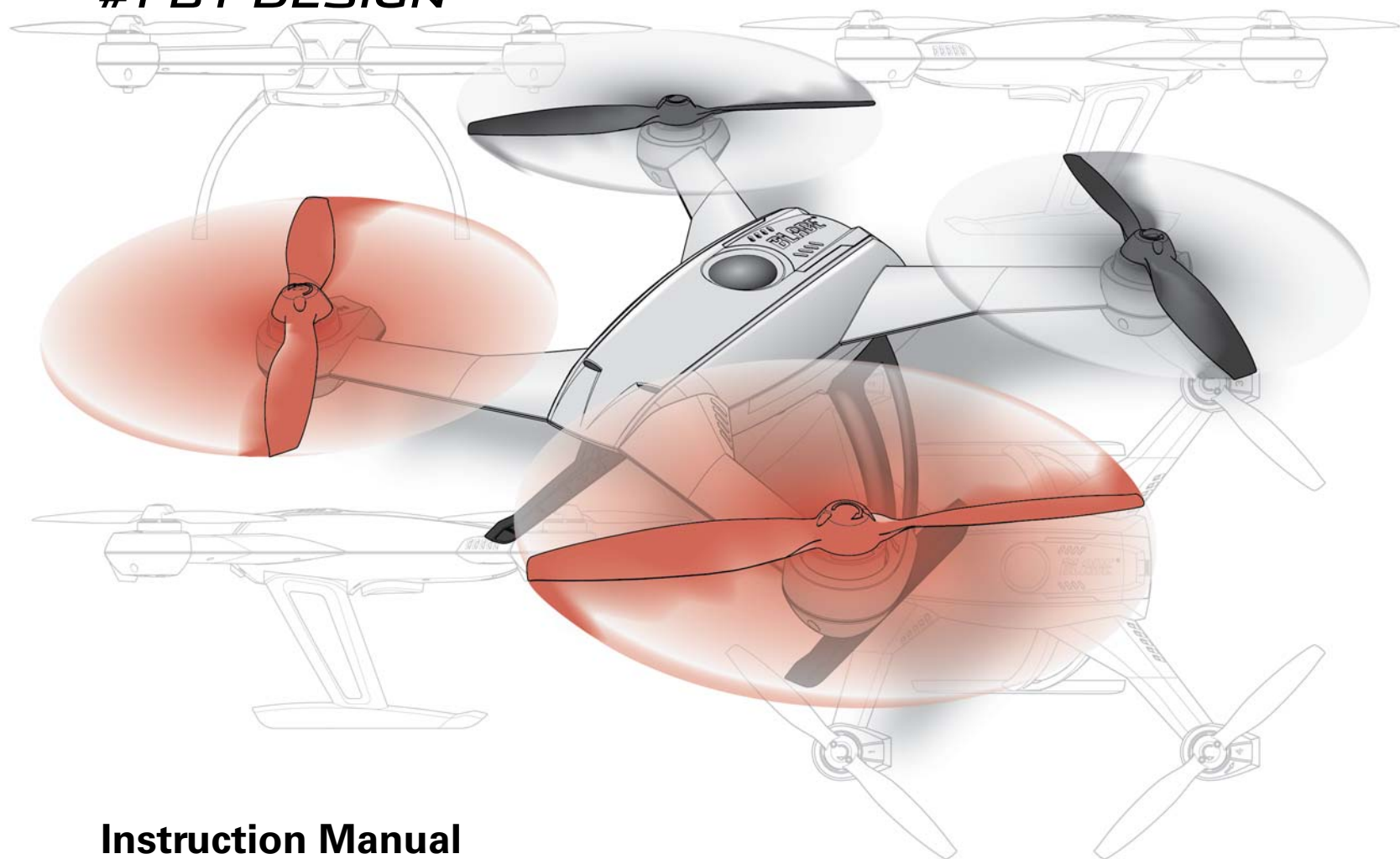


BLADE **350 QX2**

#1 BY DESIGN



Instruction Manual



RTF **BNF**[™]

NOTICE

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

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

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

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.



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.

General Safety Precautions and Warnings

- 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 move the throttle fully down at rotor strike.
- 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.
- Never operate aircraft with damaged wiring.
- Never touch moving parts.



CAUTION: The ESCs for the 350 QX2 are not compatible with any other product, and the 350 QX2 is not compatible with any other ESCs. Use of any other ESCs on the 350 QX2 will cause a crash, which may result in property damage and/or personal injury.



WARNING AGAINST COUNTERFEIT PRODUCTS: If you ever need to replace a Spektrum component 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.

The Blade 350 QX2 has many more features than other Blade quadcopters. Please take the time to read this manual and understand the functions this aircraft contains before flying.

BLADE® 350 QX2

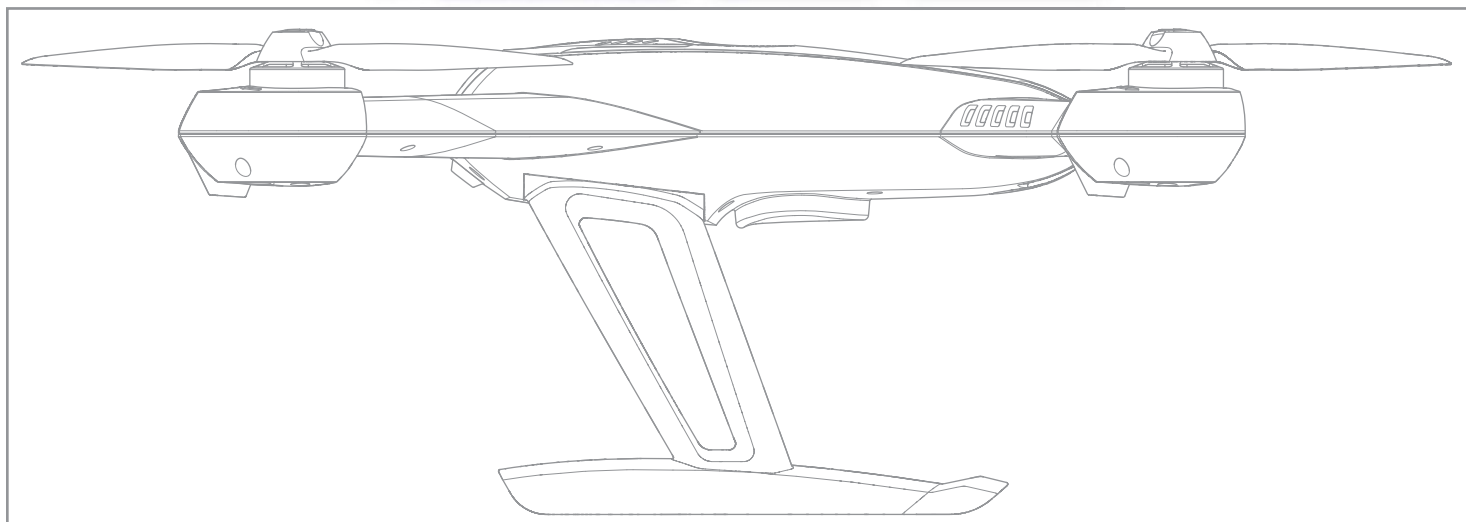


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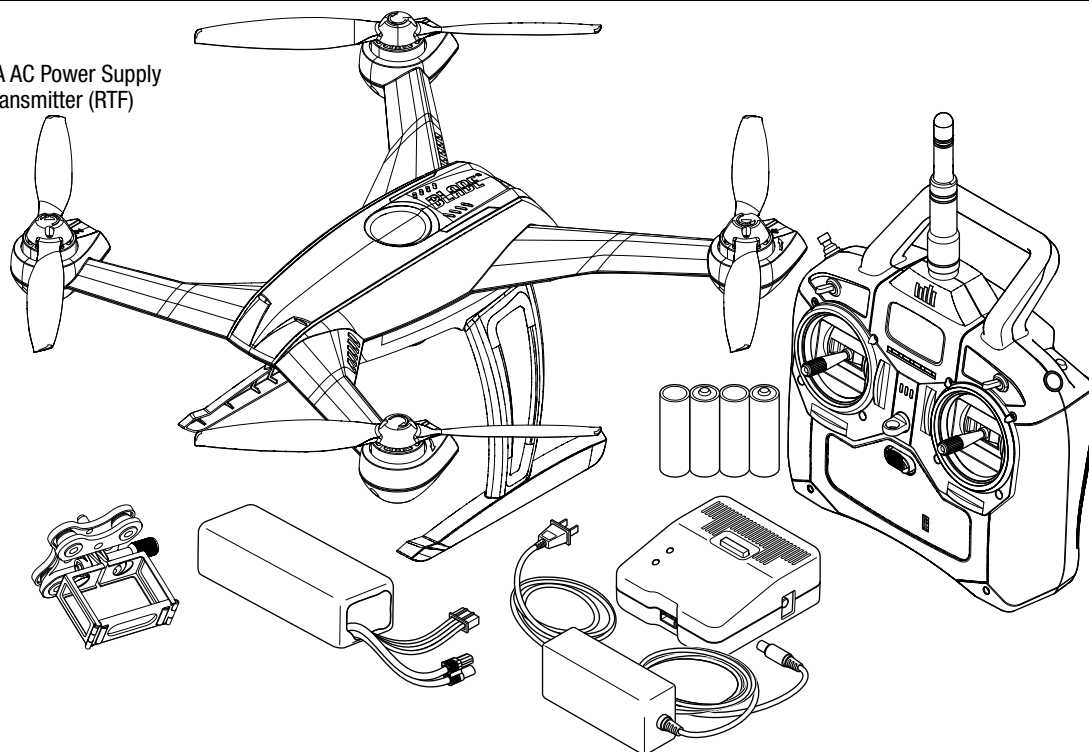
Components	
Airframe	Blade 350 QX2 Quadcopter
Motors	4x Brushless Outrunner Motor, 1100Kv
ESCs	4x 10-Amp Brushless ESC
Battery	3000mAh 3S 11.1V 20C Li-Po Battery
Charger	3S DC Li-Po Balancing Charger with 5A AC Power Supply
Transmitter	Spektrum™ DX4 DSMX® 4-Channel Transmitter

Specifications	
Length	18.30 in (465mm)
Height	7.48 in (190mm)
Main Rotor Diameter	22.80 in (580mm)
Flying Weight	35.5 oz (760 g)

To register your product online, visit www.bladehelis.com

Box Contents

- Blade® 350 QX2
- 3000mAh 3S 11.1V 20C Li-Po Battery
- 3S DC Li-Po Balancing Charger with 5A AC Power Supply
- Spektrum™ DX4 DSMX® 4-Channel Transmitter (RTF)
- 4 AA Batteries (RTF)
- Camera Mount



Charging Warnings

The Battery Charger (EFLC3016) included with your quadcopter has been designed to safely charge the Li-Po battery.

