U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

May 28, 2015

Exemption No. 11703
Regulatory Docket No. FAA–2015–0785

Mr. Christopher Ryan Welsh
167 Stits Hill Road
Pine Valley, NY 14872

Dear Mr. Welsh:

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption, including the date it ends.

By letter dated March 25, 2015, you petitioned the Federal Aviation Administration (FAA) for an exemption. The petitioner requested to operate an unmanned aircraft system (UAS) to conduct aerial videography and photography.

See Appendix A for the petition submitted to the FAA describing the proposed operations and the regulations that the petitioner seeks an exemption.

The FAA has determined that good cause exists for not publishing a summary of the petition in the Federal Register because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to the petitioner.

Airworthiness Certification

The UAS proposed by the petitioner are the Yuncee Q500 Typhoon and Blade 350 QX3.

In accordance with the statutory criteria provided in Section 333 of Public Law 112−95 in reference to 49 U.S.C. § 44704, and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of Section 333. Therefore, the FAA finds that relief from 14 CFR part 21, *Certification procedures for products and parts,*

Subpart H—Airworthiness Certificates, and any associated noise certification and testing requirements of part 36, is not necessary.

The Basis for Our Decision

You have requested to use a UAS for aerial data collection[1]. The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. In Grants of Exemption Nos. 11062 to Astraeus Aerial (*see* Docket No. FAA−2014−0352), 11109 to Clayco, Inc. (*see* Docket No. FAA−2014−0507), 11112 to VDOS Global, LLC (*see* Docket No. FAA−2014−0382), and 11213 to Aeryon Labs, Inc. (*see* Docket No. FAA−2014−0642), the FAA found that the enhanced safety achieved using an unmanned aircraft (UA) with the specifications described by the petitioner and carrying no passengers or crew, rather than a manned aircraft of significantly greater proportions, carrying crew in addition to flammable fuel, gives the FAA good cause to find that the UAS operation enabled by this exemption is in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They are similar in all material respects to relief previously requested in Grant of Exemption Nos. 11062, 11109, 11112, and 11213;
- The reasons stated by the FAA for granting Exemption Nos. 11062, 11109, 11112, and 11213 also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. 106(f), 40113, and 44701, delegated to me by the Administrator, Mr. Christopher Ryan Welsh is granted an exemption from 14 CFR §§ 61.23(a) and (c), 61.101(e)(4) and (5), 61.113(a), 61.315(a), 91.7(a), 91.119(c), 91.121, 91.151(a)(1), 91.405(a), 91.407(a)(1), 91.409(a)(1) and (2), and 91.417(a) and (b), to the extent necessary to allow the petitioner to operate a UAS to perform aerial data collection. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

In this grant of exemption, Mr. Christopher Ryan Welsh is hereafter referred to as the operator.

[1] Aerial data collection includes any remote sensing and measuring by an instrument(s) aboard the UA. Examples include imagery (photography, video, infrared, etc.), electronic measurement (precision surveying, RF analysis, etc.), chemical measurement (particulate measurement, etc.), or any other gathering of data by instruments aboard the UA.

Failure to comply with any of the conditions and limitations of this grant of exemption will be grounds for the immediate suspension or rescission of this exemption.

1. Operations authorized by this grant of exemption are limited to the Yuncee Q500 Typhoon and Blade 350 QX3 when weighing less than 55 pounds including payload. Proposed operations of any other aircraft will require a new petition or a petition to amend this exemption.

2. Operations for the purpose of closed-set motion picture and television filming are not permitted.

3. The UA may not be operated at a speed exceeding 87 knots (100 miles per hour). The exemption holder may use either groundspeed or calibrated airspeed to determine compliance with the 87 knot speed restriction. In no case will the UA be operated at airspeeds greater than the maximum UA operating airspeed recommended by the aircraft manufacturer.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL). Altitude must be reported in feet AGL.

5. The UA must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate or U.S. driver's license.

6. All operations must utilize a visual observer (VO). The UA must be operated within the visual line of sight (VLOS) of the PIC and VO at all times. The VO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The VO and PIC must be able to communicate verbally at all times; electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the VO can perform the duties required of the VO.

7. This exemption and all documents needed to operate the UAS and conduct its operations in accordance with the conditions and limitations stated in this grant of exemption, are hereinafter referred to as the operating documents. The operating documents must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations in this exemption and the procedures outlined in the operating documents, the conditions and limitations herein take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised

documents to the Administrator or any law enforcement official upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to this grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted this exemption, then the operator must petition for an amendment to its grant of exemption. The FAA's UAS Integration Office (AFS−80) may be contacted if questions arise regarding updates or revisions to the operating documents.

8. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g., replacement of a flight critical component, must undergo a functional test flight prior to conducting further operations under this exemption. Functional test flights may only be conducted by a PIC with a VO and must remain at least 500 feet from other people. The functional test flight must be conducted in such a manner so as to not pose an undue hazard to persons and property.

9. The operator is responsible for maintaining and inspecting the UAS to ensure that it is in a condition for safe operation.

10. Prior to each flight, the PIC must conduct a pre-flight inspection and determine the UAS is in a condition for safe flight. The pre-flight inspection must account for all potential discrepancies, e.g., inoperable components, items, or equipment. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight.

11. The operator must follow the UAS manufacturer's maintenance, overhaul, replacement, inspection, and life limit requirements for the aircraft and aircraft components.

