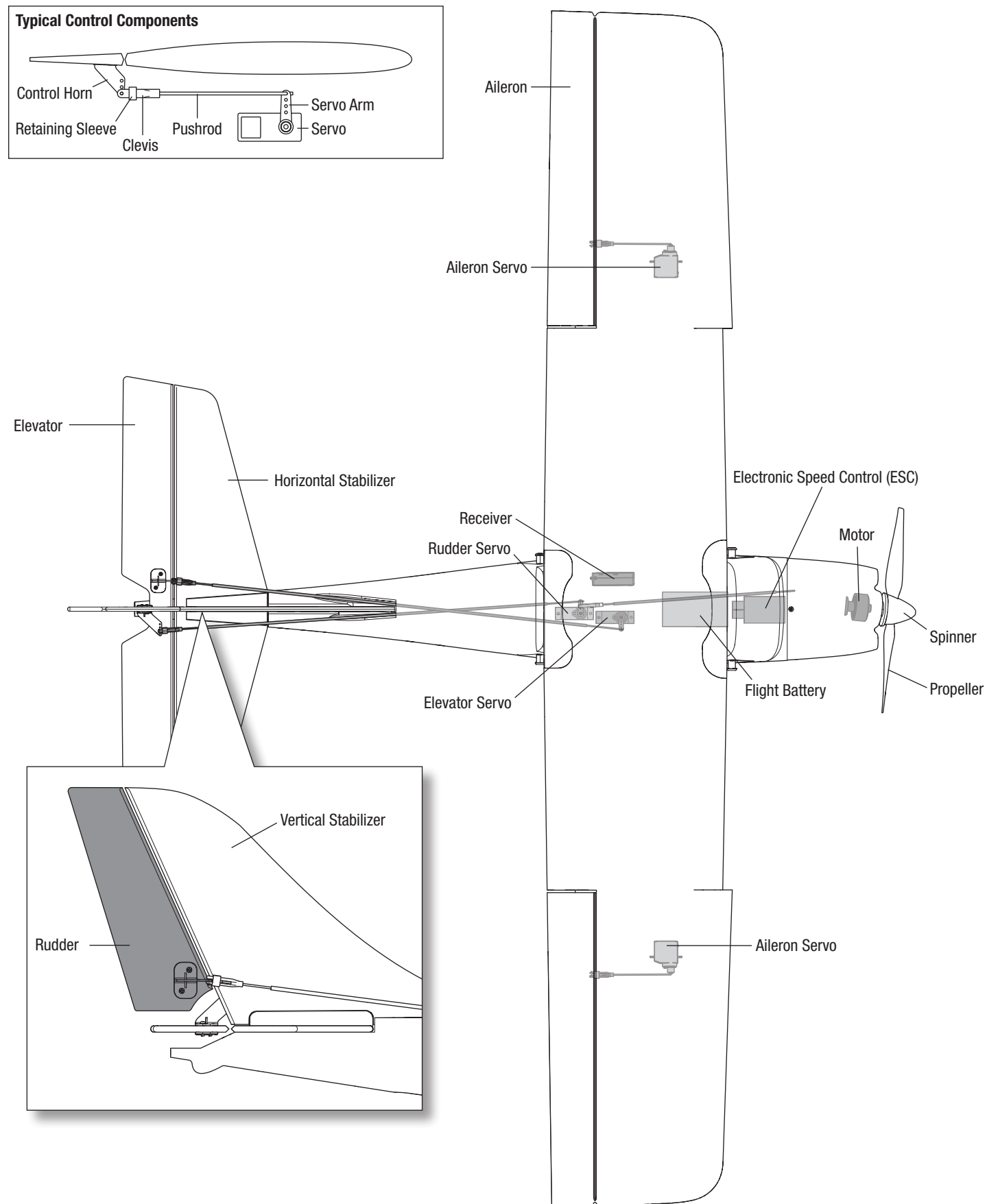
Aircraft Assembly

We recommend reading each section of this manual before proceeding with assembly per the steps outlined. We also recommend watching the entire assembly video by scanning this QR code or using this URL: www.horizonhobby.cc/ApprenticeS2assembly.

2.5mm x 8mm (8)

Landing Gear Installation

The Apprentice S 2 1.2m includes hardware options for wheel installation as well as the necessary wire struts for the optional float installation (floats are not included).

1. Install the main landing gear assembly into the slot on the bottom of the fuselage.
2. Install the two landing gear retainers over the landing gear assembly as shown, securing them with four 2.5mm x 8mm Phillips screws and a PH#1 screwdriver.

IMPORTANT: Do not overtighten the screws in the plastic. Only tighten the screws until the retainers are firmly seated and the landing gear is not loose.

3. Install the optional float set strut retaininers, securing them with four 2.5mm x 8mm Phillips screws and a PH#1 screwdriver, to ensure the retainers do not become lost. These retainers are required for installation of the optional float set mount wires.
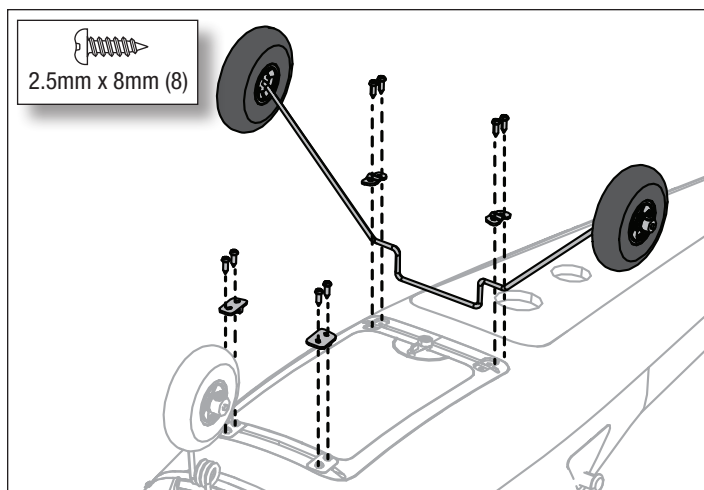
Tail Installation

We recommend watching the "Tail Installation" chapter/section of the assembly video by scanning this QR code or using this URL: www.horizonhobby.cc/ApprenticeS2assembly.
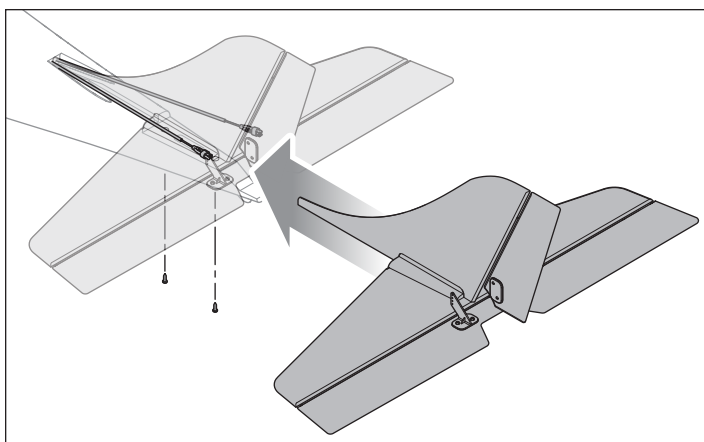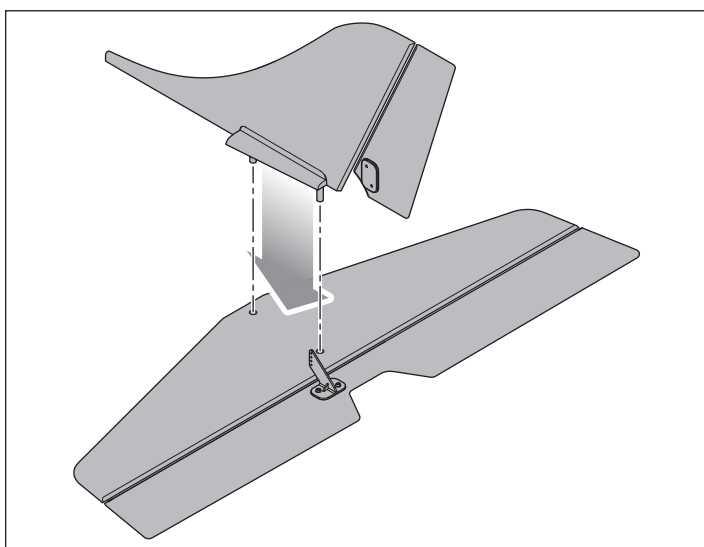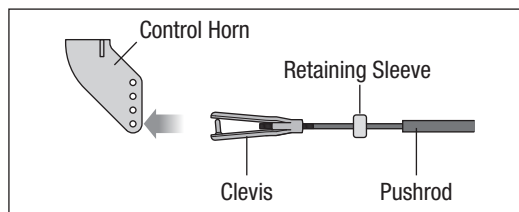
Assembly Video

1. Insert the two pins on the base of the vertical stabilizer through the holes in the horizontal stabilizer as shown.
2. Guide the tail assembly under and between the control linkages, and insert the vertical stabilizer pins into the corresponding holes in the rear of the fuselage.
3. From the bottom of the fuselage, using a PH#1 screwdriver, install two 2.5mm x 8mm Phillips screws through the holes in the fuselage and into the vertical stabilizer pins.

IMPORTANT: Do not overtighten the screws in the plastic. Only tighten the screws until the vertical and horizontal stabilizers are firmly seated.

4. Attach the clevises of the rudder and elevator control horns by gently prying open the clevis, inserting the clevis pin through the outermost hole of the control horn, and closing the side of the clevis over the clevis pin, capturing the control horn between it.
5. Slide the retaining sleeve over the clevis to keep the clevis sides from opening.

Control Horn
Retaining Sleeve
Clevis
Pushrod

Wing Installation

We recommend watching the "Wing Installation" chapter/section of the assembly video by scanning this QR code or using this URL: www.horizonhobby.cc/ApprenticeS2assembly.

Assembly Video

The wing of the Apprentice S 2 1.2m is secured to the fuselage using four of the included rubber bands. This method of installation allows the wing to move or separate from the fuselage in the event of a hard landing or crash, minimizing damage to the airframe. The use of more than four rubber bands is not recommended, as using additional bands may cause the wing to be held too securely to the fuselage.

1. Connect the aileron servo connectors to the Y-harness, marked "AIL", 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. Correct operation of the SAFE system requires connection of both ailerons to the included Y-harness and port 2 of the receiver.

IMPORTANT: Ensure the servo connectors and the Y-harness are connected with the correct polarity. The connectors have a small bevel on two corners which must align with the corresponding bevel in the Y-harness connectors. In addition, the wire colors should match between the servos and Y-harness.