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

- By handling, charging or using the included Li-Po battery, you assume all risks associated with lithium batteries.
- If at any time the battery begins to balloon or swell, discontinue use immediately. If charging or discharging, discontinue and disconnect. Continuing to use, charge or discharge a battery that is ballooning or swelling can result in fire.
- Always store the battery at room temperature in a dry area for best results.
- Always transport or temporarily store the battery in a temperature range of 40–120° F (5–49° C). Do not store battery or model in a car or direct sunlight. If stored in a hot car, the battery can be damaged or even catch fire.
- Always charge batteries away from flammable materials.

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

Low Voltage Cutoff (LVC)

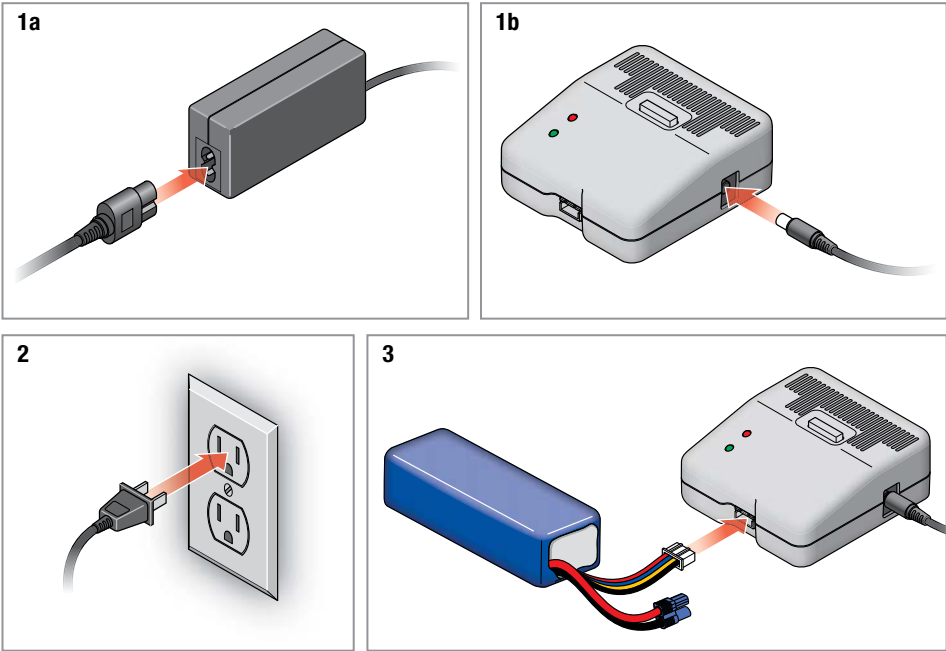
Low voltage cutoff (LVC) protects the Li-Po battery from over-discharge in flight and activates when the battery reaches a preset value. When the battery is discharged to the cutoff point, the aircraft will display rapidly flashing red, green and blue LEDs to warn you it's time to land. When you see this LED code, land immediately to prevent over-discharge and damage to the battery.

When the LVC is activated, you have approximately 2 minutes until the battery is depleted and can no longer maintain a hover. Repeated flying to LVC will damage the battery.

NOTICE: Crash damage and battery damage are not covered under warranty.

IMPORTANT: Always disconnect and remove the Li-Po battery from the aircraft after each flight. Charge your Li-Po battery to about half capacity before storage. During storage, make sure the battery charge does not fall below 3V per cell. A connected battery will result in trickle discharge.

Charging the Flight Battery



- Charger Specifications**
- Input Voltage: 10.5–15V DC
 - Charge Current: 3.5A

The Battery Charging Process	
1.	Connect the AC power supply to the charger.
2.	Connect the AC power supply to an AC power source. The green LED blinks.
3.	Connect the battery to the charger. The red LED blinks, indicating charging. When the battery nears full charge, the red and green LEDs blink, indicating cell balancing.
4.	Disconnect the battery when the green LED glows solid.

- LED Indications**
- Green Blinking: Ready to Charge
 - Red Blinking: Charging
 - Red & Green Blinking: Cell Balancing
 - Green Solid: Charging Complete
 - Red Solid: Error

CAUTION: Overcharging a battery can cause a fire.

NOTICE: If using a battery other than the included Li-Po battery, refer to your battery manufacturer's instructions for charging.

BNF™ Transmitter Setup

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

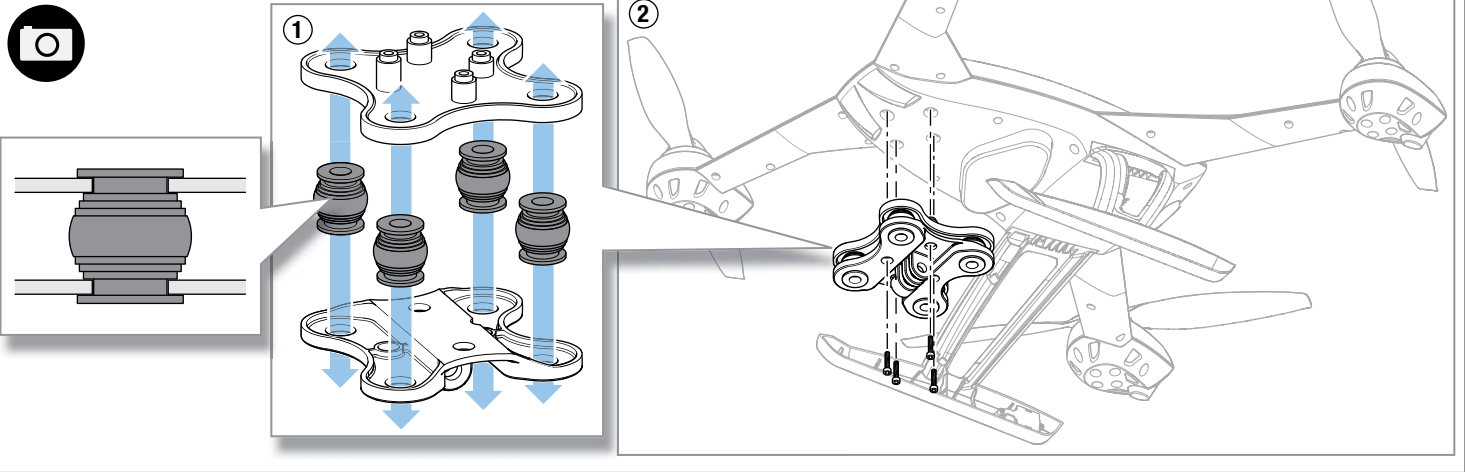
Transmitter	Model Type	Reverse Setup	Throttle Cut Setup	Mode Setup	Switch Positions	Throttle Cut	Return Home
DX4e (New)* w/3-position switch	N/A	N/A	N/A	N/A	Position 0 = SMART Mode Position 1 = AP Mode Position 2 = Stability Mode	Lower throttle trim until motors stop turning	Press and Hold TRAINER/ BIND Release to EXIT
DX5e (New)* w/3-position switch	N/A	N/A	N/A	N/A	Position 0 = SMART Mode Position 1 = AP Mode Position 2 = Stability Mode	Lower throttle trim until motors stop turning	Press and Hold TRAINER/ BIND Release to EXIT
DX6i	Acro	THRO-N ELEV-N GEAR-R AILE-N RUDD-N FLAP-N	ACT	Travel Adj: GEAR POS (0) GEAR: ↑100%; GEAR/F MODE POS (1) GEAR: ↓40% FLAPS: Norm ←↑100; LAND ↓100 MIX 1: ACT; GEAR → GEAR ACT RATE D 0%; U + 100% SW MIX TRIM INH SUB TRIM THRO ↑ 15-20%	GEAR 0; Mix 0 = SMART Mode GEAR 1; Mix 0 = AP Mode GEAR 1; Mix 1 = Stability Mode	Press throttle cut	FLAP Position 0 = OFF FLAP Position 2 = Return Home
DX7/7SE	Acro	FLAP-R (6) Others-N	N/A	Travel Adj: GEAR (0) ↑100%; GEAR (1) ↓40% MIX 1: FLAP → Gear OFF/ON RATE → -50% 0% SW: MIX OFFSET: 0	GEAR (0); Mix (0) = SMART Mode GEAR (1); Mix (0) = AP Mode GEAR (1); Mix (1) = Stability Mode	Lower throttle trim until motors stop turning	FLAP Pos 0 = OFF FLAP Pos 1 = Return Home
DX7S	Acro	AUX1-R Others-N	Set To: Trainer	Switch Select: Move Gear to F MODE (F MODE:GEAR) Leave FLAPS as AUX1 Set All Others to INH MIX 1: GER > GER RATE: 0% -100% OFFSET: 0%; TRIM: INH; SW: Mix0	F MODE (0) = SMART Mode F MODE (1) = AP Mode F MODE (1); HOLD (1) = Stability Mode	Press Trainer	FLAP Pos 0 = OFF FLAP Pos 2 = Return Home
DX8	Acro	AUX1-R Others-N	Set To: Trainer	Switch Select: F-Mode to Gear; Flap to Aux 1 All Others to INH	F MODE (0) = SMART Mode F MODE (1) = AP Mode F MODE (2) = Stability Mode	Press Trainer/Bind	FLAP Pos 0 = OFF FLAP Pos 2 = Return Home
DX6/DX9/DX18	Acro	AUX1-R Others-N	Set To: I (BIND)	Channel Assign: NEXT 1-4: N/A 5 Gear: B 6 AUX1: H 7-10: INH	B (0) = SMART Mode B (1) = AP Mode B (2) = Stability Mode	Press I (BIND)	D (FLAP) Pos 0 = OFF D (FLAP) Pos 2 = Return Home

* Old versions of the DX4e and DX5e (with 2-position channel 5 switches) are **not** recommended for the 350 QX2. Only **Smart Mode** and **Stability Mode** will be available with GPS On.