12. Each UAS operated under this exemption must comply with all manufacturer safety bulletins.

13. Under this grant of exemption, a PIC must hold either an airline transport, commercial, private, recreational, or sport pilot certificate. The PIC must also hold a current FAA airman medical certificate or a valid U.S. driver's license issued by a state, the District of Columbia, Puerto Rico, a territory, a possession, or the Federal government. The PIC must also meet the flight review requirements specified in 14 CFR § 61.56 in an aircraft in which the PIC is rated on his or her pilot certificate.

14. The operator may not permit any PIC to operate unless the PIC demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours and currency must be logged in a manner consistent with

14 CFR § 61.51(b). Flights for the purposes of training the operator's PICs and VOs (training, proficiency, and experience-building) and determining the PIC's ability to safely operate the UAS in a manner consistent with how the UAS will be operated under this exemption are permitted under the terms of this exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 CFR § 91.119.

15. UAS operations may not be conducted during night, as defined in 14 CFR § 1.1. All operations must be conducted under visual meteorological conditions (VMC). Flights under special visual flight rules (SVFR) are not authorized.

16. The UA may not operate within 5 nautical miles of an airport reference point (ARP) as denoted in the current FAA Airport/Facility Directory (AFD) or for airports not denoted with an ARP, the center of the airport symbol as denoted on the current FAA-published aeronautical chart, unless a letter of agreement with that airport's management is obtained or otherwise permitted by a COA issued to the exemption holder. The letter of agreement with the airport management must be made available to the Administrator or any law enforcement official upon request.

17. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

18. If the UAS loses communications or loses its GPS signal, the UA must return to a pre-determined location within the private or controlled-access property.

19. The PIC must abort the flight in the event of unpredicted obstacles or emergencies.

20. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough available power for the UA to conduct the intended operation and to operate after that for at least five minutes or with the reserve power recommended by the manufacturer if greater.

21. Air Traffic Organization (ATO) Certificate of Waiver or Authorization (COA). All operations shall be conducted in accordance with an ATO-issued COA. The exemption holder may apply for a new or amended COA if it intends to conduct operations that cannot be conducted under the terms of the attached COA.

22. All aircraft operated in accordance with this exemption must be identified by serial number, registered in accordance with 14 CFR part 47, and have identification (N−Number) markings in accordance with 14 CFR part 45, Subpart C. Markings must be as large as practicable.

23. Documents used by the operator to ensure the safe operation and flight of the UAS and any documents required under 14 CFR §§ 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the aircraft is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

24. The UA must remain clear and give way to all manned aviation operations and activities at all times.

25. The UAS may not be operated by the PIC from any moving device or vehicle.

26. All Flight operations must be conducted at least 500 feet from all nonparticipating persons, vessels, vehicles, and structures unless:
    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately in a manner ensuring the safety of nonparticipating persons; and
    b. The owner/controller of any vessels, vehicles or structures has granted permission for operating closer to those objects and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard.

    The PIC, VO, operator trainees or essential persons are not considered nonparticipating persons under this exemption.

27. All operations shall be conducted over private or controlled-access property with permission from the property owner/controller or authorized representative. Permission from property owner/controller or authorized representative will be obtained for each flight to be conducted.

28. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS−80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

If this exemption permits operations for the purpose of closed-set motion picture and television filming and production, the following additional conditions and limitations apply.

29. The operator must have a motion picture and television operations manual (MPTOM) as documented in this grant of exemption.

30. At least 3 days before aerial filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local Flight Standards District Office (FSDO) with jurisdiction over the area of proposed filming. The 3-day notification may be waived with the concurrence of the FSDO. The plan of activities must include at least the following:
    a. Dates and times for all flights;
    b. Name and phone number of the operator for the UAS aerial filming conducted under this grant of exemption;
    c. Name and phone number of the person responsible for the on-scene operation of the UAS;
    d. Make, model, and serial or N−Number of UAS to be used;
    e. Name and certificate number of UAS PICs involved in the aerial filming;
    f. A statement that the operator has obtained permission from property owners and/or local officials to conduct the filming production event; the list of those who gave permission must be made available to the inspector upon request;
    g. Signature of exemption holder or representative; and
    h. A description of the flight activity, including maps or diagrams of any area, city, town, county, and/or state over which filming will be conducted and the altitudes essential to accomplish the operation.

31. Flight operations may be conducted closer than 500 feet from participating persons consenting to be involved and necessary for the filming production, as specified in the exemption holder's MPTOM.

Unless otherwise specified in this grant of exemption, the UAS, the UAS PIC, and the UAS operations must comply with all applicable parts of 14 CFR including, but not limited to, parts 45, 47, 61, and 91.

This exemption terminates on June 30, 2017, unless sooner superseded or rescinded.

Sincerely,

/s/
John S. Duncan
Director, Flight Standards Service

Enclosures

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC

Regulatory Docket No. _____

IN THE MATTER OF THE PETITION FOR EXEMPTION OF:
Christopher Ryan Welsh
FOR AN EXEMPTION SEEKING RELIEF FROM THE REQUIREMENTS OF TITLE 14 OF THE CODE OF FEDERAL REGULATIONS SECTIONS 61.113(a) & (b), 91.7(a), 91.121, 91.151(a), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), AND 91.417(a) & (b) CONCERNING COMMERCIAL OPERATION OF YUNEEC Q500 TYPHOON AND BLADE 530 QX3 UNMANNED AIRCRAFT SYSTEMS
PURSUANT TO SECTION 333 OF
THE FAA MODERNIZATION AND REFORM ACT OF 2012
(PUBLIC LAW 112-95)