2. Center the wing on the fuselage. The bottom of the wing should sit flat against the top of the fuselage wing saddle.

IMPORTANT: Ensure the aileron servo wires are not pinched between the wing and fuselage.

3. Secure the wing to the fuselage by installing four rubber bands between the front and back fuselage pins and over the top of the wing.

TIP: Install each of the first two bands diagonally, starting from the front pin to the rear pin on the opposite side of the fuselage. Install the last two bands starting from the front pin straight back to the rear pin on the same side of the fuselage.
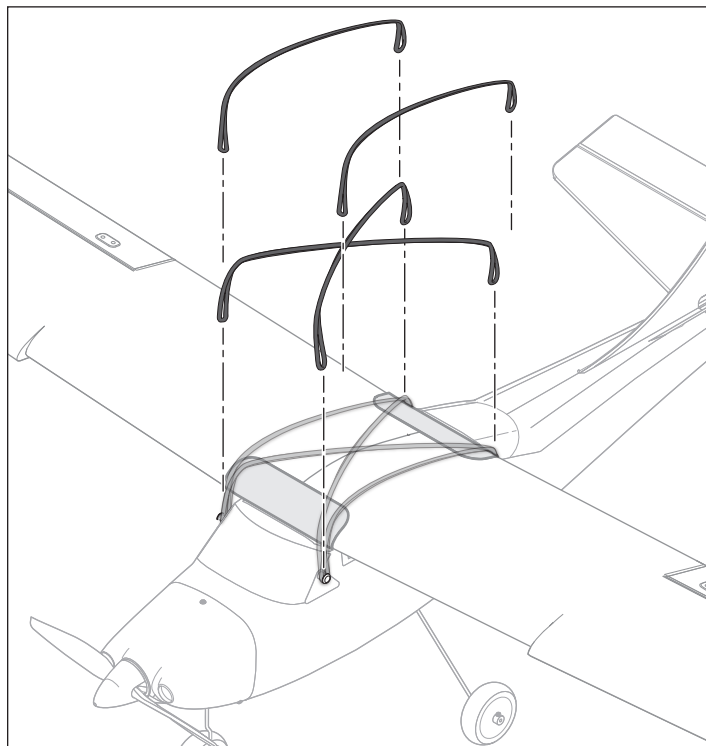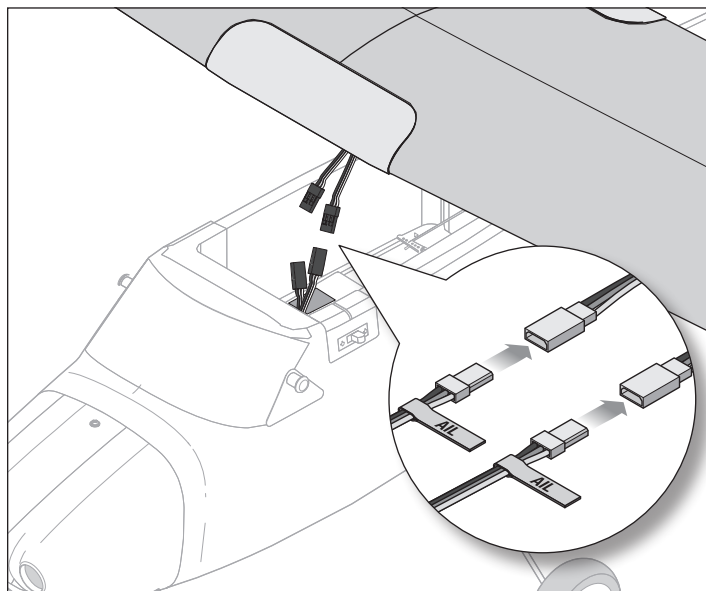
Install the Transmitter Batteries

1. Remove the battery cover.
2. Install the included four AA batteries, noting proper polarity.
3. Reinstall the battery cover.

Low Battery Alarm

When the transmitter battery voltage drops below 4.7 volts, an alarm sounds and the voltage LEDs flash. Replace the batteries immediately. If the alarm sounds while flying, land your aircraft as soon as possible.

⚠ **CAUTION:** Do not attempt to recharge the included AA batteries. These batteries are not rechargeable. Charging non-rechargeable batteries may cause the batteries to burst, resulting in injury to persons and/or damage to property.
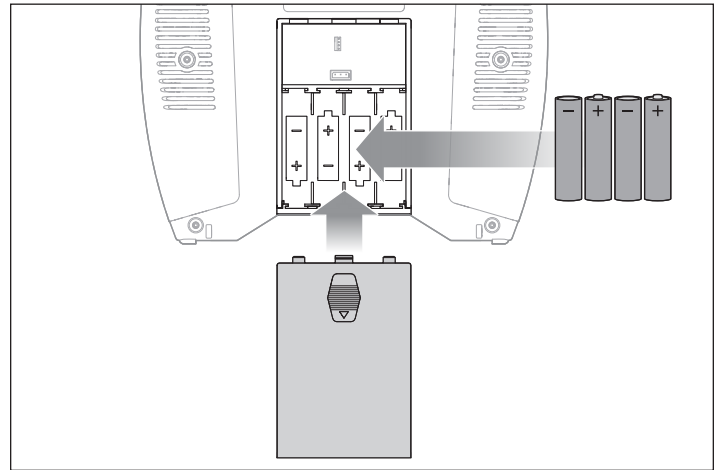
Transmitter Switches and LEDs

Button A = Trainer/Bind/Panic Button: This button is used to control the Trainer, Bind and Panic Recovery Mode functions.

See the Flight Training section for information on using the transmitter as part of a "buddy box" training system.

See the Binding section for information on re-binding your transmitter and aircraft if necessary. The included transmitter comes bound to the receiver/aircraft from the factory, therefore binding is not typically necessary.

See the Sensor Assisted Flight Envelope (SAFE) Technology section for information about panic recovery mode.

Switch F = Hi/Lo Rate Switch: This switch supports high and low rate functions on aileron, elevator and rudder channels.

We recommend using low rates when first learning to fly or for smooth and more precise maneuvering, and high rates for more aggressive maneuvers and aerobatics.

In the upper, or "HI" position, servo travel is 100% on these channels.
In the lower, or "LO," position, servo travel decreases to 70%.

Switch B = Flight Mode Switch: This switch is used to select the SAFE flight mode. See the Sensor Assisted Flight Envelope (SAFE) Technology section for information about the various SAFE flight modes.

Switch H = Throttle Cut Switch: This switch activates throttle cut.

With the throttle cut on (switch position 1), throttle input from the throttle stick is deactivated. This safety feature ensures any accidental bump of the throttle stick will not activate the motor while the flight battery is connected.

With the throttle cut off (switch position 0), any position of the throttle stick above the lowest setting will activate the aircraft motor.
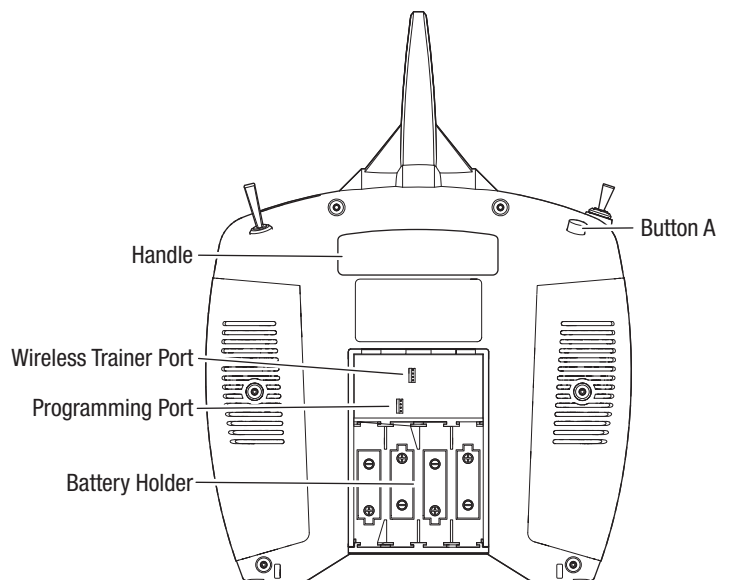
NOTICE: Always ensure the throttle stick is at the lowest setting before switching the throttle cut function off. Failure to do so will result in the motor activating.

Switch D = Channel 7 Switch: This switch is not used for this aircraft.

RGB LED and Audible Indications:

Flashing with beeps: The transmitter is in bind mode, because the bind button was held down while the transmitter was powered on. See the Binding section for more information.

Pulsates with one low tone beep every 2 seconds: The transmitter battery voltage has dropped below 4.7 volts. Replace the transmitter batteries immediately. If this happens while flying, land the aircraft as soon as possible.

Antenna

Switch D
Switch B
RGB LED
Flight Battery Voltage Indicator
Throttle/ Rudder Stick
Power Button
Throttle Trim
Rudder Trim
Neck Strap Mount

Switch H
Switch F
Elevator/ Aileron Stick
Elevator Trim
Aileron Trim

Button A
Handle
Wireless Trainer Port
Programming Port
Battery Holder

Apprentice® S 2 1.2m
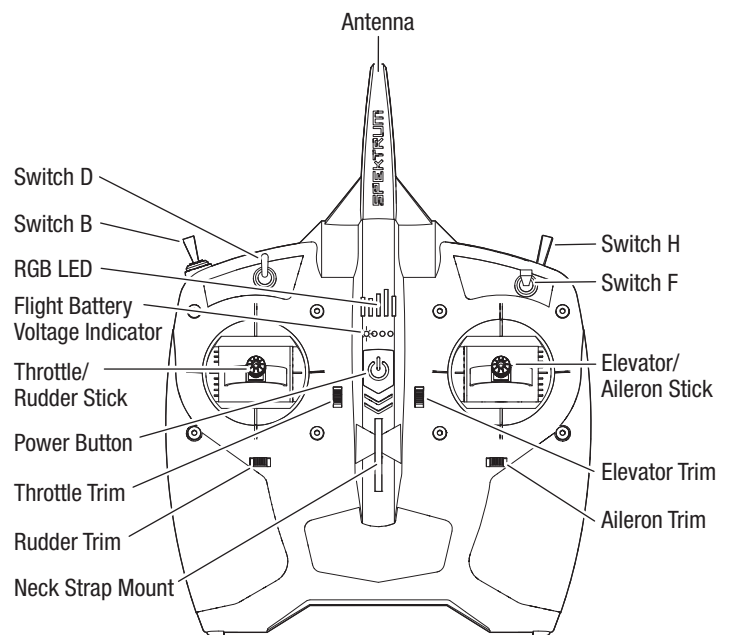
Flight Battery Voltage Indicator

The included DXS transmitter is equipped with a flight battery voltage indicator feature that works with compatible Smart technology receivers, flight controllers and telemetry-capable ESCs. This Smart technology feature gives a visual representation of the approximate flight battery voltage/power remaining via the four LED indicators on the transmitter.