Mounting a Camera

IMPORTANT: Consult local laws and ordinances before installing and operating any type of photograph-capable or video recording device in this product.

Assembling the Isolation Mount



Installing the Included Camera Frame to the Isolation Mount

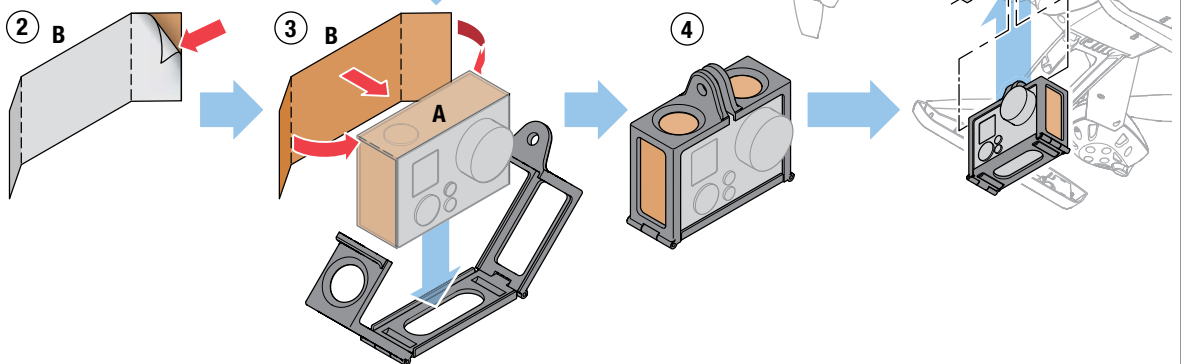
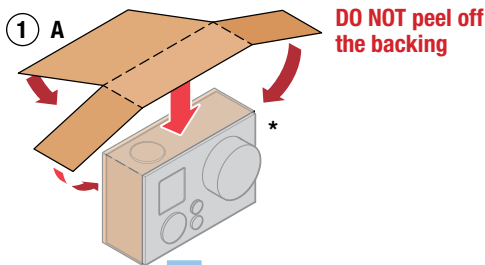
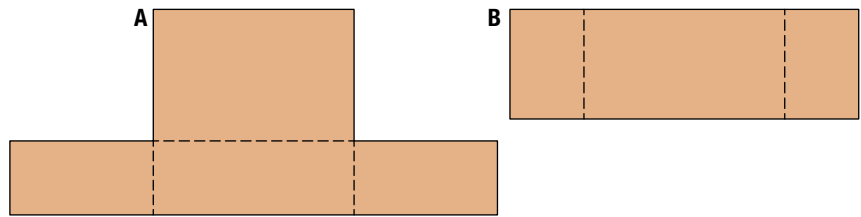
* Camera not included

Copper Foil Shielding Instructions

The Blade® 350 QX2 includes two adhesive-backed, metal-foil sheets to provide GoPro® users with an extra measure of RF-shielding.

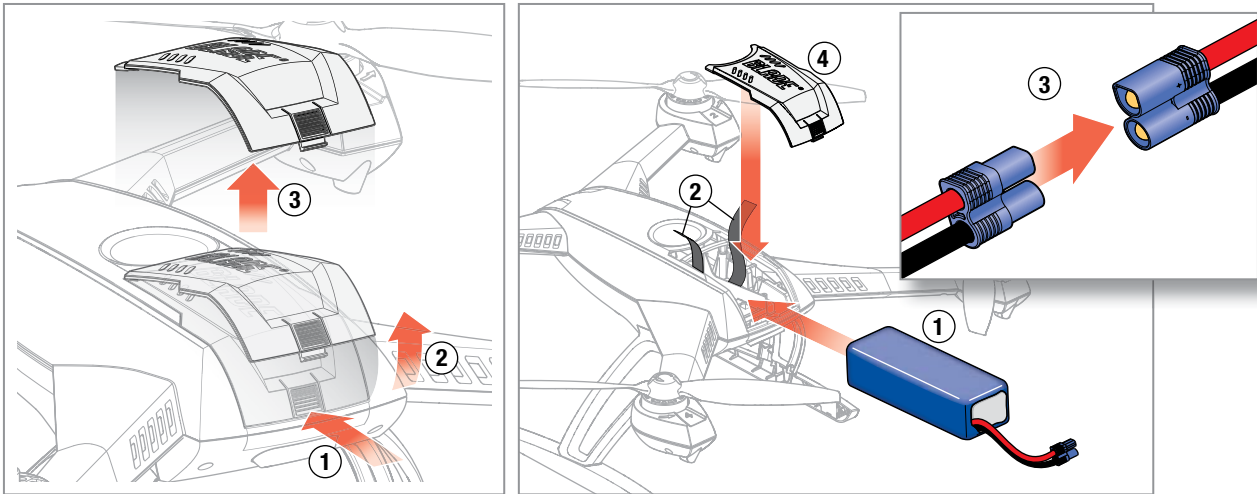
1. Fold the inner "T" sheet (A) around the camera with the metallic side facing away from the camera so it covers the top, sides and back. **DO NOT peel off the backing.**
2. Peel the backing off the rectangular sheet (B).
3. Wrap sheet B around the back of sheet A, sealing all the rear edges and holding everything together.
4. The shield is removable and is held in place by the 350 QX2 camera mount.

The front and bottom of the camera are left unshielded to allow any RF noise to radiate out and away from the 350 QX2.

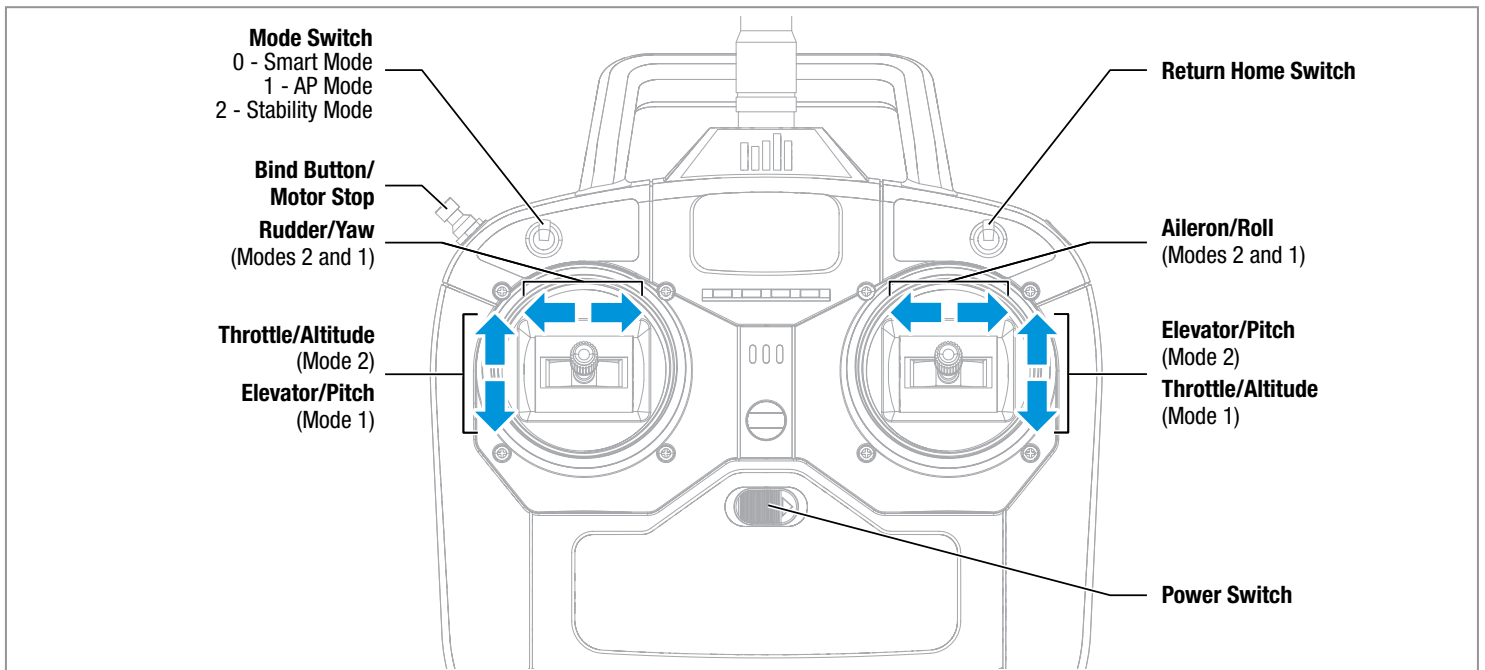


WARNING: Always disable Wi-Fi before flying the Blade 350 QX2 with a GoPro camera. If Wi-Fi is not disabled, interference may cause loss of control, which could result in a crash.