Submitted on March 25, 2015

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GLOSSARY OF ABBREVIATIONS

AGL	Above Ground Level
AOI	Area of Interest
ATC	Air Traffic Control
ATO	Air Traffic Organization
AV	Aerial Vehicle
CFR	Code of Federal Regulations
COA	Certificate of Authorization
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
GCS	Ground Control Station
GPS	Global Positioning System
LOL	Loss of Link
NAS	National Airspace System
NOTAM	Notice to Airman
PIC	Pilot In Command
Section 333	FAA Modernization and Reform Act of 2012 (FMRA) Section 333
SO	Safety Observer
SOP	Standard Operating Procedures
UA	Unmanned Aircraft
UAS	Unmanned Aircraft System
VFR	Visual Flight Rules
VLOS	Visual Line of Site
VMC	Visual Meteorological Conditions
VTOL	Vertical Takeoff and Landing

SUMMARY

Christopher Ryan Welsh seeks exemption from the requirements of 14 C.F.R §§ 61.113(a) & (b), 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b), to operate an Unmanned Aircraft System pursuant to Section 333 of the FAA Modernization and Reform Act of 2012 (FMRA). This exemption will permit Christopher Ryan Welsh to operate an Unmanned Aircraft System (UAS) for the commercial purpose of conducting aerial video and photography within the National Airspace System (NAS).

INTRODUCTION AND INTERESTS OF THE PETITIONER

Christopher Ryan is an ATP rated, current pilot, with over 6500 hours of flight experience and holds a First Class Medical Certificate. Additionally, Christopher Ryan Welsh is an FAA certificated A&P mechanic. He has over 25 years recreational/hobby experience in all aspects of radio controlled model airplanes, helicopters, trucks and aerial video/photography. The objective of Christopher Ryan Welsh aerial video and photography operations is to provide high quality imaging for a variety of commercial, public, and residential uses, specifically targeting, but not limited to:

- Construction sites before and after
- Appraisals
- Real-estate marketing
- Weddings and Special Events
- Aerial acquisitions used for inspections of public and private structures.
- Search and Rescue operations
- Marine/Maritime inspections and photography

BACKGROUND

Unmanned Aircraft Systems: YUNCEE Q500 TYPHOON, BLADE 350 QX3, UASs

Christopher Ryan Welsh seeks an exemption to operate YUNCEE Q500 Typhoon and Blade 350 QX3 systems for compensation or hire within the NAS. The YUNCEE Q500 Typhoon and Blade 350 QX3 are vertical takeoff and landing (VTOL) Unmanned Aircraft (UA) with a Ground Control Station (GCS) utilizing integrated touchscreen control, electronic tablet or smart phone systems. The YUNCEE Q500 Typhoon has a maximum gross weight of approximately 60.0 ounces, while having a length of 16.5 inches width of 16.5 inches (without rotor blades), height of 8.3 inches, and a maximum speed of approximately 25 knots. The Blade 350 QX3 has a maximum gross weight of approximately 33.7 ounces, a length of 18.3 inches, width of 22.8 inches, height of 10.5 inches, and a maximum speed of approximately 25 knots. The YUNCEE Q500 Typhoon and Blade 350 QX3 UAs are equipped with four main rotors; driven by 3 cell Lithium Polymer battery powered electric motors.

The YUNCEE Q500 Typhoon and Blade 350Q X3 UAs that will be operated by Christopher Ryan Welsh will be registered in accordance with 49 U.S.C. 44103, *Registration of Aircraft*, as well as 14 C.F.R Part 47, *Aircraft Registration*, and marked in accordance with 14 C.F.R. Part 45, *Identification and Registration Marking*.

BASIS FOR PETITION

Petitioner, Christopher Ryan Welsh, pursuant to the provisions of the Federal Aviation Regulations (14 C.F.R. § 11.61) and the FAA Modernization and Reform Act of 2012 (FMRA), Section 333, *Special Rules for Certain Unmanned Aircraft Systems*, hereby petitions the Administrator to commercially operate the YUNCEE Q500 Typhoon and

Blade 350 QX3 UASs in the National Airspace System (NAS), and for an exemption from the requirements of 14 C.F.R §§ 61.113(a) & (b), 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b).

In consideration of the speed, weight, size, and limited operating area associated with the unmanned aircraft and its operation, Christopher Ryan Welsh operation of YUNCEE Q500 Typhoon and Blade 350 QX3 UASs meets the conditions of FMRA Section 333 and therefore, will not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H.

Accordingly, Christopher Ryan Welsh requests relief from Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b), as these sections set forth requirements for maintenance that only apply to aircraft with an airworthiness certificate.

Christopher Ryan Welsh submits that the requested relief is proper since an equivalent level of safety will be ensured. Christopher Ryan Welsh will use his experience as an FAA certificated A&P Mechanic and lifetime hobby of operating model aircraft to perform maintenance, alterations, and/or preventive maintenance on the UASs using the methods, techniques, and practices prescribed in the operating documents (i.e., Aircraft Maintenance Log, YUNCEE Q500 Typhoon and Blade 350 QX3 Instruction Manuals). Furthermore, Christopher Ryan Welsh will document and maintain all maintenance records for the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs.

Relief from certain requirements of Section 61.113(a) and (b), entitled *Private pilot privileges and limitations: Pilot in command,* is requested by Christopher Ryan Welsh to the extent necessary to allow the proposed UAS flight operations to be conducted by a Pilot in Command (PIC) holding a private pilot or higher level certificate, as well as an

airman medical certificate, and who has demonstrated, by meeting minimum flight- hour and currency requirements, that the PIC is able to safely operate the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs in a manner consistent with this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from people, vessels, vehicles and structures.