- When the battery is fully charged, all four LEDs glow solid.
- When the throttle is increased, the voltage of the battery drops, causing the LEDs to indicate less voltage, via fewer LEDs glowing solid or flashing. The useable capacity of the battery remains.
- When the throttle is decreased, the load on the battery decreases and the voltage of the battery increases, indicated by more LEDs glowing solid or flashing. Over time less of the useable capacity of the battery remains and less power is available, indicated by fewer LEDs glowing solid or flashing.
- When the last LED begins to flash, the flight battery low voltage alarm on the transmitter sounds before the low voltage cutoff function is triggered in the aircraft ESC (see the Flying section for a description of the low voltage cutoff function). The flight battery low voltage alarm sounds for 25 seconds. If the throttle is lowered and the flight battery voltage recovers because enough useable capacity remains in the flight battery, the alarm will stop before 25 seconds. In either case, land the aircraft as soon as practical after the alarm sounds.

To reset the flight battery low voltage warning:

1. After landing, disconnect the flight battery from the aircraft for at least 15 seconds, or until the flight battery voltage indicator LEDs on the DXS transmitter go out.
2. Connect a fully charged battery to the aircraft. The flight battery voltage indicator resets prior to the next flight.

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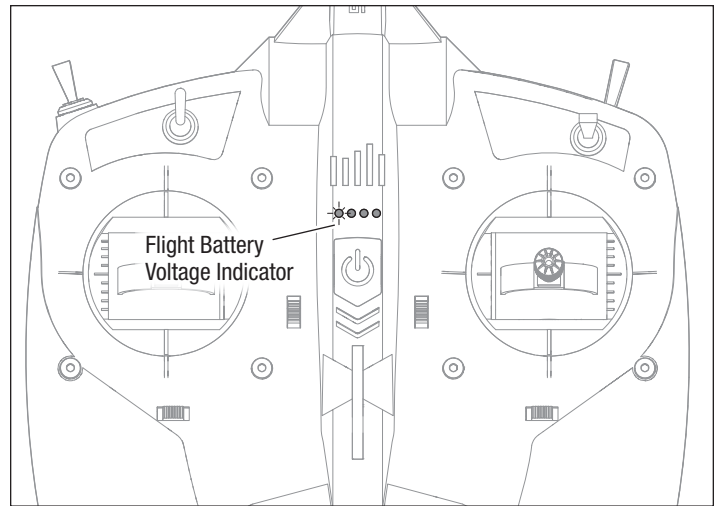
Installing the Flight Battery and Arming Electronic Speed Control (ESC)

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

1. Lower the transmitter throttle stick and turn on throttle cut (switch H, position 1). With the throttle cut on, throttle input from the throttle stick is deactivated. This safety feature ensures any accidental bump of the throttle stick will not activate the motor while the flight battery is connected.

IMPORTANT: If you connect the battery while the throttle is not at its lowest position, the ESC will not arm. Reduce throttle to the lowest setting for the ESC to arm.

2. Power on the transmitter, and wait at least 5 seconds before proceeding.
3. Rest the aircraft on a flat surface with the landing gear facing up.
4. Turn the battery compartment latch and remove the battery hatch.
5. Secure the flight battery in the battery compartment using the hook and loop straps so the aircraft is balanced at the correct center of gravity (CG). See the Center of Gravity section for information on measuring the CG.
6. Connect the flight battery to the ESC connector, noting proper polarity.
7. Replace the battery hatch, locking it in place with the battery compartment latch.
8. Set the aircraft upright on its landing gear. Keep the aircraft immobile while the SAFE system initializes.
9. 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: If the aircraft is moved and does not complete initialization within approximately 30 seconds, disconnect and reconnect the flight battery to re-initialize the system.

IMPORTANT: AS3X technology in Experienced Mode is not active until you advance the throttle past 25%. Once it is active, the control surfaces may move on the aircraft. This is normal. The AS3X technology will remain active until the ESC is disconnected.

⚠ **CAUTION:** Always disconnect the Li-Po flight battery from the aircraft receiver when not flying to avoid over-discharging the battery.
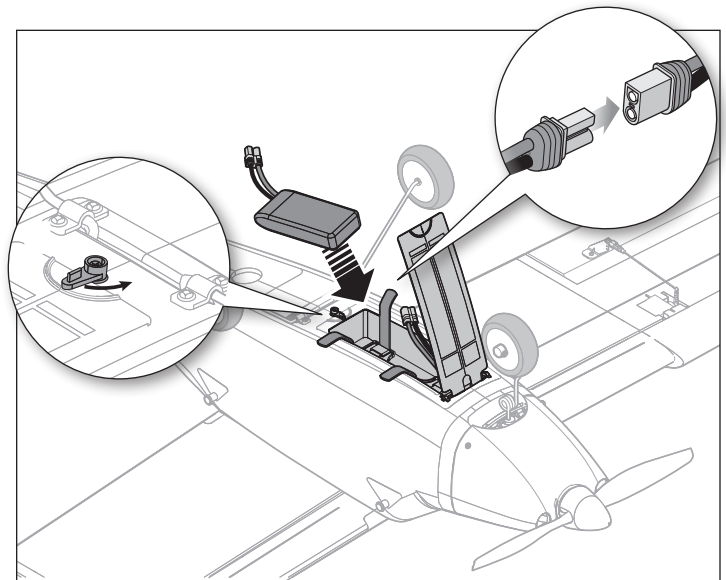
Center of Gravity (CG)

An aircraft with the correct CG is balanced at a calculated point for safe and stable flight. When flying in Beginner mode with the aircraft balanced properly, the aircraft should climb gradually at full power and fly level at 50–60% power with no elevator input.

If the 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.

After installing the battery (in the recommended position) and before powering on the ESC, verify the CG by supporting the aircraft upright on your fingertips 75-90mm back from the front edge of the wing, at the wing root.

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

Scan the QR code to view the assembly video and the proper method to balance the aircraft.

Assembly Video

75-90mm back from the leading edge of the wing at the wing root
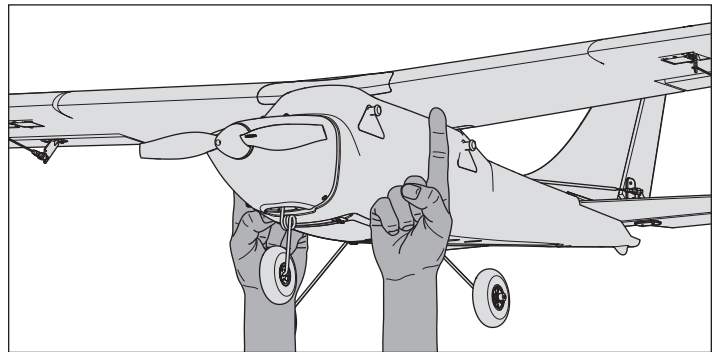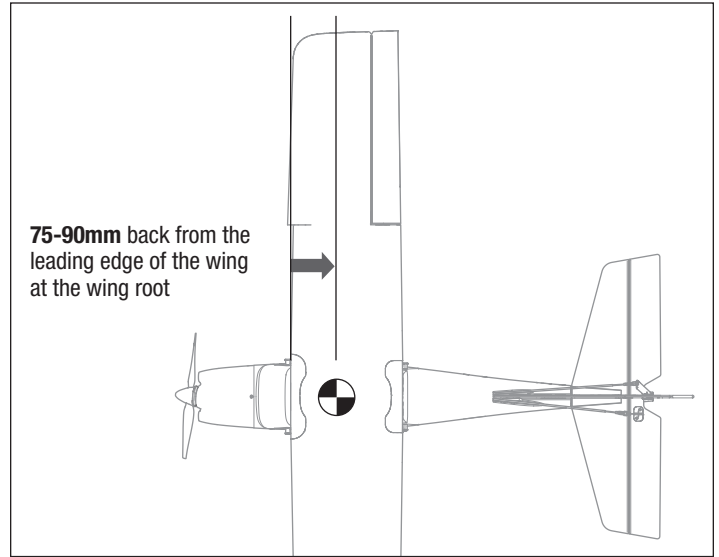
Control Direction Test

⚠️ **WARNING:** Do not perform this or any other equipment test without turning on throttle cut. Serious injury or property damage could result from the motor starting inadvertently.

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

1. Power on the transmitter.

2. Turn on throttle cut (switch H, position 1).

3. Set the flight mode switch to Experienced Mode (switch B, position 2). **IMPORTANT:** Do NOT check the controls in the Beginner or Intermediate Modes (switch B, position 0 or 1).

4. Place the model on level ground away from obstacles.

5. Power on the aircraft, and wait for it to fully initialize.

6. Move the sticks on the transmitter as shown in the table and observe the control surfaces on the aircraft. Ensure the aircraft control surfaces respond as shown and return to neutral when the control input is released.

7. Check for any binding in the control surfaces.

8. With the aircraft on a smooth surface, roll the aircraft forward by hand. Push the rudder trim button on the transmitter left or right until the aircraft tracks straight.

TIP: The transmitter emits a faint beep with each click of the trim buttons in either direction. Holding the button in either direction quickly adjusts the trim several steps until the button is released or until the trim reaches the end of its travel. If the trim button does not beep when clicked, the trim is at the far end of its travel. Center trim is indicated by a slightly louder beep.

Centering the Control Surfaces

After checking for correct control surface movement and nose wheel alignment, release the transmitter sticks. Check each of the control surfaces to make sure they are centered.

For any surface that is not centered:

1. Slide the retaining sleeve off the clevis.

2. Gently pry the clevis open.

3. Slide the clevis pin out of the control horn.

4. Rotate the clevis on the pushrod to lengthen or shorten the length of the pushrod to adjust the center position of the surface.

5. When the correct position is achieved, slide the clevis pin back into the correct control horn hole.

6. Close the clevis, capturing the control horn between the sides.

7. Slide the retaining sleeve over the clevis to keep the clevis from opening.


Throttle/Rudder Stick — Elevator/Aileron Stick
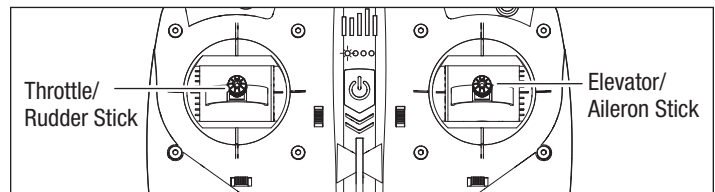
Transmitter Command	Control Surface Response (viewed from the rear)
Elevator	
Ailerons	
Rudder	

Before Your First Flight

Before attempting to fly this aircraft for the first time, we recommend using the RealFlight Trainer Edition RC Flight Simulator (RFL1205, sold separately) and a Spektrum WS2000 Wireless Simulator Dongle (SPMWS2000, sold separately) along with the DXS transmitter included with the RTF Basic version to learn and practice the basics of flying. Featuring six popular Horizon Hobby trainer aircraft and built-in Virtual Flight Instructor lessons, new pilots can learn to fly successfully by practicing on a PC at home or on a laptop just about anywhere else!