Connecting the Flight Battery



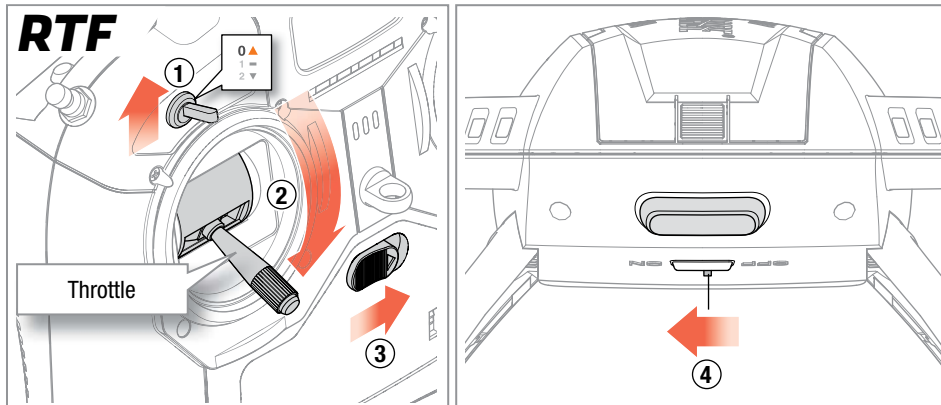
RTF Transmitter Control Layout



Power On

Transmitter
(Mode 2)

350 QX2



Binding

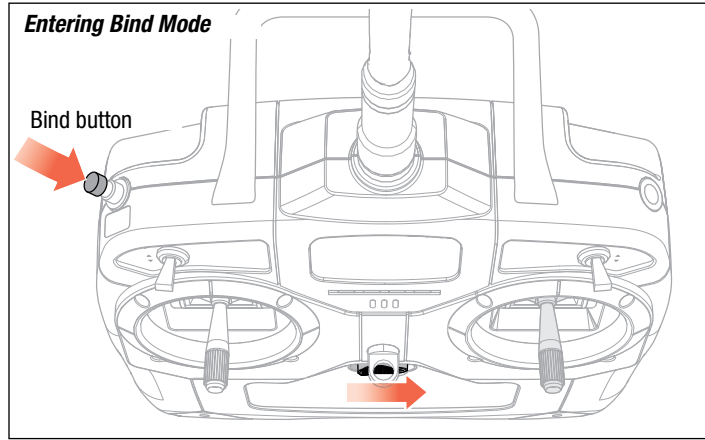
The transmitter is bound to the model at the factory. If for any reason the model needs to be re-bound, follow the directions below.

The Binding Process

1. With the transmitter and quadcopter powered off, connect the battery to the 350 QX2.
2. With the 350 QX2 on a level surface, turn on the power switch and allow the quadcopter to initialize.
3. Wait until the blue LED on the quadcopter flashes rapidly, signaling the quadcopter is initialized and ready to bind.
4. Ensure the throttle is in the low position. Hold the control sticks in the desired bind position (see illustrations) and press and hold the bind button, then power on the transmitter.
5. Refer to the Flying LED Codes table to ensure the aircraft is bound correctly.

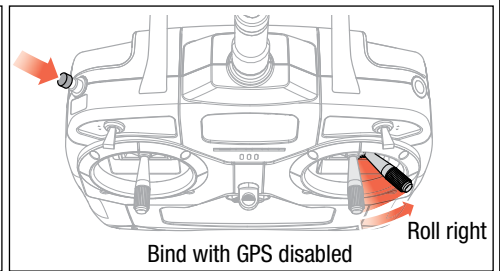
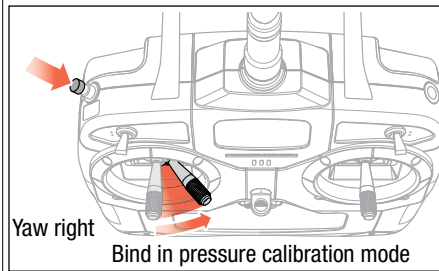
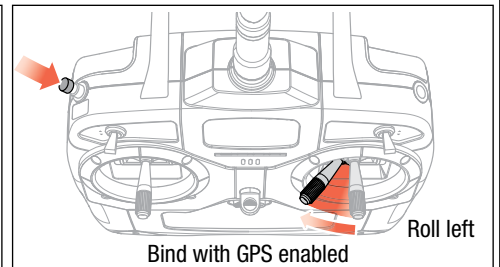
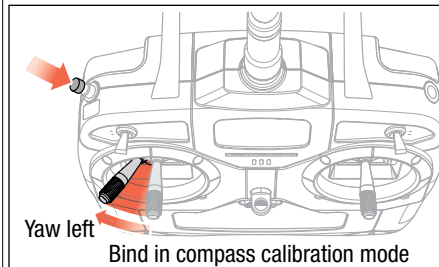
IMPORTANT: Do not attempt to bind with more than one bind code. Binding with more than one bind code will only allow the aircraft to bind normally.

Unless binding with a bind code, the elevator and aileron inputs must be neutral during binding. If you are attempting a normal bind with any input other than neutral, the aircraft will emit a constant, rapid beeping sound.






Normal Bind

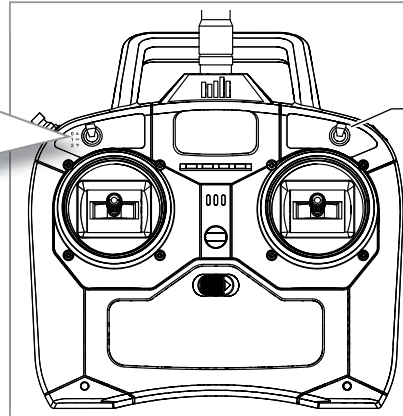
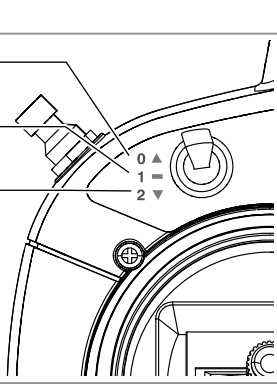
Transmitter Bind Codes (Mode 2 shown)




RTF Flight Mode Switches

GPS Enabled Functions

-  **Smart Mode**
(Solid Green LED on the 350 QX2)
-  **AP Mode**
(Solid Purple LED on the 350 QX2)
-  **Stability Mode**
(Solid Blue LED on the 350 QX2)



Return Home
(Rapid Red flashing LED  on the 350 QX2)

Flight Modes Explained

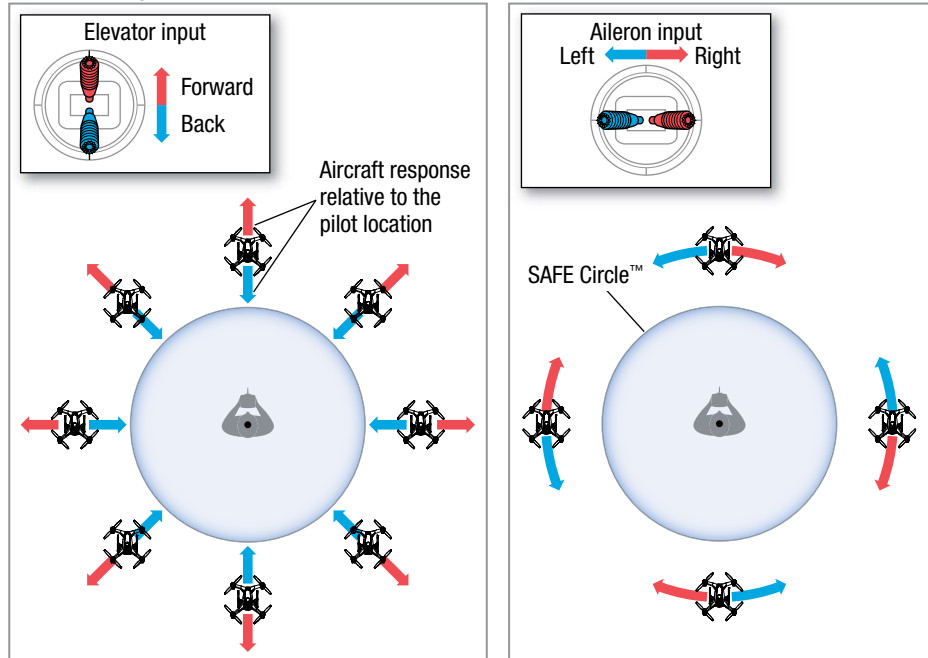
The Blade 350 QX2 flies very differently in the different flight modes. Beginners should use **Smart Mode** to start and progress slowly into **Stability Mode**. When flying in **Smart Mode**, the quadcopter follows stick input based on the set pilot location. When flying in **Stability Mode**, the quadcopter follows stick inputs based on the orientation of the aircraft. The transition from **Smart Mode** to **Stability Mode** can be


a challenge for new flyers because the pilot will need to learn how to interpret the aircraft's orientation.


For pilots new to quadcopters and helicopters, familiarize yourself with the Blade 350 QX2 in **Smart Mode**.


NOTICE: Do not attempt to fly your 350 QX2 in **Stability Mode** or **AP Mode** until you have familiarized yourself with the operation of the aircraft in **Smart Mode** and read and understand the descriptions of the other flight modes.