Christopher Ryan Welsh seeks relief from Section 91.7(a), entitled *Civil aircraft airworthiness*, because the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs do not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H. As such, Christopher Ryan Welsh submits that he will ensure that the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs are in an airworthy condition, prior to every flight, by determining that the UASs are in compliance with the operating documents (i.e., Aircraft Maintenance Log, YUNCEE Q500 Typhoon and Blade 350 QX3 Instruction Manuals), and that the aircraft are in a condition for safe flight.

Christopher Ryan Welsh also seeks an exemption from the requirements of Section 91.121, entitled *Altimeter Settings*, as the YUNCEE Q500 Typhoon and Blade 350 QX3 UAs will not have a typical barometric altimeter onboard. However, altitude information of the YUNCEE Q500 Typhoon and Blade 350 QX3 UAs will be provided to the PIC via Global Positioning System (GPS) equipment and radio communications telemetry data link, which downlinks from the UA to the GCS for active monitoring of the flight path. The maximum altitude of the YUNCEE Q500 Typhoon and Blade 350 QX3 are factory limited to 400 feet AGL by onboard software. This altitude information, combined with Christopher Ryan Welsh's operation of the YUNCEE Q500 Typhoon and Blade 350 QX3

UASs within visual line of sight, at or below 400 feet AGL, will ensure a level of safety equivalent to Section 91.121.

Additionally, Christopher Ryan Welsh seeks an exemption from the requirements of Section 91.151(a), entitled *Fuel requirements for flight in VFR conditions*. Christopher Ryan Welsh submits that safety will not be affected by operation of the YUNCEE Q500 Typhoon and Blade 350 QX3 UAs during daylight hours in visual meteorological conditions (VMC) under visual flight rules (VFR), with enough battery power to fly for a total duration of 15 minutes to the first point of intended landing and, assuming a normal cruising speed, to fly after that for at least 5 minutes (i.e. 20 percent battery power remaining).

In accordance with 14 C.F.R. § 11.81, Christopher Ryan Welsh provides the following information in support of its petition for exemption:

A. Name And Address Of The Petitioner.

The name and address of the Petitioner and point of contact is:

Christopher Ryan Welsh
167 Stits Hill Road
Pine Valley, NY 14872
(607) 377-4898 Cell
(607) 796-9704 Home
Email:christopherw300@gmail.com

B. The Specific Sections Of 14 C.F.R. From Which Christopher Ryan Welsh Seeks Exemption.

1. Christopher Ryan Welsh Seeks Exemption From The Requirements Of Section 61.113(a) And (b).

Section 61.113, entitled Private pilot privileges and limitations: *Pilot in command*, subsections (a) and (b) prescribe the following, in relevant part:

(a) No person who holds a private pilot certificate may act as a pilot in command (PIC) of an aircraft that is carrying passengers or property for compensation or hire; nor may that person, for compensation or hire, act as PIC of an aircraft.

(b) A private pilot may, for compensation or hire, act as PIC of an aircraft in connection with any business or employment if—

(1) The flight is only incidental to that business or employment; and

(2) The aircraft does not carry passengers or property for compensation or hire.

2. Christopher Ryan Welsh Seeks Exemption From The Requirements Of Section 91.7(a).

Section 91.7, entitled *Civil aircraft airworthiness*, subsection (a), states the following:

(a) No person may operate a civil aircraft unless it is in an airworthy condition.

3. Christopher Ryan Welsh Seeks Exemption From The Requirements Of Section 91.121.

Section 91.121, entitled Altimeter settings, subsection (a), states the following, in part:

(a) Each person operating an aircraft shall maintain the cruising altitude or flight level of that aircraft, as the case may be, by reference to an altimeter that is set, when operating--

(1) Below 18,000 feet MSL, to--

(i) The current reported altimeter setting of a station along the route and within 100 nautical miles of the aircraft;

(ii) If there is no station within the area prescribed in paragraph (a)(1)(i) of this section, the current reported altimeter setting of an appropriate available station; or

(iii) In the case of an aircraft not equipped with a radio, the elevation of the departure airport or an appropriate altimeter setting available before departure.

4. Christopher Ryan Welsh Seeks Exemption From The Requirements Of Section 91.151(b).

Section 91.151, entitled *Fuel requirements for flight in VFR conditions*, subsection (b), states the following:

(b) No person may begin a flight in a rotorcraft under VFR conditions unless (considering wind and forecast weather conditions) there is enough fuel to fly to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 20 minutes.

5. Christopher Ryan Welsh Seeks Exemption From The Requirement Of Section 91.405(a).

Section 91.405, entitled *Maintenance required*, subsection (a), states the following:

Each owner or operator of an aircraft—

(a) Shall have that aircraft inspected as prescribed in subpart E of this part and shall between required inspections, except as provided in paragraph (c) of this section, have discrepancies repaired as prescribed in part 43 of this chapter[.]

6. Christopher Ryan Welsh Seeks Exemption From The Requirements Of Section 91.407(a)(1)

Section 91.407, entitled *Operation after maintenance, preventive maintenance, rebuilding, or alteration*, subsection (a)(1), states the following:

(a) No person may operate any aircraft that has undergone maintenance, preventive maintenance, rebuilding, or alteration unless--

(1) It has been approved for return to service by a person authorized under § 43.7 of this chapter[.]

7. Christopher Ryan Welsh Seeks Exemption From The Requirements Of Sections 91.409(a)(1) And 91.409(a)(2).

Section 91.409, entitled *Inspections*, subsection (a), states the following:

(a) Except as provided in paragraph (c) of this section, no person may operate an aircraft unless, within the preceding 12 calendar months, it has had --

(1) An annual inspection in accordance with part 43 of this chapter and has been approved for return to service by a person authorized by § 43.7 of this chapter; or

(2) An inspection for the issuance of an airworthiness certificate in accordance with part 21 of this chapter.