We also encourage you to connect with experienced RC pilots in your area through hobby shops or at designated flying fields. And for those located in the United States, we recommend joining a national organization such as the Academy of Model Aeronautics (AMA). The AMA can provide information on local clubs, instructors and established flying sites in your area in addition to insurance coverage. Visit www.modelaircraft.org for more information.
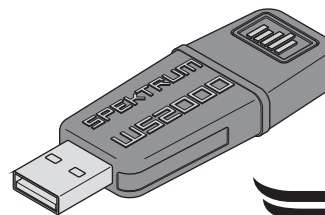
RealFlight Trainer Edition

Choose a Flying Field

Consult local laws and ordinances before choosing a location to fly your aircraft.

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. We recommend consulting your local hobby shop for information on local flying fields and clubs. For customers in the United States, visit the Academy of Model Aeronautics at www.modelaircraft.org for more information on flying clubs.

Remember, this aircraft can reach significant speeds when flying and will cover ground very quickly. Plan on flying in an area that gives you more space than you think you need, especially during the initial flights.

The chosen flying site should:
- Have a minimum of 1300 feet (400m) of clear space in all directions.
- Be free of trees, buildings, cars, power lines or anything that could entangle your aircraft or interfere with your line of sight.
- Be clear of people and pets.

Range Test

⚠ **WARNING:** While holding the aircraft during the range test, always keep body parts and loose items away from the motor. 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 included Spektrum DXS transmitter incorporates a range check mode to reduce the output power of the transmitter. Follow the directions below to enter range check mode for the DXS transmitter:

1. With the throttle stick and trim set to the lowest setting, power on the transmitter for at least 5 seconds.

2. With the help of an assistant to hold the aircraft, connect the aircraft battery to the ESC connector. Keep the aircraft immobile for 5 seconds.

3. Face the model, holding the transmitter in your normal flying position.

4. Press and hold the bind button (button A) and toggle the HI/LO rate switch (switch F) up and down twice. The transmitter RGB LED will flash and the alarm will sound, indicating the system is in range check mode. Do not release the bind button until the range check is complete.

IMPORTANT: You must hold the bind button through the entire range check process. Releasing the button will exit range check mode.

5. With the model firmly restrained on the ground, stand approximately 30 paces away from the model.

TIP: 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.

6. Move the transmitter rudder, elevator, aileron and throttle controls to ensure they operate smoothly at approximately 30 paces. If control issues exist, do not attempt to fly. Refer to the Warranty and Service Contact Information table at the end of the this manual to contact Horizon Hobby product support.

7. When the range check is successfully completed, release the bind button to exit range check mode.

⚠ **CAUTION:** Due to reduced output power of the transmitter, NEVER attempt to fly while the transmitter is in range check mode. Loss of control will occur.

HOLD

Switch F
2X

Apprentice® S 2 1.2m
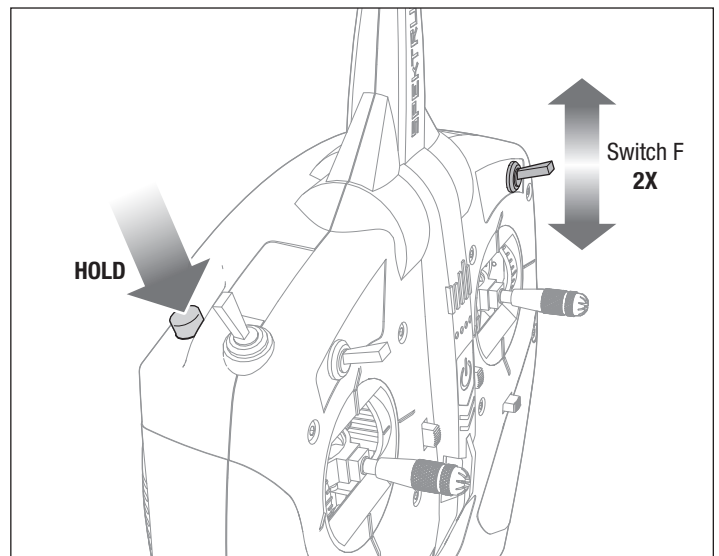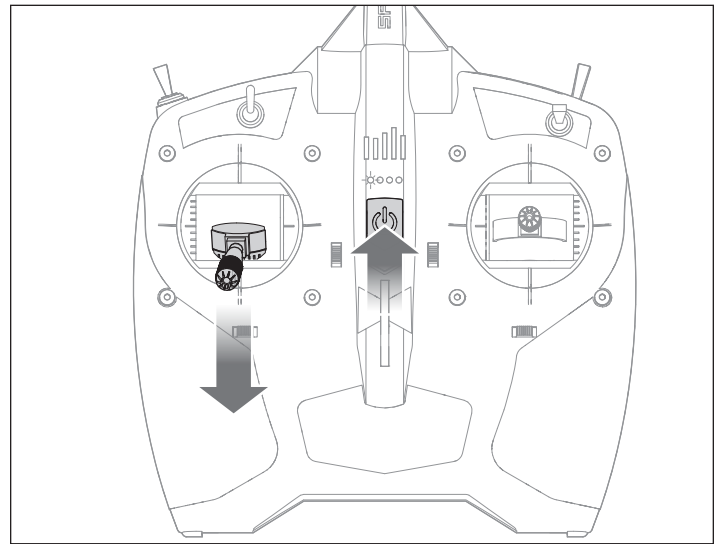
Flight Control

IMPORTANT: Even though SAFE technology is a very helpful tool, the aircraft still needs to be flown manually. If incorrect input is given at lower altitudes or at slower speeds, the aircraft can crash. Study these control inputs and the aircraft response to each carefully before attempting your first flight. For first flights, set the SAFE flight mode switch to Beginner Mode (position 0). For smooth control of your aircraft, always make small corrections. All directions are described as if you were sitting in the aircraft.

Throttle, Faster or Slower

- Push the throttle stick forward to make the aircraft go faster and climb.
- Pull the throttle stick back to slow down and descend.

Elevator Up and Down

- Pull the elevator stick back to make the nose of the aircraft go up.
- Push the elevator stick forward to make the nose of the aircraft go down.

Aileron Right and Left

- Move the aileron stick right to make the aircraft roll or bank right.
- Move the aileron stick left to make the aircraft roll or bank left.

TIP: Always picture yourself in the aircraft when determining which way to bank the aircraft wings.

- When the aircraft is flying away from you, banking the aircraft right or left appears normal.
- When flying toward you, the aircraft will appear to bank the opposite direction to the control input given. This will become more instinctual with experience.
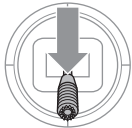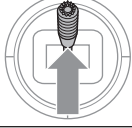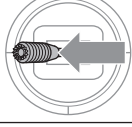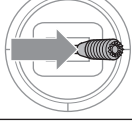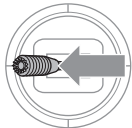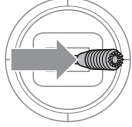
TIP: When flying toward yourself, if one of the wings drops, move the aileron stick toward the low wing to level the aircraft.

Rudder Right and Left

- Push the rudder stick right to yaw the aircraft nose to the right.
- Push the rudder stick left to yaw the aircraft nose to the left.

The rudder stick is also used to steer the aircraft left and right while taxiing on the ground.

TIP: Similar to aileron control, picture yourself in the aircraft to determine which direction to point the nose whether you are flying away from yourself or toward yourself.

Transmitter Command	Aircraft Response
Throttle	
Elevator	
Aileron	
Rudder	

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	Switch A Position (Flight Mode Switch)
Beginner Mode	Position 0
Intermediate Mode	Position 1
Experienced Mode	Position 2

Button I
Trainer/Bind/Panic Button

In= ON
Out = OFF

Switch A
(Flight Mode)

Back   Front

0   1   2
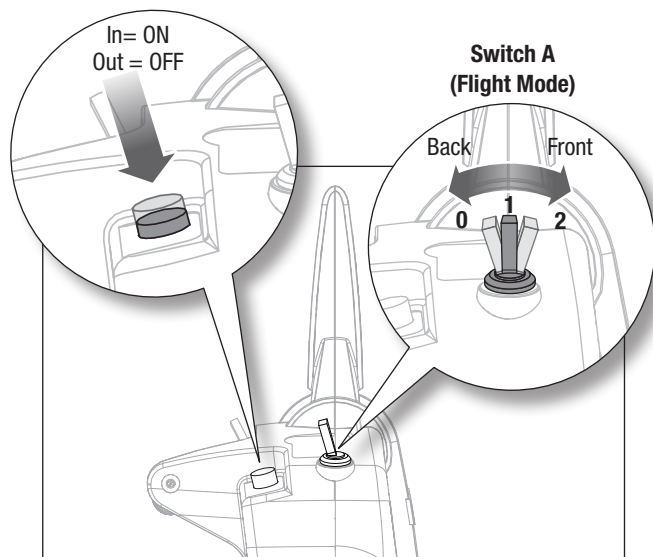
Panic Recovery Mode

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.

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.

SAFE Landing   SAFE Take Off

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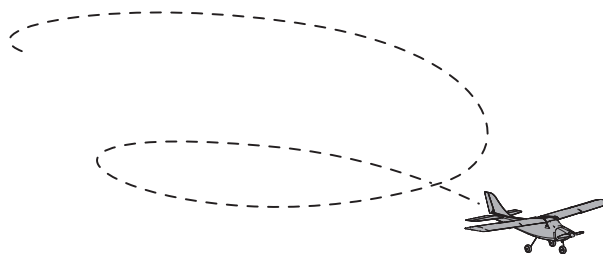
SAFE Technology makes this aircraft a better learning tool, but you must set yourself up for success in flying:

• 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

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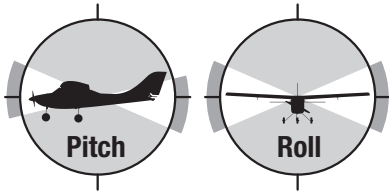
- Envelope limit: Pitch (nose up and down) and Roll (wing tips up and down) angles are limited to help you keep the aircraft airborne
- Self-leveling: when the pitch and roll controls are returned to neutral, the aircraft returns to level flight
- Stability assisted takeoff and landing
- Throttle based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

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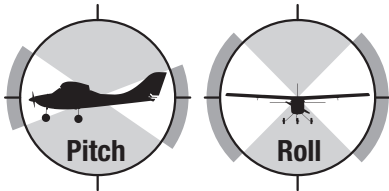
- Natural Flight Experience: Pitch and roll controls are increased. Self leveling is not active.
- Large Flight Envelope: The pilot is only prevented from entering extreme flight attitudes.