Stick Relativity

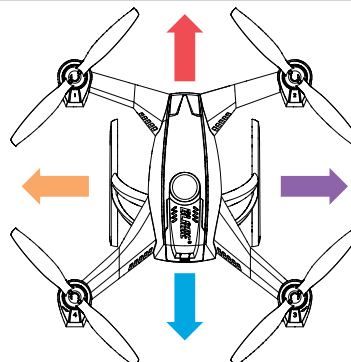
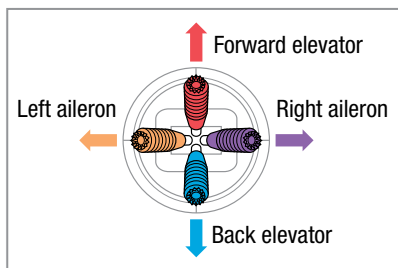


-  **Flight Mode 0 – Smart Mode (Default)**
(Solid Green Indicator LED)
 - *Stick Relativity*– While in **Smart Mode**, the path of the aircraft will always follow the control stick input direction relative to the SAFE Circle, regardless of the direction the nose of the aircraft is pointing.
 - *SAFE Circle™*– In most scenarios, the quad will not enter the SAFE Circle.
 - *Position Hold*– The aircraft will hold its position when elevator and aileron inputs are at neutral.
 - *Self-Leveling*– Brings the 350 QX2 to a level attitude when the elevator and aileron inputs are at neutral.
 - *Altitude Command*– Altitude is relative to throttle stick position.

-  **Flight Mode 1 – AP Mode**
(Solid Purple Indicator LED)
 - *Position Hold*– The aircraft will hold its position when elevator and aileron inputs are at neutral.
 - *Self-Leveling*– Brings the 350 QX2 to a level attitude when the elevator and aileron inputs are at neutral.
 - *Altitude Command*– Altitude is relative to throttle stick position.

-  **Flight Mode 2 – Stability Mode**
(Solid Blue Indicator LED)
 - *Self-Leveling*– Brings the 350 QX2 to a level attitude when the elevator and aileron inputs are at neutral.
 - *Position Hold*– The 350 QX2 uses GPS to hold a given location when this function is activated. If GPS is enabled and has a solid lock, the aircraft will hold its position when elevator or aileron inputs are at neutral.
 - *Throttle provides proportional thrust*– The throttle responds directly to the throttle input, giving the pilot direct control over hovering as well as ascent and descent rates.

AP and Stability Mode Control Inputs



Audible Alerts and LED Codes

The motors will beep under the following conditions:

- Any time the props stop spinning after they have been initialized.
- After 30 seconds of no throttle input (waiting armed on the ground).

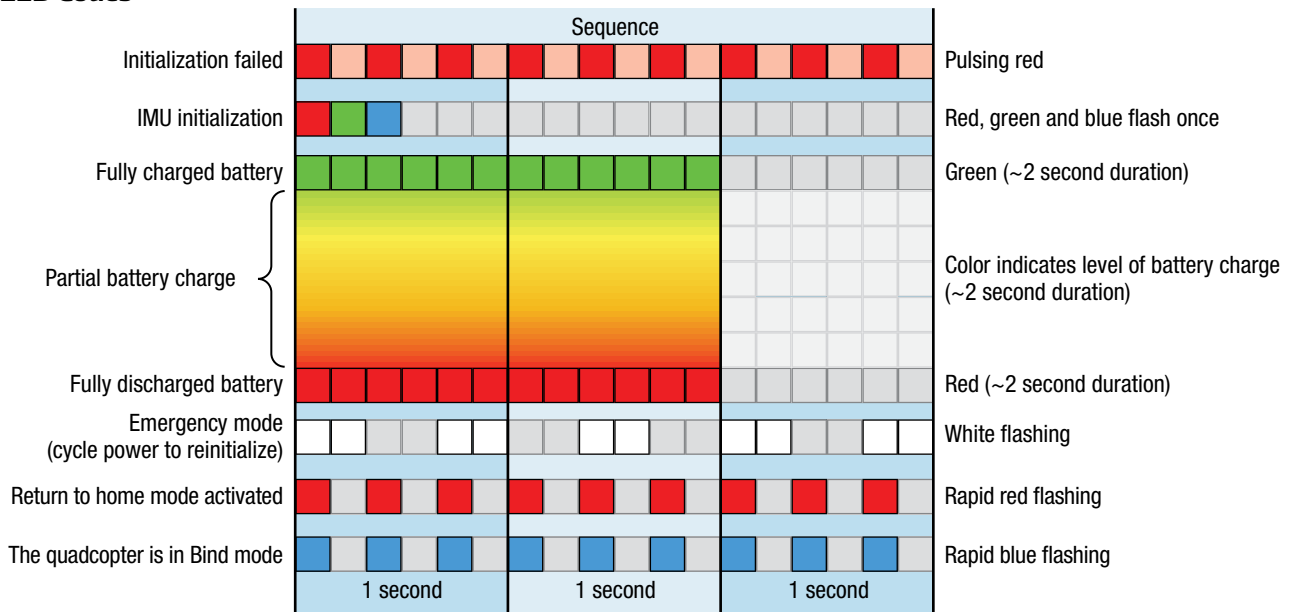
Audible Alerts

Event	Audible Alert
ESC power on	one short beep
Successful initialization	many continuous tones with increasing frequency
RC signal detected after start	one long tone
Bind detected	one long tone
Bind accepted (3 seconds after detected)	one long tone
Throttle stick in correct position for motor start	low, med, high (happy tone)
Cannot start motors because of low voltage	high, med, low (sad tone)
Cannot start motors because vehicle is tilted	high, med, low (sad tone)
Enter ESC ID assignment mode	loud high, low — high, low
GPS Lock Acquired/Lost	3 short beeps, pause, then 3 short beeps

Initialization Audible Alerts

Event	Audible Alert
Gyro, accelerometer sensor error	High, low, 1 short tone
Compass initialization error	High, low, 2 short tones
Pressure sensor initialization error	High, low, 3 short tones
GPS initialization error	High, low, 4 short tones
ESCs not detected	High, low, 6 short tones
Settings saved (i.e. when changed GPS on/off, etc)	Rapid low, med, high — low, med, high
Low-battery warning	Medium frequency, loud tone (every 3 seconds)
Emergency state warning (also after ESC ID assignment)	Once per second loud medium tone

Startup LED Codes



Flying LED Codes

	Sequence	
Smart Mode, with GPS lock		Solid green
Smart Mode, no GPS lock		3 green flashes, pause
Stability Mode, with pressure		Slow green flash
AP Mode, with GPS lock		Solid purple
AP Mode, no GPS lock		3 purple flashes, pause
AP Mode, GPS disabled		Slow purple flash
Stability Mode, with GPS lock		Solid blue
Stability Mode, no GPS lock		3 blue flashes, pause
Stability Mode, GPS disabled		Slow blue flash
Flight mode set to Smart Mode		} Shows flight mode position on motor startup
Flight mode set to AP Mode		
Flight mode set to Stability Mode		
Flight battery voltage below 10.9V		Red, green and blue flash (~3 second cycle)
Flight battery voltage below 10.6V		Red, green and blue flash (~1 second cycle)
Compass calibration needed*		Slow orange flash

*The LED may randomly flash orange. Unless it is repeated in the pattern above, compass calibration is not needed.



CAUTION: If you see the LED signal for low battery, immediately land your aircraft and recharge the battery.



CAUTION: Do not attempt to use Return Home with a low battery.

Calibration LED Codes

	Sequence	
Gyro temperature calibration*		Rapid green and blue flashing
No calibration		Green pulsing
Compass calibration entered		Slow red and green flashing
Compass calibration started		Rapid red and green flashing
Pressure sensor temperature calibration		Rapid red and blue flashing
Pressure and gyro calibration*		Rapid red, green and blue flashing
Accelerometer offset calibration entered (in flight only)		Slow red, green and blue flashing
Accelerometer offset calibration started (in flight only)		Rapid red, green and blue flashing
Calibration failed		Solid white

* These items are performed by the manufacturer.

GPS Functionality of the 350 QX2


To acquire a reliable GPS signal, it is important the 350 QX2 has a clear view of the sky. Obstructions that can affect the aircraft's ability to acquire an acceptable signal include:

- Flying close to or around tall/big buildings
- Flying under dense vegetation
- Flying indoors or under a structure

If you lose or cannot acquire a GPS lock and home position, the aircraft will not have Stick Relativity, SAFE Circle, Position Hold or Return Home functions available.

It is not possible to use **Smart Mode** without having GPS enabled. If the 350 QX2 is initialized without GPS enabled, it will default to **Stability Mode**. The aircraft will still be capable of altitude command.

If you do not have a GPS signal, try maneuvering the 350 QX2 by steering with forward elevator and rudder only.

 **CAUTION:** Do not attempt to fly the 350 QX2 with GPS enabled while indoors or in a location where the GPS signal is known to be poor, as loss of signal could result in a crash.

GPS Functions

(see the *Binding* section for turning GPS functions ON and OFF)

With GPS ON

- If the 350 QX2 took off with GPS lock and a home position set, when Return Home mode is activated the quadcopter will fly back to the start position (maintaining altitude along the way), then reduce altitude to land.
- If the 350 QX2 should lose GPS when Return Home mode is activated, it will land quickly using the barometric pressure sensor to maintain the descent rate.
- If the 350 QX2 took off without GPS lock, but acquires a GPS signal in flight, it will land slowly using GPS to hold its position and barometric pressure sensor to maintain the descent rate when Return Home mode is activated.
- If the 350 QX2 loses GPS during landing in Return Home mode, it will increase the rate of descent and land quickly to avoid drift.
- If the 350 QX2 deviates too far from its intended GPS path when in Return Home mode, it will descend using the barometric pressure sensor to maintain the descent rate. This could happen if the flight control system loses its orientation because of aggressive flight in 3 axis mode.
- Once the 350 QX2 has landed in Return Home mode, it will disarm the motors.