8. Christopher Ryan Welsh Seeks Exemption From The Requirements Of Sections 91.417(a) And 91.417(b).

Section 91.417, entitled *Maintenance records*, subsections (a) and (b), state the

following:

(a) Except for work performed in accordance with §§ 91.411 and 91.413, each registered owner or operator shall keep the following records for the periods specified in paragraph (b) of this section:

(1) Records of the maintenance, preventive maintenance, and alteration and records of the 100-hour, annual, progressive, and other required or approved inspections, as appropriate, for each aircraft (including the airframe) and each engine, propeller, rotor, and appliance of an aircraft. The records must include--

(i) A description (or reference to data acceptable to the Administrator) of the work performed; and

(ii) The date of completion of the work performed; and

(iii) The signature, and certificate number of the person approving the aircraft for return to service.

(2) Records containing the following information:

(i) The total time in service of the airframe, each engine, each propeller, and each rotor.

(ii) The current status of life-limited parts of each airframe, engine, propeller, rotor, and appliance.

(iii) The time since last overhaul of all items installed on the aircraft which are required to be overhauled on a specified time basis.

(iv) The current inspection status of the aircraft, including the time since the last inspection required by the inspection program under which the aircraft and its appliances are maintained.

(v) The current status of applicable airworthiness directives (AD) and safety directives including, for each, the method of compliance, the AD or safety directive number and revision date. If the AD or safety directive involves recurring action, the time and date when the next action is required.

(vi) Copies of the forms prescribed by § 43.9(d) of this chapter for each major alteration to the airframe and currently installed engines, rotors, propellers, and appliances.

(b) The owner or operator shall retain the following records for the periods prescribed:

(1) The records specified in paragraph (a)(1) of this section shall be retained until the work is repeated or superseded by other work or for 1 year after the work is performed.

(2) The records specified in paragraph (a)(2) of this section shall be retained and transferred with the aircraft at the time the aircraft is sold.

(3) A list of defects furnished to a registered owner or operator under § 43.11 of this chapter shall be retained until the defects are repaired and the aircraft is approved for return to service.

C. The Extent Of Relief Christopher Ryan Welsh Seeks And The Reason Christopher Ryan Welsh Berry Seeks The Relief.

1. Extent Of Relief Christopher Ryan Welsh Seeks And The Reason Christopher Ryan Welsh Seeks Relief From Section 61.113(a) And (b).

Relief from Section 61.113(a) and (b) entitled *Private pilot privileges and limitations: Pilot in command*, is requested to the extent necessary to allow a PIC holding a private pilot or higher level certificate, as well as a current and valid airman medical certificate, and who has met certain flight-hour and currency requirements, to conduct the proposed UAS flight operations for compensation or hire.

This relief is requested since the limitations set forth in Section 61.113(a) and (b) state that a private pilot may, for compensation or hire, act as PIC of an aircraft in connection with any business or employment if: (1) The flight is only incidental to that

business or employment; and (2) The aircraft does not carry passengers or property for compensation or hire.

As set forth more fully below, Christopher Ryan Welsh submits that an equivalent level of safety will be maintained because no PIC will be allowed to operate the YUNCEE Q500 Typhoon or Blade 350Q X3 UAS unless that PIC has met certain flight-hour and currency requirements, demonstrating that the PIC is able to safely operate either the YUNCEE Q500 Typhoon or Blade 350Q X3 UAS in a manner consistent with the operations specifications as described in this exemption, including evasive and emergency maneuvers, as well as maintaining appropriate distances from people, vessels, vehicles and structures.

2. Extent Of Relief Christopher Ryan Welsh Seeks And The Reason Christopher Ryan Welsh Seeks Relief From Section 91.7(a).

Relief from Section 91.7(a) entitled *Civil aircraft airworthiness*, is requested to the extent required to allow Christopher Ryan Welsh to determine that the YUNCEE Q500 Typhoon and Blade 350Q X3 UASs are in airworthy condition prior to every flight by ensuring that the UAS is in compliance with the operating documents (i.e., Aircraft Maintenance Log, YUNCEE Q500 Typhoon and Blade 350 QX3 Instruction Manuals).

Christopher Ryan Welsh seeks the requested relief because the YUNCEE Q500 Typhoon and Blade 350Q X3 UASs do not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H. Therefore, Christopher Ryan Welsh will ensure that the YUNCEE Q500 Typhoon and Blade 350Q X3 UASs are in airworthy condition based upon its compliance with the operating documents (i.e., Aircraft Maintenance Log, YUNCEE Q500 Typhoon and Blade 350 QX3 Instruction Manuals)

prior to every flight, and further, determine that the aircraft are in condition for safe flight, as stated in the conditions and limitations below.

3. Extent Of Relief Christopher Ryan Welsh Seeks And The Reason Christopher Ryan Welsh Seeks Relief From Section 91.121.

Relief from Section 91.121, entitled Altimeter settings, may be required to allow flight operations of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs, which utilize a barometric pressure sensor, GPS equipment, and a radio communications telemetry data link to downlink altitude information from the UA to the PIC at the ground control station (GCS). Since the FAA requires that any altitude information concerning UAS operations be reported to air traffic control (ATC) in feet above ground level (AGL), Christopher Ryan Welsh seeks the requested relief because the YUNCEE Q500 Typhoon and Blade 350 QX3 UA's altimeter may be set on the ground to zero feet AGL, rather than the local barometric pressure or field altitude, before each flight.