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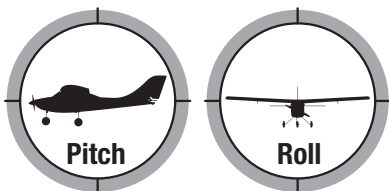
- Natural Flight Experience: The pilot experiences natural AS3X flight for smooth handling and outstanding precision
- Unlimited Flight Envelope: No limit on Pitch and Roll angles (airframe limited)

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

1 Pilot loses control of the aircraft in any flight mode.

2 Pilot presses and holds the Panic Recovery button and returns all other controls to their neutral position. The aircraft will roll wings level and pull out of a dive...

3 ...once the aircraft is flying straight and level, the pilot releases the Panic Recovery button and continues a gentle climb to a safe altitude.
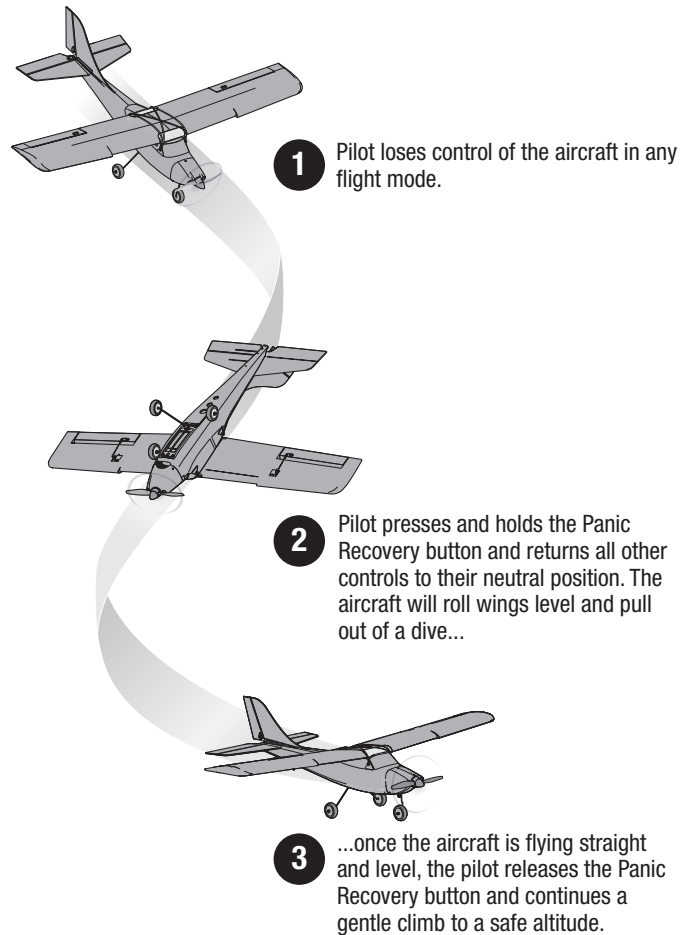
IMPORTANT: Aircraft will recover to a safer attitude even if sticks are held. Some control input is still used with panic activated.

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.

Preflight Checklist

Find a safe open area to fly.	Perform a radio system range test.
Charge the flight battery.	Plan flight for flying field conditions.
Install a fully charged flight battery in the aircraft.	Set a flight time for 6-8 minutes using the recommended 1300mAh 3S battery pack.
Make sure all linkages move freely.	
Check the Center of Gravity (CG).	Have Fun!
Perform the control direction test.	

Flying

This aircraft is relatively easy to fly and helps you apply beginner skills to flying; however, we recommend you get help from a qualified flight instructor for your first radio controlled flights. Some model flying clubs provide flight training at their flying fields. Find a nearby flying club through your local hobby shop. In the U.S., visit the Academy of Model Aeronautics at www.modelaircraft.org for more information on clubs and flight instruction.

Scan the QR code for a link to a video with tips to help successfully fly the aircraft.

Flying Video

Tips for Success

- 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.

Weather Conditions

A good flying day is calm, with winds that are less than 5–7 mph (8–11km/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.

Takeoff

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 (8–11km/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.

TIP: Ground launch in Beginner mode. Increase the 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 the Panic Mode switch if needed.

Wind

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. Use the Panic Mode switch if needed.

Wind

Apprentice® S 2 1.2m
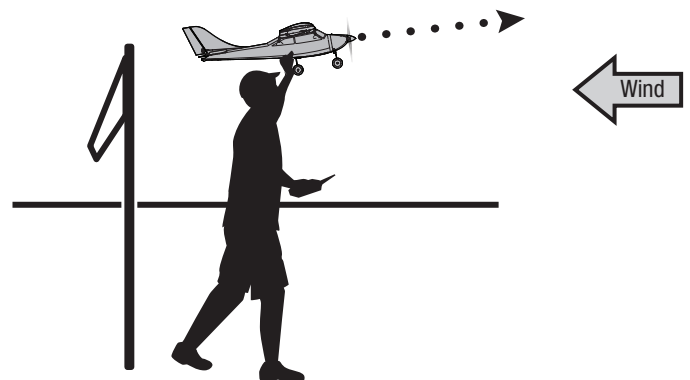
In Flight

Continue to climb into the wind at full throttle, until the aircraft reaches about 50 feet (15 meters). Gradually turn the aircraft away from you while still maintaining altitude. Begin a turn by banking the aircraft slightly with the aileron stick. Gently pull back on the elevator stick to pull the aircraft around the turn and to maintain altitude. When the aircraft reaches the heading desired, simply apply the opposite aileron to level the wings and ease off the elevator.

Climb to about 200 feet (60 meters) and reduce the throttle to around 50%. Adjust the throttle up or down to maintain altitude. Try not to get the aircraft too high or far away, making it difficult to see.

As you are flying:

- Fly at a high enough altitude to give yourself time to react to what the aircraft is doing.
- Make small and gentle stick movements to see how the aircraft responds.
- Practice flying in large circles, high off the ground. Flying with the nose pointed toward you is one of the hardest skills to master when learning to fly. Flying in circles will give you experience viewing the aircraft from all angles.
- If you lose orientation of the aircraft, press and hold the Panic Recovery button and release the sticks. The aircraft will return to level flight. Release the button to continue your flight.

NOTICE: If a crash is imminent, activate throttle cut or quickly lower the throttle and throttle trim. Failure to do so could result in greater damage to the airframe, as well as damage to the ESC and motor.

NOTICE: Crash damage is not covered under warranty.

When properly trimmed, the aircraft's wing design causes the aircraft to climb at full throttle and descend at reduced throttle without the use of elevator.

Full throttle   50% throttle   Reduced throttle
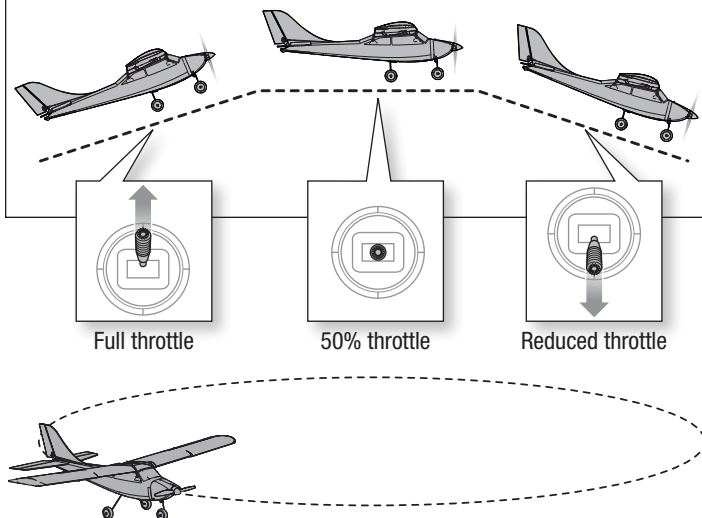
Landing

1. Reduce the throttle to around 50% to slow the airspeed.
2. Fly the aircraft downwind past the end of the runway.
3. Turn the aircraft into the wind and line the aircraft up with the runway center line.
4. Gradually decrease the throttle further to begin descending towards the runway, keeping the wings level during approach. Try to have the aircraft at approximately 10 feet (3 meters) altitude as it passes over the threshold of the runway.
5. As the aircraft passes over the threshold of the runway decrease the throttle.
6. Just as the aircraft is about to touch down, gently pull back on the elevator to raise the nose, or flare, for a gentle landing on the main landing gear. The goal is to be at a low enough speed so the aircraft will not climb when the landing flare is started.

TIP: If the aircraft bounces back into the air, either increase the throttle slightly and ease the aircraft gently back down to the runway, or increase the throttle to full power, climb out and go around to begin the landing process again.

7. Continue using the rudder stick to steer the aircraft straight down the runway, allowing the aircraft to roll to a stop.

NOTICE: If a crash is imminent, activate throttle cut or quickly lower the throttle and throttle trim. Failure to do so could result in greater damage to the airframe, as well as damage to the ESC and motor.

NOTICE: Crash damage is not covered under warranty.

IMPORTANT: When 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.

Landing Pattern

Wind

Pilot

Wind
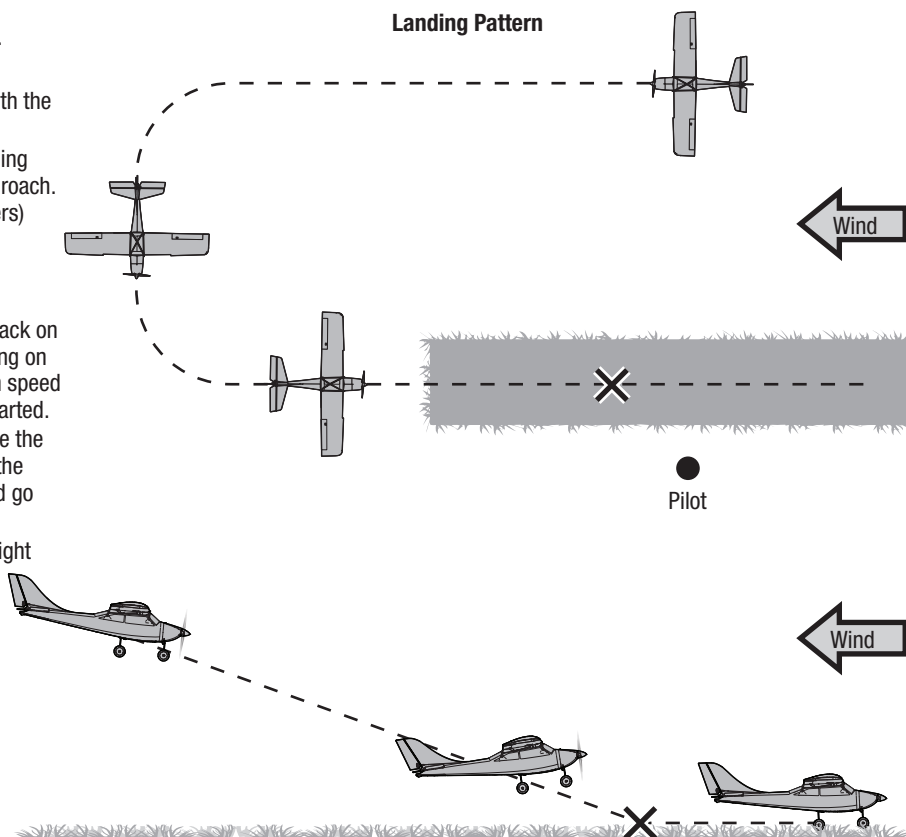
Low Voltage Cutoff (LVC)

Low Voltage Cutoff is a function built into the electronic speed control to protect the battery from over-discharge. When the flight battery charge is low, LVC limits power supplied to the motor so the flight controls receive sufficient energy to safely land the aircraft.