With GPS OFF

- If Return Home mode is activated, the 350 QX2 will level off and land quickly using the barometric pressure sensor to maintain the descent rate.
- Once the 350 QX2 has landed in Return Home mode, it will disarm the motors.

GPS Failure

Upon GPS failure, the 350 QX2 will respond according to the following conditions:

Smart Mode: (rapid Green flashing LED)

If the 350 QX2 is in this mode and the GPS fails, the quad will default to **Stability Mode**. The aircraft will still use the pressure sensor to maintain altitude and control rate of descent. If GPS is reacquired, after 5–10 seconds of reliable GPS signal the **Smart Mode** functions are returned to normal

AP Mode: (long Purple, two short Green flashing LED)

If the 350 QX2 is in this mode and the GPS fails, it will not switch to **Smart Mode** and will not enter GPS hold, but will otherwise function normally. If GPS is reacquired, after 5–10 seconds of reliable GPS signal the **AP Mode** functions are returned to normal.

Stability Mode: (long Blue, two short Green flashing LED)

If the 350 QX2 is in this mode and the GPS fails, it will not switch to **Smart Mode** and will not enter GPS hold, but will otherwise function normally. If GPS is reacquired, after 5–10 seconds of reliable GPS signal the **Stability Mode** functions are returned to normal.

Loss of Transmitter Signal

If the transmitter signal is lost for any reason, the 350 QX2 will respond according to the following conditions:

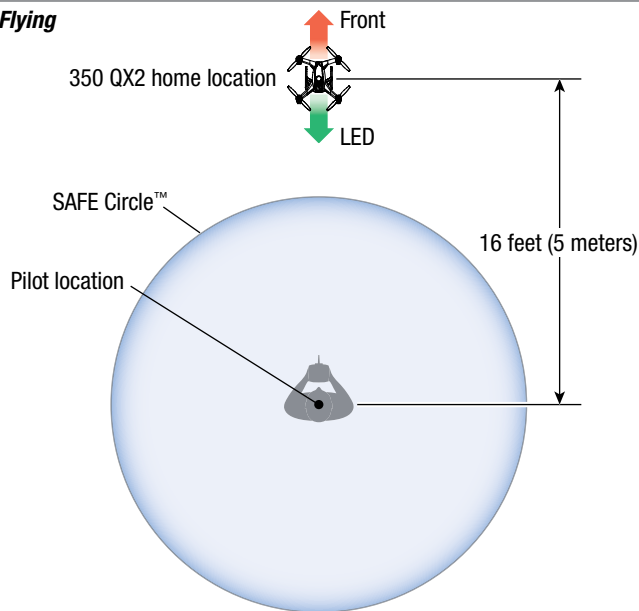
- If the motors are not turning, the 350 QX2 will disarm.
- If the motors are turning but the 350 QX2 is not flying, it will turn off the motors and disarm.
- If the 350 QX2 is flying and has a good GPS lock with a home position set, it will activate the Return Home function upon the loss of the transmitter signal.
- If the compass is not connected or faulty, or if there is no GPS lock, the 350 QX2 will descend slowly upon the loss of the transmitter signal.
- If the pressure sensor is not working, the 350 QX2 will reduce power to initiate a controlled descent upon the loss of the transmitter signal.

Flight Guidelines and Warnings

- Always keep aircraft in sight and under control.
- Always keep people and pets at least 35 feet (10 meters) away when the battery is connected.
- Keep children out of the vicinity of this product at all times.
- 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.
- Never operate aircraft with damaged wiring.
- Never touch moving parts.

Preparing the 350 QX2 For Flight

Smart Mode Flying



1. Power on the transmitter with the flight mode set to **Smart Mode** and the throttle stick down.
2. Install a charged battery, plug it in and close the hatch.
3. With the quad on a level surface, turn on the power switch and allow the 350 QX2 to initialize. If the GPS is enabled, wait for the GPS signal to be acquired, which is indicated by a solid green LED. It may take from 30–90 seconds to acquire a GPS signal.

IMPORTANT: While in **Smart Mode** the motors will not start if a GPS signal has not been acquired.

4. Move the aircraft to the desired home location and orient the aircraft pointed away from the pilot.
5. Step back approximately 16 feet (5 meters) from the home location.
6. When you are prepared to fly, you have two options to start the motors:
 - **Move the rudder stick full left, then full right, then back to center.**
 - **Move both sticks into the bottom inside corners, then back to center.**
7. The props will begin to spin. The home position for GPS functions is set and your aircraft is ready to fly.

Lower the throttle stick and hold the bind button for 1 second to power off the props after flight.

CAUTION: When the home location is set (**step 6**), the 350 QX2 must be approximately 16 feet (5 meters) from where the pilot will stand during flight, pointing away from the pilot. If the aircraft is pointed in any other direction, the *SAFE Circle* feature will not function as expected and may result in personal injury or damage to property. Once the aircraft's motors are started, do not change your position.

Flying the 350 QX2

Takeoff

Increase the throttle slightly above low stick (10–15%). The 350 QX2 altitude in **Smart Mode** corresponds to the throttle position. Low throttle is on the ground, slightly raising the throttle will produce a low hover, and the higher the throttle position, the higher the 350 QX2 will ascend until it reaches its maximum altitude (approximately 45 meters).

Explore the flight envelope of the 350 QX2 in **Smart Mode** without fear of losing orientation. See the diagrams in the *Flight Modes Explained* section for more details on the aircraft's function in **Smart Mode**. In **Smart Mode**, the direction the aircraft is pointing does not affect the control, and the aircraft's response relative to you (*the pilot location*) does not change with orientation. **AP Mode** and **Stability Mode** operate more like a conventional RC helicopter or multicopter.

Landing

To land the 350 QX2 there are two options:

- Guide the aircraft to where you wish to land and reduce the throttle. Hold the bind button for 1 second after landing to disarm the motors.
- Activate the Return Home function to return the 350 QX2 to the assigned home location and land automatically.

CAUTION: Do not activate the **Return Home** function if the 350 QX2 is showing the low battery indication. *Manually land the aircraft immediately.*

Return Home

- When this feature is activated, the 350 QX2 will fly back to its assigned home location and land. After landing, the motors may take up to 5 seconds to disarm. If the motors take more than 20+ seconds to disarm, perform the Pressure Sensor Calibration.
- To restart the props after landing in **Return Home**, fully lower the throttle, then quickly move the rudder stick fully left and then fully right.

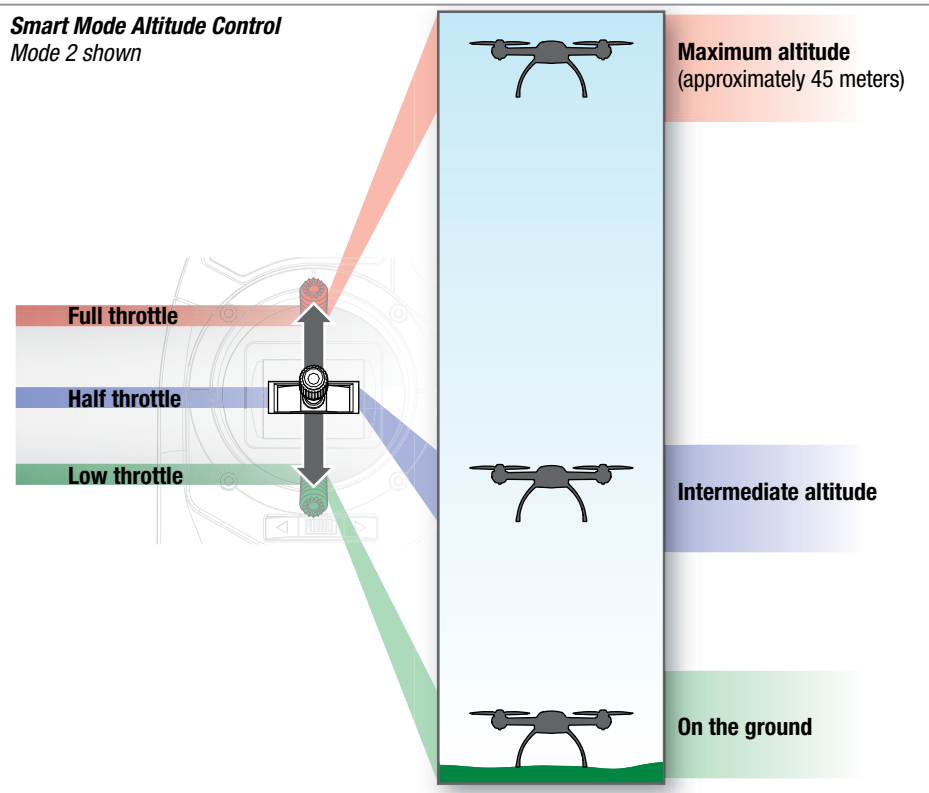
CAUTION: The 350 QX2 will not recognize the **SAFE Circle** feature when **Return Home** is used. Activating **Return Home** may cause the 350 QX2 to fly directly over the pilot if the aircraft was flown to a position behind where the pilot was standing when the home position was established.