Considering the limited altitude of the proposed operations, relief from 14 CFR 91.121 is sought to the extent necessary to comply with the applicable conditions and limitations stated below. As more fully set forth herein, an equivalent level of safety will be maintained since the YUNCEE Q500 Typhoon and Blade 350 QX3 UAs are equipped with a barometric pressure sensor and GPS equipment, which automatically ensures that a ground level pressure setting will be established prior to each flight, and provides the PIC with altitude information of the UA on the touchscreen of the GCS or is limited by onboard software.

4. Extent Of Relief Christopher Ryan Welsh Seeks And The Reason Christopher Ryan Welsh Seeks Relief From Section 91.151(b).

Relief from Section 91.151(b) entitled Fuel requirements for flight in VFR conditions, is requested to the extent required to allow flights of the battery powered

YUNCEE Q500 Typhoon and Blade 350 QX3 UAs during daylight hours in visual meteorological conditions (VMC), under visual flight rules (VFR), for a total duration of 15 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 5 minutes. Christopher Ryan Welsh seeks the requested relief because without an exemption from Section 91.151(b), the flight time duration of the battery powered YUNCEE Q500 Typhoon and Blade 350 QX3 UAs will severely constrain the practicality of any aerial video or still photo flight operations Christopher Ryan Welsh proposes to conduct pursuant to this Petition.

Significantly, as set forth below, the technical specifications of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs, the YUNCEE Q500 Typhoon and Blade 350 QX3 operating documents, and Christopher Ryan Welsh's proposed operating limitations, ensure that Christopher Ryan Welsh will safely operate the battery powered YUNCEE Q500 Typhoon and Blade 350 QX3 UAs during daylight hours in visual meteorological conditions (VMC), under visual flight rules (VFR), with enough battery power to fly for a total duration of 15 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 5 minutes.

5. Extent Of Relief Christopher Ryan Welsh Seeks And The Reason Christopher Ryan Welsh Seeks Relief From Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), And 91.417(a) & (b).

Since Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) only apply to aircraft with an airworthiness certificate, Christopher Ryan Welsh requests relief from these Sections because the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs do not require airworthiness certificates. As set forth more fully below, the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs meet the conditions of FMRA Section 333 for operation without an airworthiness certificate. Accordingly, Christopher

Ryan Welsh will use his experience as an FAA certificated A&P Mechanic and lifetime hobby of operating model aircraft to perform maintenance, alterations, or preventive maintenance on the UASs using the methods, techniques, and practices prescribed in the UAS operating documents (i.e Aircraft Maintenance Log, YUNCEE Q500 Typhoon and Blade 350 QX3 Instruction Manuals). Furthermore, Christopher Ryan Welsh will document and maintain all maintenance records for the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs.

D. The Reasons Why Granting Christopher Ryan Welsh Request Would Be In The Public Interest; That Is, How It Would Benefit The Public As A Whole.

Granting the present Petition will further the public interest by allowing Christopher Ryan Welsh to safely, efficiently, and economically perform aerial video and photography within the National Airspace System.

Additionally, use of YUNCEE Q500 Typhoon and Blade 350 QX3 UASs will decrease congestion of the NAS, reduce pollution through use of electric propulsion, and provide significant benefits to the economy. Notably, the benefits of Christopher Ryan Welsh's proposed operation of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs will be realized without implicating any privacy issues.

1. The Public Will Benefit From Decreased Congestion Of The NAS.

The YUNCEE Q500 Typhoon and Blade 350 QX3 UAs are battery powered and serve as a safe, efficient, and economical alternative to the manned aircraft traditionally utilized to obtain aerial imagery. By reducing the amount of manned aircraft needed to perform aerial acquisitions, an exemption allowing the use of a YUNCEE Q500 Typhoon and Blade 350 QX3 UAS would reduce the amount of manned aircraft in the NAS, reduce

noise and air pollution, as well as increase the safety of life and property in the air and on the ground.

Furthermore, by reducing the number of manned aircraft operating in the NAS, congestion around airports caused by arriving and departing aircraft will be reduced. The YUNCEE Q500 Typhoon and Blade 350 QX3 UAs do not require an airport to takeoff or land. Likewise, a reduction of manned aircraft conducting aerial video and photography missions would result in fewer aircraft that must be handled by air traffic control during the ground, takeoff, departure, arrival, and landing phases of flight operations.

2. The Public Will Benefit From The Safety And Efficiency Of The YUNCEE Q500 Typhoon and Blade 350 QX3 UASs.

Conducting aerial acquisitions with the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs, instead of manned aircraft, will greatly benefit the public by drastically reducing the levels of air and noise pollution generated during traditional aerial video and still photography flight operations. By using battery power and electric motors, the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs produce no air pollution, and is the most viable environmentally conscious alternative to the cabin class, six cylinder internal combustion engine aircraft that are typically utilized for aerial video and photography, while burning approximately 20-30 gallons per hour of leaded aviation fuel. The YUNCEE Q500 Typhoon and Blade 350 QX3 UAs, while reducing the carbon footprint of aerial acquisitions, also eliminates noise pollution, as the UAs are propelled by battery powered electric motors, rather than an internal combustion engine.

By using the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs to perform aerial video and photo acquisitions, the substantial risk to life and property in the air and on the ground, which is usually associated with traditional manned aircraft flight operations, will

be substantially reduced or completely eliminated. Aside from the lack of flight crew members located onboard the aircraft, the YUNCEE Q500 Typhoon and Blade 350 QX3 UAs (weighing approximately 60 ounces and 34 ounces respectively, at their maximum gross weights with lengths of 16.5 inches and 18.3 inches respectively, widths of 16.5 inches and 22.8 inches respectively, and with no fuel on board), has less physical potential for collateral damage to life and property on the ground, and in the air, compared to the manned aircraft that typically conduct similar operations (weighing approximately 6,000 pounds with a wingspan of approximately 42 feet, a length of 34 feet, and a fuel capacity of 180 gallons).