When LVC engages, the aircraft will slow and the motor will begin to pulse. When the motor power decreases, land the aircraft immediately and charge the flight battery.

NOTICE: Repeated flying to the low voltage cutoff will damage the battery.
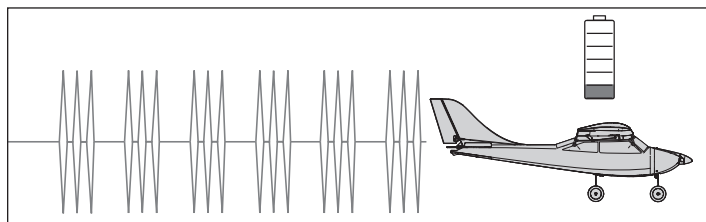
Trimming the Aircraft

Adjusting Trim in Flight

If your aircraft does not fly straight and level at half throttle with the sticks at neutral, fly into the wind and adjust the trim sliders as indicated in the table until the aircraft maintains a reasonably straight and level flight path.

- Trimming is best done in calm wind conditions.
- The SAFE flight mode switch should be set to Experienced mode (switch B, position 2) before adjusting the trims.

After the aircraft is trimmed in flight, land the aircraft and proceed to the Manually Adjusting Trim section to re-center the servos and set the trim mechanically.

The included DXS transmitter features electronic trim buttons. The transmitter emits a faint beep with each click of the trim buttons in either direction. Holding the button in either direction quickly adjusts the trim several steps until the button is released or until the trim reaches the end of its travel. If the trim button does not beep when clicked, the trim is at the far end of its travel. Center trim is indicated by a slightly louder beep.

TIP: Trim the aircraft at sufficient altitude of about 100' (30 meters). Having an experienced flight instructor trim your aircraft during the first flight is recommended.

Aircraft Drift	Required Trim
Elevator	Elevator Trim
Elevator	Elevator Trim
Aileron	Aileron Trim
Aileron	Aileron Trim
Rudder	Rudder Trim
Rudder	Rudder Trim

Manually Adjusting Trim

After adjusting the aircraft trims in the air, the servos should be re-centered and the pushrods adjusted to reflect the trim changes made in the air. Doing so ensures the servos will retain full throw and not overdrive in either direction.

1. After landing from the trim flight, set the throttle cut to ON (switch H, position 1).
2. Set the flight mode switch to experienced mode (switch B, position 2). Ensure the aircraft is kept immobile.
3. One at a time, take note of any offset in position of each control surface.
4. Remove the clevis from the control horn of the control surface by sliding the soft rubber tube back along the pushrod. Gently pry the clevis open and slide the pin out of the control horn.
5. Center the transmitter trim for that control surface.
6. Adjust the clevis in or out by rotating the clevis on the pushrod until the control surface position matches the corrected offset when the clevis pin is inserted in the control horn.
7. Re-insert the clevis pin in the correct hole in the control horn.
8. Snap the clevis closed, capturing the control horn between the clevis sides.
9. Slide the soft rubber tube over the clevis to keep it from opening.
10. Move to the next control surface and repeat steps 3 through 9, until all of the transmitter control surface trims are centered.

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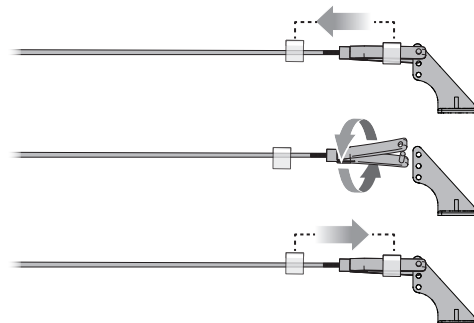
Post Flight

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

IMPORTANT: When 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.

LiPo battery tips:
- 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 for long term storage.
- During storage, make sure the battery charge does not fall below 3V per cell.
- Always read and follow all safety warnings and guidelines included with your LiPo batteries.

Transmitter and Receiver Binding

Binding is the process of programming the aircraft receiver with the identification code of the transmitter so the receiver will only connect to that specific transmitter.

The included transmitter was bound to the aircraft at the factory. If the aircraft does not respond to transmitter control inputs when the batteries in the aircraft and transmitter are fully charged, the aircraft receiver and transmitter may need to be re-bound.

To re-bind the transmitter and receiver:

1. Power OFF the transmitter

2. Set the throttle stick to the low position and all other controls to neutral.* Ensure the aircraft is immobile.

   IMPORTANT: The throttle will not arm if the transmitter's throttle control is not put at the lowest position.

3. Install a bind plug in the BIND extension lead located in the battery compartment.

4. Connect the flight battery to the ESC. The receiver LED will flash rapidly (visible with the wing removed).

5. Press and hold the bind button (button A) on the transmitter while powering ON the transmitter. The receiver LED will glow solid when the receiver and transmitter are bound. The aircraft will initialize and the controls will function normally.

6. Remove the bind plug from the BIND extension.

Once properly bound, the receiver and transmitter will retain their bind for future flights.

If you encounter problems, refer to the troubleshooting guide. If necessary, contact the appropriate Horizon Hobby product support office.

* Failsafe

The receiver stores the position of the transmitter throttle control at the time of binding as the failsafe position. If the receiver should ever lose communication with the transmitter, the failsafe function will activate. Failsafe moves the throttle channel to its preset failsafe position (low throttle) that was stored during binding. All other control channels move to put the aircraft in a slowly descending circle until radio link is re-established.
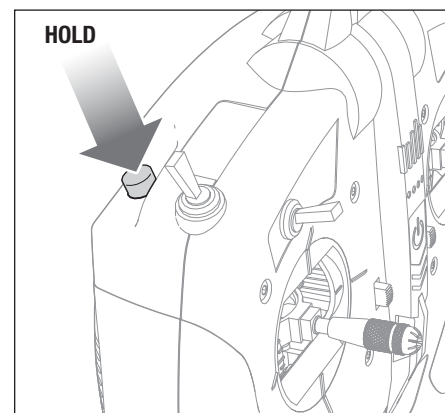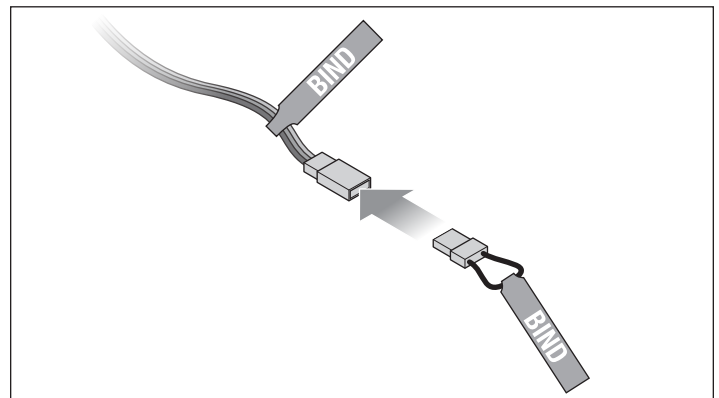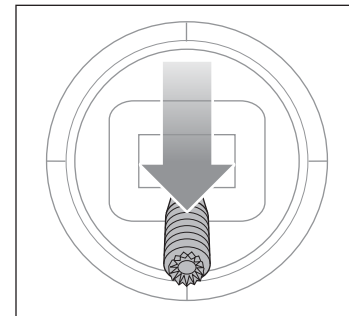
Flight Training

To the new pilot:

This aircraft is easy to fly and helps you apply beginner skills to flying; however, we recommend you get help from a qualified flight instructor for your first radio controlled flights. Some model flying clubs provide flight training at their flying fields. Find a nearby flying club through your local hobby shop. In the U.S., visit the Academy of Model Aeronautics at www.modelaircraft.org for more information on clubs and flight instruction.

To the flight instructor:

Feel free to experiment with the SAFE technology before instructing your student on this aircraft. The progressive switch positions in the SAFE technology are intended for a new pilot to learn with minimal instructor assistance. We recommend using Flight Mode Switch Position 1 to instruct a new pilot. Switch positions 0 and 2 may stabilize the aircraft more or less than desired for instruction purposes.

DXS Wireless Trainer Feature

Your DXS transmitter may be connected wirelessly to another transmitter through the SRXL2 DSMX Remote Receiver (SPM9747, sold separately).

The DXS transmitter is ideal as the instructor transmitter as it is compatible with all Spektrum transmitters when using this feature. Servo reversing and trims must be the same on both transmitters.

This "buddy box" approach has helped many new pilots get the feel for aircraft control with the close assistance of a flight instructor. Connecting two transmitters enables your flight instructor to hold the master transmitter while you hold the slave transmitter. While you learn to fly, the instructor holds the trainer switch to give you control of the aircraft. If you need help, the flight instructor can release the switch to take control.

IMPORTANT: If a transmitter other than the included DXS is used as the instructor or student transmitter, refer to Buddy Box Setup section below.

Remote Receiver Installation

1. Open the battery door
2. Connect the remote receiver cable to the wireless trainer port.
3. Install the remote receiver in the cavity behind the battery door with double sided tape.

Buddy Box Setup

IMPORTANT: Use these settings for an Instructor or Student transmitter if using the buddy box option for training on any transmitter other than the included DXS. Failure to do so will prevent the SAFE technology flight modes from working correctly.

The transmitter must be configured using the Transmitter Setup and Buddy Box setup charts.