After Your Flight

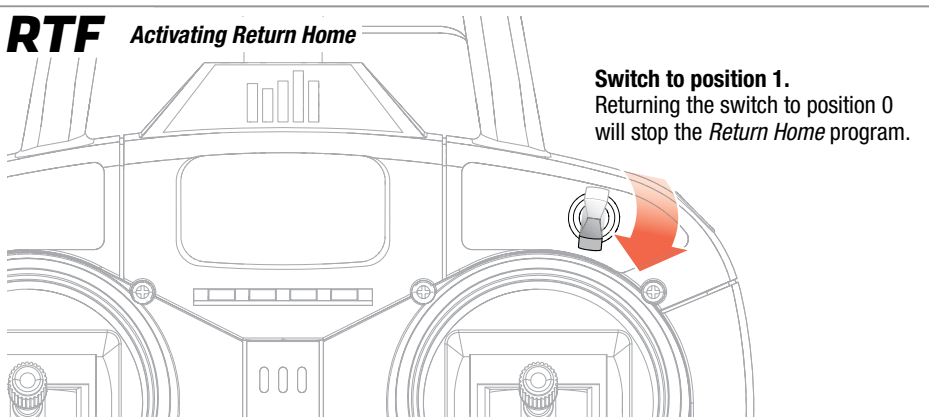
1. Turn off the power switch on the 350 QX2.
2. Turn off the power to your transmitter.
3. Unplug and remove the battery from the 350 QX2.

CAUTION: Always disconnect the Li-Po battery from the aircraft when not flying to avoid over-discharging the battery. Batteries discharged to a voltage below the lowest approved voltage may become damaged, resulting in loss of performance and potential fire when batteries are charged.

Smart Mode Altitude Control Mode 2 shown



RTF Activating Return Home



Switch to position 1. Returning the switch to position 0 will stop the *Return Home* program.

Location alert

The motors will beep under the following conditions:

- At any time the props stop spinning after they have been initialized.
- After 30 seconds of no throttle input (waiting armed on the ground).

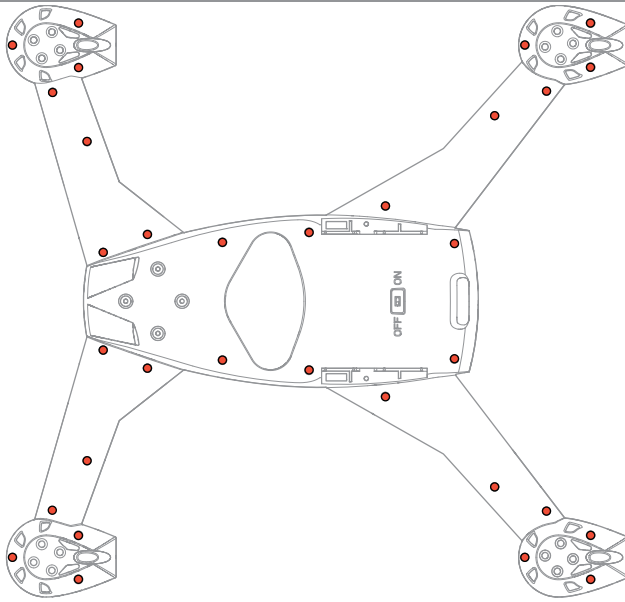
This will alert the pilot to the location of the aircraft if it lands in a location with low visibility.

Beeping will continue until the battery can no longer supply enough power to the motors.

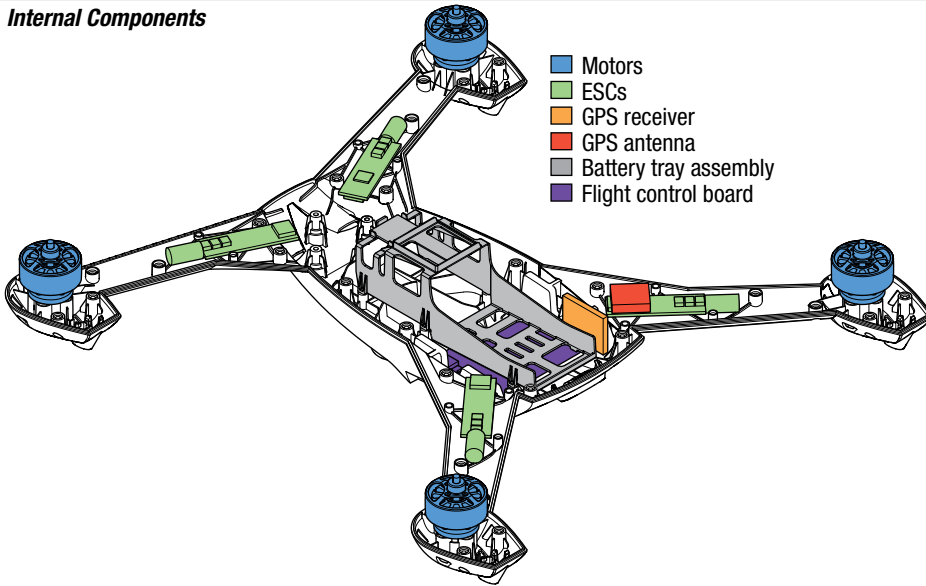
If the quadcopter crash lands and one or more motors are stopped by an impact, the quadcopter enters emergency mode. The LED will flash white and the motors will beep loudly.

Airframe Maintenance

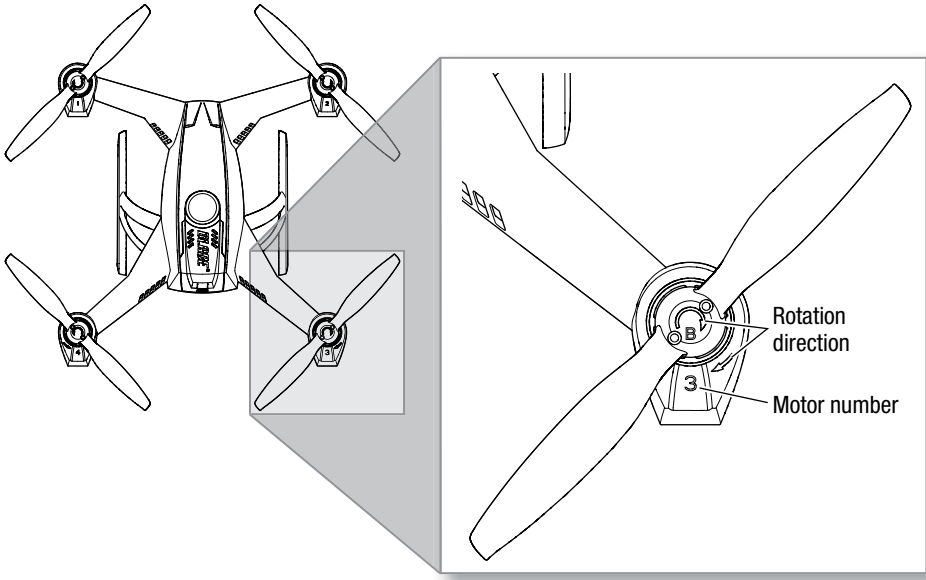
Body Screw Locations



Internal Components



Propeller Direction of Rotation Indicators



Replacing the body

Disassembly of the old airframe

1. Ensure the battery is disconnected from the quadcopter.
2. Remove the 2 machine screws from each propeller and remove the propellers.
3. Remove the 32 1.5mm hex screws from the bottom of the frame to separate the upper and lower body pieces.
4. Unplug the compass sensor from the flight control board. Remove the landing gear with compass sensor and place it in a safe area away from magnets.

NOTICE: Do not allow the compass sensor to get near a magnet. Any magnet, including those in the 350 QX2 motors, can damage the compass and cause it to work incorrectly. If the 350 QX2 is flown with a faulty compass, all GPS functions will be compromised.

5. Unplug the GPS receiver from the flight control board and remove the battery tray assembly.
6. If you are replacing the GPS components, remove the foil from the GPS receiver and unplug the GPS antenna from the GPS receiver.
7. Remove the flight control board from the airframe.
8. Remove the receiver.
9. Remove the motors and ESCs from the airframe.

Before installing the components into the new airframe, inspect all the components for any obvious damage or burnt smells. Check the motors for smooth bearings and inspect all the propellers for chips, burrs or cracks. Replace any parts in question.

Installing components in the new airframe

1. Install the motors and ESCs, making sure to match the wire colors on the connectors.
2. Install the receiver.
3. Install the flight control board.
4. Install the tray assembly.
5. Install the GPS receiver and GPS antenna and plug the cables into their corresponding sockets.
6. Assign the motors and ESCs according to the *ESC and Motor Assignment Procedure*.
7. Install the landing gear and connect the compass to the flight control board. If you replaced the compass or believe that it may have been impaired by a magnetic field, you will need to perform the compass calibration procedure.
8. Mount the top of the airframe.
9. Install the propellers, paying attention to the direction of rotation as indicated by the arrows molded in the frame and on the propellers for each motor.

Compass Calibration

The Flight Controller on the 350 QX2 has automatic magnetic declination calibration, so you will not have to worry about looking up the magnetic declination at your location and changing settings on your 350 QX2 to get accurate compass measurements. The status LED blinks orange if the compass senses a magnet or metal object nearby. A random orange flash of the LED is considered normal, and not cause for compass calibration. When the Status LED blinks a consistent pattern of orange, compass calibration should be performed using the procedure below.