3. Performing Aerial Video and Photography Operations With The YUNCEE Q500 Typhoon and Blade 350 QX3 UASs Will Benefit The Economy.

In addition to being safe and efficient, the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs are also an economical alternative to using manned aircraft to conduct similar aerial operations. As such, operation of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs will allow United States based companies or individuals, like Christopher Ryan Welsh, to remain competitive and contribute to growth of the U.S. economy. Specifically, with the rising cost of aviation fuel and the Environmental Protection Agency ("EPA") regulatory actions phasing out leaded aviation fuels, U.S. owned and operated companies must adopt new and alternative technology in order to remain competitive. Operating the battery powered YUNCEE Q500 Typhoon and Blade 350 QX3 UASs is one such technology that not only allows companies or individuals greater operational flexibility compared to manned aircraft, but provides such flexibility without the high operational cost of a traditional manned aircraft.

By operating the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs, companies or individuals such as Christopher Ryan Welsh, can remain competitive and profitable, and therefore, provide greater job stability to employees and contractors, which will ultimately contribute to growth of the U.S. economy. Improved financial performance of U.S. companies, through commercial use of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs, provides a stable workforce that increases consumer spending; improves local, state, and federal tax revenues; and allows companies to invest in research and development in order to remain competitive both in the United States and abroad.

4. There Are No Privacy Issues.

Similar to the manned aerial acquisition flight operations that have been conducted for decades, Christopher Ryan Welsh's proposed operation of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs will not implicate any privacy issues. Specifically, the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs will be operated only in compliance with operating documents including the YUNCEE Q500 Typhoon instruction manual, Blade 350 QX3 Instruction Manuals, Limitations imposed by the Grant of Exemption and in accordance with the Federal Aviation Regulations, including the minimum altitude requirements of 14 C.F.R. § 91.119 (sections as applicable).

E. The Reasons Why Granting The Exemption Would Not Adversely Affect Safety, Or How The Exemption Would Provide A Level Of Safety At Least Equal To That Provided By The Rule From Which Christopher Ryan Welsh Seeks Exemption.

1. Reasons Why The YUNCEE Q500 Typhoon and Blade 350 QX3 UAs Meet The Conditions Of The FAA Modernization and Reform Act of 2012 (FMRA) Section 333.

In consideration of the size, weight, speed, and limited operating area associated with the unmanned aircraft and its operation, Christopher Ryan Welsh's operation of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs meet the conditions of FMRA

Section 333, and will not require an airworthiness certificate in accordance with 14 C.F.R. Part 21, Subpart H.

Section 333 provides authority for a UAS to operate without airworthiness certification and sets forth requirements for considering whether a UAS will create a hazard to users of the NAS or the public, or otherwise pose a threat to national security. Specifically, FMRA Section 333 states the following, in part:

> *(a) In General.--Notwithstanding any other requirement of this subtitle, and not later than 180 days after the date of enactment of this Act, the Secretary of Transportation shall determine if certain unmanned aircraft systems may operate safely in the national airspace system before completion of the plan and rulemaking required by section 332 of this Act or the guidance required by section 334 of this Act.*
>
> *(b) Assessment of Unmanned Aircraft Systems.--In making the determination under subsection (a), the Secretary shall determine, at a minimum--*
>
> > *(1) which types of unmanned aircraft systems, if any, as a result of their size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight do not create a hazard to users of the national airspace system or the public or pose a threat to national security; and*
> >
> > *(2) whether a certificate of waiver, certificate of authorization, or airworthiness certification under section 44704 of title 49, United States Code, is required for the operation of unmanned aircraft systems identified under paragraph (1).*
>
> *(c) Requirements for Safe Operation.--If the Secretary determines under this section that certain unmanned aircraft systems may operate safely in the national airspace system, the Secretary shall establish requirements for the safe operation of such aircraft systems in the national airspace system.*

In seeking this exemption, Christopher Ryan Welsh submits that YUNCEE Q500 Typhoon and Blade 350 QX3 UASs can operate safely in the NAS pursuant to FMRA Section 333, as demonstrated by: (a) the characteristics of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs; (b) the pilot certification requirement; and (c) the specific operating limitations.

a. The Specifications Of The YUNCEE Q500 Typhoon and Blade 350 QX3 UASs Demonstrate Its Safe Characteristics.

The YUNCEE Q500 Typhoon and Blade 350 QX3 UASs do not create a hazard to users of the NAS or the public, or otherwise pose a threat to national security considering its size, weight, speed, and operational capability.

i. Technical Specifications Of The YUNCEE Q500 Typhoon and Blade 350 QX3 UASs.

The technical specifications of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs are set forth by the YUNCEE Q500 Typhoon and Blade 350 QX3 Specifications and Data Sheet, attached hereto as Exhibit A and B.

ii. The YUNCEE Q500 Typhoon and Blade 350 QX3 UASs Autonomous Flight And Navigation Modes Enable The UASs To Remain Within A Defined Operational Area.

The YUNCEE Q500 Typhoon and Blade 350 QX3 UASs may be operated in both manual and autonomous flight modes. A complete description of the flight and navigational modes of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs is provided at pages 12-17 of the YUNCEE Q500 Typhoon and pages 9-12 of the Blade 350 QX3 Instruction Manuals, attached hereto as Exhibit C and D.

iii. The YUNCEE Q500 Typhoon and Blade 350 QX3 UASs Are Designed For Automatic Return To Home Point Or Hover In The Event Of Loss Of The Control Link Or Navigation.