Trainer Button

Instructor*

Student*

SRXL2 DSMX Remote Receiver

Wireless Trainer Port

Back
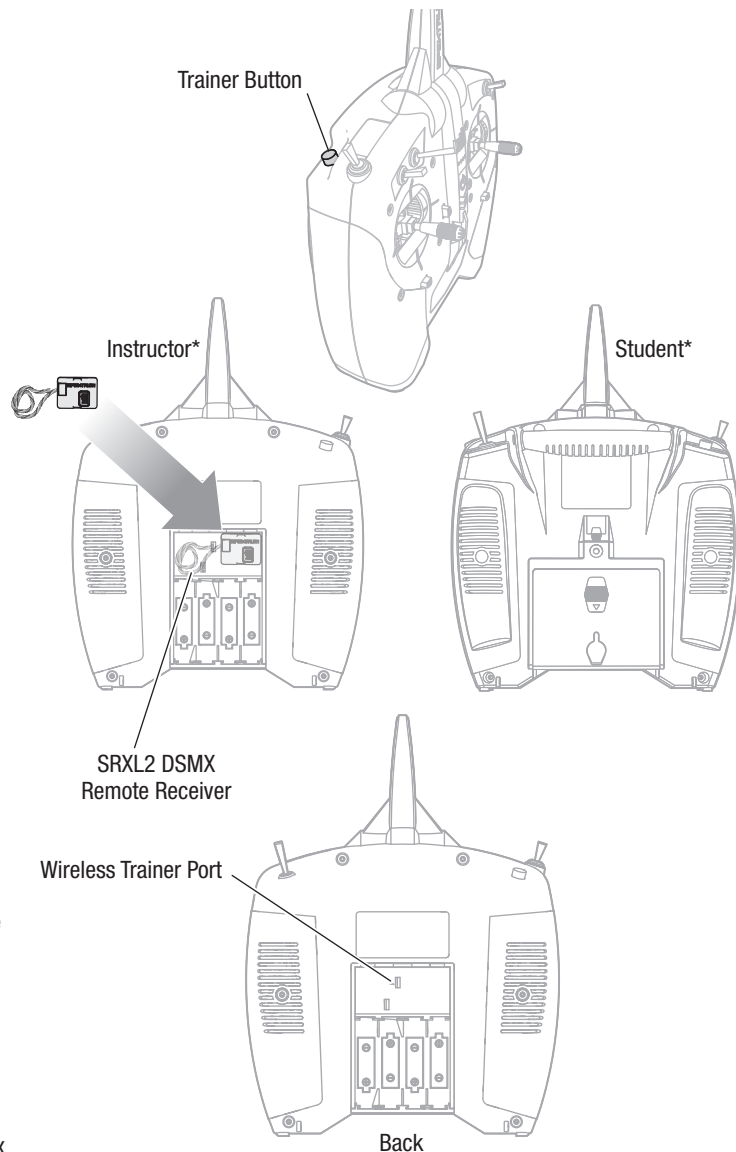
Student* Transmitter Setup	
Student Transmitter	Student Setup
DX4e, DX5e (2pos)	Factory Trainer Settings
DX4e. DX5e (3pos)	Factory Trainer Settings
DXe	Factory Trainer Settings
DX6i	Factory Trainer Settings
DX7	Factory Trainer Settings
DX6 DX7s DX7(G2) DX8 DX8(G2) / DX9 DX10t DX18 DX20	Factory Trainer Settings

Instructor* Transmitter Setup	
Instructor Transmitter	Instructor Setup
DX4e, DX5e (2pos)	Factory Trainer Settings
DX4e, DX5e (3pos)	Factory Trainer Settings
DXe	Factory Trainer Settings
DX6i	Factory Trainer Settings
DX7	Trainer to Normal
DX6 DX7s DX7(G2) DX8 DX8(G2)* / DX9 DX10t DX18 DX20	Activate Programmable Master and insure channels Thro - Aux 1 are set to student.

* Some transmitters with older versions of Spektrum Airware software may use different terminology to describe the Student and Instructor functions.

Apprentice® S 2 1.2m

Optional Transmitter Setup

To use a Spektrum transmitter other than the included DXS, use the setup table which corresponds to your transmitter series, DX, NX or iX series, to program the transmitter.

When using the recommended setup, the transmitter switch layout is as follows:
- Switch B Selects the Flight mode; Beginner (position 0), Intermediate (position 1), Experienced (position 2)
- Button I controls the Panic mode (depressed activates Panic mode)
- Switch F controls the aileron dual rates
- Switch C controls the elevator dual rates
- Switch G controls the rudder dual rates.
- Switch H controls the throttle cut.

IMPORTANT: After completing the transmitter setup or making any changes to the transmitter setup, the transmitter and receiver must be re-bound to save the desired failsafe positions.

Dual Rates

Make the initial flights in low rate, changing to high rate elevator for landing.

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, adjust the exponential settings in the transmitter to fine tune the responsiveness of the aircraft around neutral to your preference.

iX Series Transmitter Setup
1. Power ON your transmitter and begin once the Spektrtum 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. Tap 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;** Select **Channel Assign**, select **PROCEED** *5 Gear*: **Switch B** *6 Aux1*: **Switch I** Press and hold the back arrow icon in the upper left corner of the screen to return to the main screen
7. Go to the **Model Adjust** menu
8. Select **Dual Rates and Expo;** *Channel*: **Aileron** *Switch*: **Switch F** Set Switch Positions **0** and **1**: *Rate* **100%**, *Expo* **10%** Set Switch Position **2**: *Rate* **70%**, *Expo* **5%**
9. *Channel*: **Elevator** *Switch*: **Switch C** Set Switch Positions **0** and **1**: *Rate* **100%**, *Expo* **10%** Set Switch Position **2**: *Rate* **70%**, *Expo* **5%**
10. *Channel*: **Aileron** *Switch*: **Switch G** Set Switch Positions **0** and **1**: *Rate* **100%**, *Expo* **10%** Set Switch Position **2**: *Rate* **70%**, *Expo* **5%**
11. Tap the back arrow to return to the **Model Adjust** menu
12. Select **Throttle Cut;** *Switch*: **Switch H** *Position*: **-100%**

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 **Channel Assign** 5 *Gear*: Change **A** to **Switch B** 6 *Aux1*: Change **D** to **Button I** Click **List** to exit
5. Select **<Main Screen>,** Click the scroll wheel to enter the **Function List**
6. Go to **D/R (Dual Rate) and Expo;** *Channel*: **Aileron** Set *Switch*: **Switch F** Set Switch Positions **0** and **1**: *Rate* **100%**, *Expo* **10%** Set Switch Position **2**: Rate **70%**, Expo **5%**
7. Go to **D/R (Dual Rate) and Expo;** *Channel*: **Elevator** Set *Switch*: **Switch C** Set Switch Positions **0** and **1**: *Rate* **100%**, *Expo* **10%** Set Switch Position **2**: *Rate* **70%**, *Expo* **5%**
8. Go to **D/R (Dual Rate) and Expo;** *Channel*: **Rudder** Set *Switch*: **Switch G** Set Switch Positions **0** and **1**: *Rate* **100%**, *Expo* **10%** Set Switch Position **2**: *Rate* **70%**, *Expo* **5%**
9. Select **List** to go back to the **Function List**
10. Select **Throttle Cut;** *Switch*: **Switch H** *Position*: **-100%**

DX Series Transmitter Setup
1. Power ON your transmitter, click on scroll wheel, roll to **System Setup** and click the scroll wheel. 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. Select **<Main Screen>,** Click the scroll wheel to enter the **Function List**
6. Go to **D/R (Dual Rate) and Expo;** *Channel*: **Aileron** Set *Switch*: **Switch F** Set Switch Positions **0** and **1**: *Rate* **100%**, *Expo* **10%** Set Switch Position **2**: Rate **70%**, Expo **5%**
7. Go to **D/R (Dual Rate) and Expo;** *Channel*: **Elevator** Set *Switch*: **Switch C** Set Switch Positions **0** and **1**: *Rate* **100%**, *Expo* **10%** Set Switch Position **2**: *Rate* **70%**, *Expo* **5%**
8. Go to **D/R (Dual Rate) and Expo;** *Channel*: **Rudder** Set *Switch*: **Switch G** Set Switch Positions **0** and **1**: *Rate* **100%**, *Expo* **10%** Set Switch Position **2**: *Rate* **70%**, *Expo* **5%**
9. Select **List** to go back to the **Function List**
10. Select **Throttle Cut;** *Switch*: **Switch H** *Position*: **-100%**

Smart Technology Electronic Speed Control (ESC)

The Apprentice S 2 1.2m 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

* For the RPM telemetry information to display correctly, you must program the motor pole count into the Telemetry settings of your transmitter. The Apprentice S 2 1.2m uses a 14-pole motor.

To program the motor pole count information:

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).

```
            ESC Status

      RPM:    0
    Volts:   0.0V
    Motor:   0.0A        0% Output
 Throttle:   0%
 Fet Temp:   0.0C
      BEC:   0.0C        0.0A   0.0V
```

5. Select the **Telemetry** menu option.
6. Go to the **ESC** menu option.
7. Scroll down to **Poles**.
8. Enter **14** (for iX series transmitters, you must click save to save your changes).
9. Return to the main screen.

Optional Floats (Water Takeoff and Landings)

IMPORTANT: We recommend flying with floats only when you are 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 from water:

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

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.
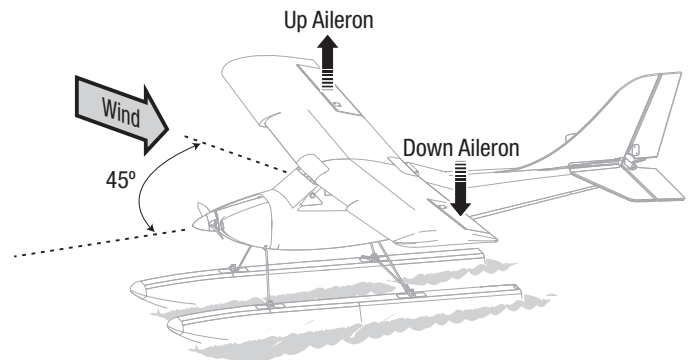
Taxi 45 degrees into the direction of the wind.

⚠ **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.

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).