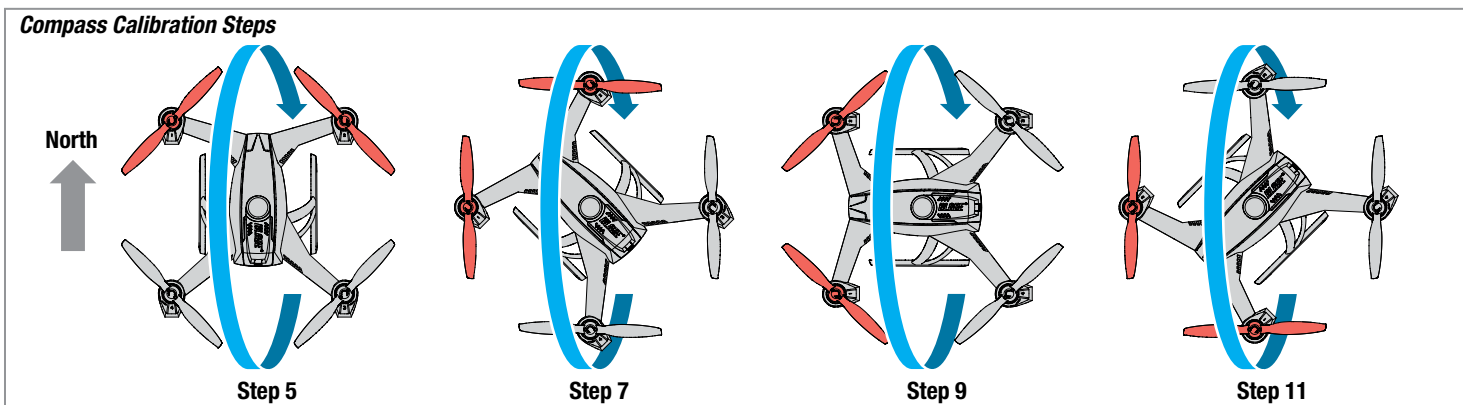
Compass calibration procedure:

1. Go to an open space outdoors away from metal. Take a conventional compass with you to ensure you know the direction of north.
2. Ensure your transmitter is off and then connect a flight battery to the 350 QX2. Power the aircraft on. Wait five seconds and then the blue LED will begin flashing rapidly, signaling the aircraft is initialized and ready to bind.
3. Once the blue light begins flashing, bind with yaw stick left. The 350 QX2 LED will slowly flash between red and green for 5 seconds.
4. Put the 350 QX2 flat in your hands and face north. After 5 seconds of slow flashing, the quad will start flashing rapidly. The quad is now collecting data to be used for the calibration.
5. Slowly rotate the quad 360 degrees about the east-west axis ("flip" the aircraft either forward or backward) until it is flat in your hands again.

6. Continue facing north and yaw the quad 45 degrees left so the quad is now facing north-west.
7. Slowly rotate the quad 360 degrees about the east-west axis, ("flip" the aircraft diagonally either direction) until it is flat in your hands again.
8. Continue facing north and yaw the quad 45 degrees left so the quad is now facing west.
9. Slowly rotate the quad 360 degrees about the east-west axis ("flip" the quad sideways either direction) until it is flat in your hands again.
10. Continue facing north and yaw the quad 45 degrees left so the quad is now facing south-west.
11. Slowly rotate the quad 360 degrees about the east-west axis ("flip" the aircraft diagonally either direction) until it is flat in your hands again.

You have 30 seconds to complete the procedure. The 350 QX2 should still be blinking rapidly when you finish. Hold the aircraft still until it stops blinking rapidly. If successful, the 350 QX2 will beep a positive confirmation and then restart itself. If unsuccessful, the 350 QX2 displays the failed calibration code, a solid white LED. If the 350 QX2 displays this error code, power off the aircraft and then begin the calibration procedure again.

Compass Calibration Steps



Pressure Sensor Calibration

The pressure sensor is calibrated at the factory on the 350 QX2. Recalibration should only be necessary if you replace the sensor.

1. Place the 350 QX2 in a cold area. Allow it to remain in the cold for 30 minutes or more.
2. Bring the 350 QX2 out of the cold and into a warm area. The greater the difference in temperature between the cold and warm areas, the more accurate the calibration will be.
3. Ensure your transmitter is off and then connect a flight battery to the 350 QX2 and power the aircraft on. Wait five seconds and then the blue LED will begin flashing rapidly, signaling the aircraft is initialized and ready to bind.

4. Once the blue light begins flashing, bind with yaw stick right. The 350 QX2 will blink red and blue rapidly. Leave the aircraft and transmitter powered on and allow the aircraft to warm up for 10 minutes. Do not move the aircraft during this time.

5. After 10 minutes the motors on the aircraft will beep to indicate the calibration is complete. Power off the aircraft and then your transmitter.

If the 350 QX2 displays the failed calibration code, power off the aircraft and then begin the pressure calibration procedure again.

Accelerometer Calibration

To calibrate the accelerometer, the quadcopter needs to fly for 20 seconds while being level. This allows the accelerometer readings to be averaged and stored in memory.

Use the following procedure to calibrate the accelerometer:

1. Power on the quadcopter with the transmitter off to enter bind mode.
2. Turn on the transmitter while holding the elevator stick back and pressing the bind switch.
3. Set the flight mode switch to AP Mode or Smart Mode. The quadcopter will fly in AP Mode no matter which position is selected.
4. Start the motors. Fly the quadcopter off the ground. The quadcopter LED will flash slowly (red, green, blue).
5. Activate the accelerometer calibration mode by changing the flight mode switch into Stability Mode. The vehicle will still fly in AP Mode. The LED will start flashing quickly (red, green, blue).

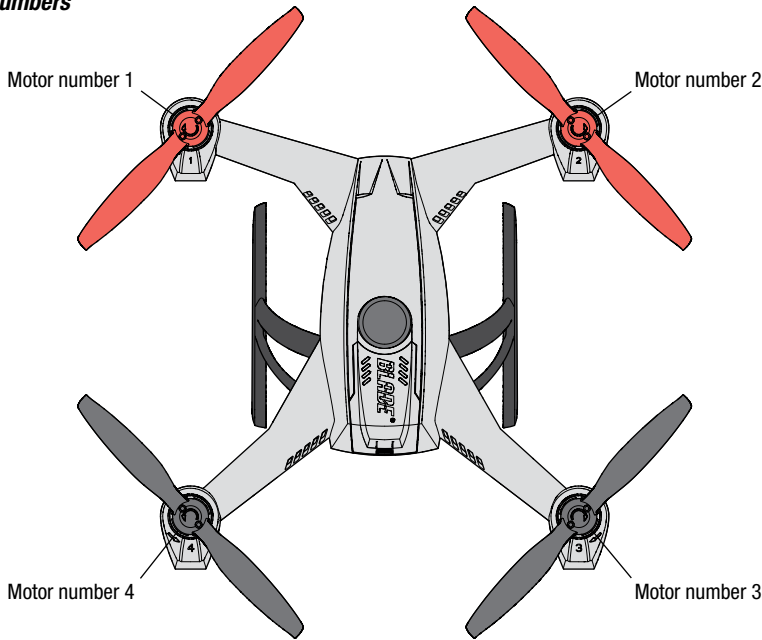
6. Fly steadily for 10–30 seconds. The LED will flash slowly when data collection is done.
7. Land the quadcopter and stop the propellers by lowering the throttle and holding the bind button for 1 second.

IMPORTANT: The calibrated values are not yet permanently stored. Do not turn off the quadcopter.

8. Start the motors and verify the quadcopter flies without drifting.
9. Land the quadcopter and stop the motors by lowering the throttle and holding the bind button for 1 second.
10. Save the calibration by moving the rudder stick quickly left, right, left, right. Values are saved when you hear a rapid triple tone twice.
11. Turn off the quadcopter.
12. Confirm the calibration by powering up the quadcopter and performing a test flight. If the calibration is not correct, start the calibration procedure again.

ESC and Motor Assignment Procedure

Motor Numbers



1. Begin with the transmitter off and connect a flight battery to the 350 QX2.
 2. Power on the quadcopter on a level surface and wait for the rapid blue flashing LED to indicate the aircraft has entered bind mode.
 3. With the throttle stick in the full throttle position, press/pull the bind button/switch and power on your transmitter. The quadcopter will acknowledge the assignment mode with a loud high, then low tone. If your transmitter is equipped with a high throttle warning at startup, it is necessary to disable this alarm prior to completing this step. After the replacement procedure is complete, re-activate the high throttle warning in your transmitter.
 4. The motor number and prop direction are molded in the top of the body. The motors will give an audible "beep" to indicate which motor to calibrate. When the motors beep 1 time, spin motor 1 by hand. The motor will respond with the same number of tones upon successful assignment.
 5. When the motors beep 2 times, spin motor 2 by hand.
 6. When the motors beep 3 times, spin motor 3 by hand.
 7. When the motors beep 4 times, spin motor 4 by hand.
- When the assignment is successful, the quadcopter enters emergency mode. Restart the quadcopter.

Troubleshooting

Problem	Possible Cause	Solution
350 QX2 will not initialize	The quadcopter was moved during initialization	Re-arm the aircraft, being cautious to avoid any movement during initialization
GPS will not lock	Heavy overcast	Wait for lighter cloud cover and re-lock or disable GPS
	Solar flares	Wait for disturbance to subside or disable GPS
	Aircraft is indoors	Disable GPS
	Objects blocking clear access to the sky (under a metal cover, inside a car, tall buildings, etc...)	Move aircraft to a clear area
	Video transmitter nearby	Re-position or remove video transmitter
	Camera is on	Turn the camera off, allow the GPS to acquire and then power the camera on.
GPS has reduced resolution	Raised threat level by the U.S. government	Wait for threat level to be reduced or disable GPS
	The GPS antenna coaxial cable is nicked, cut, or otherwise damaged	Replace the GPS antenna
GPS functions not operating properly	The compass has been exposed to a magnet	Move the aircraft away from the magnetic source. In worst case scenario, the compass may need to be replaced
	The GPS antenna coaxial cable is nicked, cut, or otherwise damaged	Replace the GPS antenna
	The aircraft is behaving erratically	Rebind the aircraft with the GPS function off
	Aggressive flight	Fly level for a few seconds before flipping into other modes
Motors will not start in Smart Mode	GPS signal is not acquired	Ensure a GPS signal is acquired
Blades take a long period of time to shut off after completing return to home	Pressure calibration is needed	Refer to the Pressure Sensor Calibration section of this manual
The quadcopter has trouble finding the home position and the props will not shut off after returning home	Accelerometer calibration is needed	Refer to the Accelerometer Calibration section of this manual

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US 7,391,320. Other patents pending.

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