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.
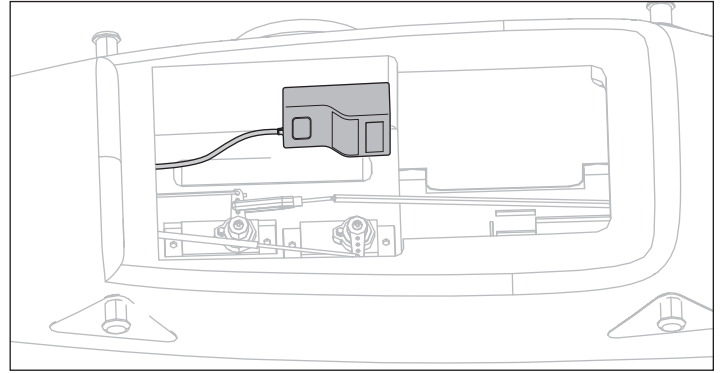
Service of Power Components

⚠ **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.
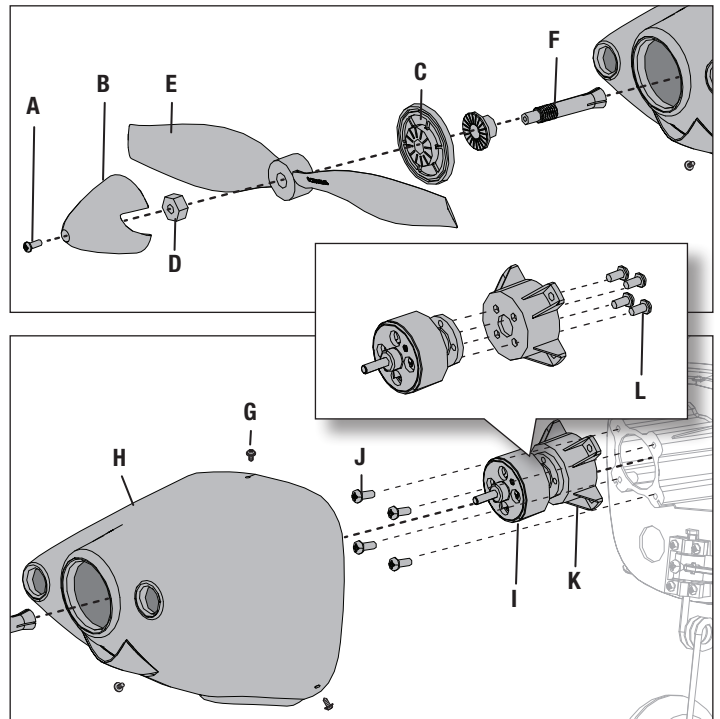
Control Horn and Servo Arm Settings

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			Nose Gear Rudder
Horns			

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 www.horizonhobby.com
	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)
	Irregular servo rotation	Replace servo
Trim is at extreme and aircraft does not fly straight or level	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

Apprentice® S 2 1.2m

Problem	Possible Cause	Solution
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

Replacement Parts

Part #	Description
EFLA1030FB	30-Amp Telemetry Capable ESC
HBZ3101	Wing Set
HBZ3102	Fuselage
HBZ3103	Tail Set
HBZ3104	Cowl
HBZ3105	Pushrod Set
HBZ3106	Nose Gear
HBZ3107	Main Landing Gear
HBZ3108	Firewall and Motor Mount
HBZ3109	Nose Gear Arm and Mounting Strap
HBZ3110	Battery Door
HBZ3111	Wheels; 58mm (3)
HBZ3114	Spinner; 34mm
HBZ3115	Hardware Set
HBZ3116	Prop Adapter
HBZ3118	Decal Sheet
SPMAR631	AR631 6CH AS3X/SAFE Receiver
SPMR1010	DXS Transmitter Only
SPMSA381	9g Sub-Micro Servo: 400mm Lead
SPMSA382	14g Sub-Micro MG Servo, 240mm Lead
SPMX13003S30M	1300mAh 3S 11.1V Smart 30C LiPo;IC3
SPMXAM1900	2832-1300kv 14-pole
SPMXC1020	Smart S120 USB-C Charger, 1x20W

Recommended Parts

Part #	Description
SPMXPSA200	Smart G2 Air Powerstage 2

Optional Parts

Part #	Description
HBZ3113	Float Mounting Wires: MiniApprentice
HBZ7390	Float Set
SPMR6775	NX6 6 Ch Transmitter Only
RFL1205	RealFlight Trainer Edition RC Flight Simulator
SPMWS2000	WS2000 Wireless Simulator USB Dongle
SPMXPSA3	Smart Powerstage Aircraft 3S Bundle
SPMXC1070	Smart S150 AC/DC Charger, 1x50W
SPMXBC100	Smart Battery & Servo Tester
SPMXC2050	S155 G2 1x55W AC Smart Charger

Hardware

Location	Description	Quantity
Spinner	M2.5 x 5mm Machine Screw	1
Cowl	M2 x 4mm Self Tapping	3
Motor Mount	M3 x 8mm Self Tapping	4
Motor	M3 x 6mm Machine Screw	4
Nose Gear Strap	M2.5 x 8mm Self Tapping	4
Nose Gear Set Screw	M3 x 6mm Machine Screw	1
Landing Gear Strap	M2.5 x 8mm Self Tapping	8
Wheel Collar	M2.5 x 4mm Machine Screw	3
Vertical Stabilizer	M2.5 x 8mm Self Tapping	2
Control Horns	M2 x 8mm Machine Screw	8

Glossary of Important Terms

Aileron: Control surface found on the trailing edge of each wing. Giving right aileron control causes the right aileron to deflect up and the left aileron to deflect down, making the aircraft roll to the right. Giving left aileron control causes the left aileron to deflect up and the right aileron to deflect down, making the aircraft roll left.

AS3X: Active Stabilization, 3-Axis. An electronic stability system that counters outside forces such as wind, turbulence, torque, tip-stall, control sensitivity issues due to CG position, to make the aircraft fly more smoothly, and provide a better flying experience.

Binding: The process of electronically linking the transmitter to the receiver. The aircraft will then recognize only a particular transmitter.

Center of Gravity (CG): Point at which the aircraft balances, most notably from front to back.

Clevis: The U-shaped connector at the end of the aircraft pushrod which allows adjustment of the pushrod length.

Control Throw: The distance a control surface deflects, normally measured from the widest point of the control surface.

Dual Rate: Setting found in the transmitter which allows two different control throw distances when the control stick is deflected fully. Using a low rate gives less control throw at full deflection and thus a less sensitive feel to the aircraft. Using high rate gives greater control throw at full deflection and thus a more sensitive feel to the aircraft.

Elevator: Control surface found on the trailing edge of the horizontal stabilizer. Up elevator causes the aircraft to pitch up. Down elevator causes the aircraft to pitch down.

Electronic Speed Control (ESC): an electronic device that controls and regulates the speed of the motor. It has connections from the battery, to the motor, and to the Receiver.

Exponential: A setting programmed in the transmitter which allows the pilot to tailor the sensitivity of the controls around neutral. Increasing the exponential value creates a softer control feel around neutral, thus making the aircraft less sensitive to control inputs. Exponential only affects the controls around neutral.

Low Voltage Cutoff (LVC): A safety feature built into the electronic speed control which activates when the battery voltage drops below a determined level, cutting power to the motor, but still providing power to the receiver and servos, allowing the aircraft to be landed safely.

Pitch: The rotation of the aircraft nose up or down, controlled by the elevator.

Range Test: Test to check the transmitter and receiver are functioning properly. The test is done by setting the transmitter to a low-power mode and testing the control function from a set distance.

Receiver: an electronic device installed in the aircraft which decodes the control inputs sent from the transmitter and sends the inputs to the servos.

Roll: Left and right rotation of the aircraft around the longitudinal axis.

Rudder: Control surface found on the trailing edge of the vertical stabilizer. Right rudder control causes the nose of the aircraft to turn to the right. Left rudder causes the nose of the aircraft to turn left.

Sensor-Assisted Flight Envelope (SAFE) Technology: Offers smoother flight capability that battles windy conditions for you and multiple modes so you can fly with the level of protection and assistance that suits any given moment of the flight.

Servo: Electronic component which translates the control signals from the receiver into movement of a control surface. The servo is connected to the control surface with a pushrod.

Throttle: Control input which regulates the speed of the motor. A higher throttle setting makes the motor rotate faster, thus increasing forward thrust. A lower throttle setting makes the motor rotate slower, thus decreasing forward thrust.

Transmitter: Control unit held by the pilot which sends signals to the aircraft.

Yaw: Left or right rotation of the aircraft nose, controlled by the rudder.

Important Federal Aviation Administration (FAA) Information

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

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

Recreational UAS Safety Test

FAA DroneZone

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 aircraftusing AMA's See and Avoid Guidance and a spotter when appropriate.
- I will not operate any model aircraft while I am under the influence of alcohol or any drug that could adversely affect my ability to safely control the model.
- I will avoid flying directly over unprotected people, moving vehicles, and occupied structures.
- I will fly Free Flight (FF) and Control Line (CL) models in compliance with AMA's safety programming.
- I will maintain visual contact of an RC model aircraft without enhancement other than corrective lenses prescribed to me. When using an advanced flight system, such as an autopilot, or flying First-Person View (FPV), I will comply with AMA's Advanced Flight System programming.

- I will only fly models weighing more than 55 pounds, including fuel, if certified through AMA's Large Model Airplane Program.
- I will only fly a turbine-powered model aircraft in compliance with AMA's Gas Turbine Program.
- I will not fly a powered model outdoors closer than 25 feet to any individual, except for myself or my helper(s) located at the flightline, unless I am taking off and landing, or as otherwise provided in AMA's Competition Regulation.
- I will use an established safety line to separate all model aircraft operations from spectators and bystanders.

Limited Warranty

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

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

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

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

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

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

WARRANTY SERVICES

Questions, Assistance, and Services—Your local hobby store and/or place of purchase cannot provide warranty support or service. Once assembly, setup or use of the Product has been started, you must contact your local distributor or Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please visit our website at www.horizonhobby.com, submit a Product Support Inquiry, or call the toll free telephone number referenced in the Warranty and Service Contact Information section to speak with a Product Support representative.

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

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

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

Non-Warranty Service—Should your service not be covered by warranty, service will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for service you are agreeing to payment of the service without notification. Service estimates are available upon request. You must include this request with your item submitted for service. Non-warranty service estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Horizon accepts money orders and cashier's checks, as well as Visa, MasterCard,

American Express, and Discover cards. By submitting any item to Horizon for service, you are agreeing to Horizon's Terms and Conditions found on our website http://www.horizonhobby.com/content/service-center_render-service-center.

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

FCC Information

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 1.2m RTF Basic (HBZ310001):
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

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

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

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

IC Information

Contains IC: 6157A-KATY1T
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:

HBZ Apprentice S 2 1.2m RTF (HBZ310001); Hereby, Horizon Hobby, LLC declares that the device is in compliance with the following: Radio Equipment Directive (RED) 2014/53/EU; EU EMC Directive 2014/30/EU; RoHS 2 Directive 2011/65/EU; RoHS 3 Directive - Amending 2011/65/EU Annex II 2015/863.

HBZ Apprentice S 2 1.2m BNF (HBZ315001); Hereby, Horizon Hobby, LLC declares that the device is in compliance with the following: Radio Equipment Directive (RED) 2014/53/EU; 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.

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.

Wireless Frequency Range and Wireless Output Power:

Transmitter:

2402-2478MHz

17.7dBm

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.

E328

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