When the Control Link is lost, the YUNCEE Q500 Typhoon and Blade 350 QX3 UAs will remain stable in flight and initiate a controlled return flight to the point of original departure. This is known as the "Return to Home" feature. Upon arrival at the "Home Point" the UA(s) will begin a controlled descent and landing. Additional protections are integrated into this safety feature to help mitigate any potential contingencies that may happen during this automated flight. Furthermore, the "Return to

Home" safety feature may be activated at any time the PIC becomes disoriented or loses visual contact with the UA. This serves as an additional feature to assure safe and controlled operation of the UA at all times.

A complete description of the "Return to Home" Functions of the YUNCEE Q500 Typhoon UAS are set forth at pages 16-17 and for the Blade 350 QX3 at pages 10-12 of the YUNCEE Q500 Typhoon and Blade 350 QX3 Instruction Manuals, attached hereto as Exhibit C and D.

iv. The YUNCEE Q500 Typhoon and Blade 350 QX3 GCSs and its operation.

A complete description of the operation and specifications of the YUNCEE Q500 Typhoon GCS are set forth at pages 10-19 and for the Blade 350 QX3 GCS at pages 06-12 of the YUNCEE Q500 Typhoon and Blade 350 QX3 Instruction Manuals, attached hereto as Exhibit C and D. The YUNCEE Q500 Typhoon GCS and Blade 350 QX3 GCS are compliant with all Federal Communications Commission (FCC) requirements, and the radio frequency spectrum used for operation and control of the UAS is set forth at page 5 of the YUNCEE Q500 Typhoon Instruction manual and page 1 of the Blade 350 QX3 Legal Notice, BLH8100-Legal, attached hereto as Exhibit C and F.

b. Flight Operations Of YUNCEE Q500 Typhoon and Blade 350 QX3 UASs Are Limited To The Line Of Sight Of A Certificated Pilot in Command With A Safety Observer.

Christopher Ryan Welsh will only utilize certificated pilots, who possess a current and valid airman medical certificate, to act as a pilot in command (PIC) of the YUNCEE Q500 Typhoon or Blade 350 QX3 UASs. Additionally, a Safety Observer will assist the PIC during flight time.

c. Flights Of YUNCEE Q500 Typhoon and Blade 350 QX3 UASs Will Be Conducted Pursuant To Specific Operating Limitations.

In seeking this exemption, Christopher Ryan Welsh proposes to commercially operate YUNCEE Q500 Typhoon and Blade 350 QX3 UASs for the special purpose of conducting aerial video and photography within the National Airspace System, pursuant to the following specific operating limitations:

1. Operations authorized by this grant of exemption will be limited to the following aircraft described in the operating documents, rotorcraft UASs weighing less than 55 pounds maximum gross weight: YUNCEE Q500 Typhoon and Blade 350 QX3 Unmanned Aircraft Systems. Proposed operations of any other aircraft will require a new petition or a petition to amend this grant.

2. UAS operations under this exemption will be limited to conducting operations for the purpose of aerial video and photography.

3. The UAs may not be flown at an indicated groundspeed exceeding 20 knots.

4. The UA must be operated at an altitude of no more than 400 feet above ground level (AGL), as indicated by the procedures specified in the operating documents unless a special request is made and approved by ATC. All altitudes reported to ATC must be in feet AGL.

5. The UAs must be operated within visual line of sight (VLOS) of the PIC at all times. This requires the PIC to be able to use human vision unaided by any device other than corrective lenses, as specified on the PIC's FAA-issued airman medical certificate.

6. The use of first person view (FPV) by the PIC or safety observer (SO) is not permitted for navigation.

7. All operations must utilize a safety observer (SO). The SO may be used to satisfy the VLOS requirement as long as the PIC always maintains VLOS capability. The SO and PIC must be able to communicate verbally at all times. Electronic messaging or texting is not permitted during flight operations. The PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight. The PIC must ensure that the SO can perform the functions prescribed in the operating documents.

8. The SO must not perform any other duties beyond assisting the PIC with seeing and avoiding other air traffic and other ground based obstacles/obstructions and is not permitted to operate the camera or other instruments.

9. The operating documents and the grant of exemption must be accessible during UAS operations and made available to the Administrator upon request. If a discrepancy exists between the conditions and limitations contained in the grant

of exemption and the procedures outlined in the operating documents, the conditions and limitations contained in the grant of exemption take precedence and must be followed. Otherwise, the operator must follow the procedures as outlined in its operating documents. The operator may update or revise its operating documents. It is the operator's responsibility to track such revisions and present updated and revised documents to the Administrator upon request. The operator must also present updated and revised documents if it petitions for extension or amendment to the grant of exemption. If the operator determines that any update or revision would affect the basis upon which the FAA granted the exemption, then the operator must petition for amendment to its grant of exemption. The FAA's UAS Integration Office (AFS-80) may be contacted if questions arise regarding updates or revisions to the operating documents.

10. Prior to each flight the PIC must inspect the UAS to ensure that it is in a condition for safe flight. If the inspection reveals a condition that affects the safe operation of the UAS, the aircraft is prohibited from operating until the necessary maintenance has been performed and the UAS is found to be in a condition for safe flight. The Ground Control Station must be included in the preflight inspection. All maintenance and alterations must be properly documented in the aircraft records.

11. Any UAS that has undergone maintenance or alterations that affect the UAS operation or flight characteristics, e.g. replacement of a flight critical component, must undergo a functional test flight. The PIC who conducts the functional test flight must make an entry in the aircraft records.

12. The pre-flight inspection must account for all potential discrepancies, e.g. inoperable components, items, or equipment, not already covered in the relevant sections of the operating documents.

13. The operator must follow the UAS manufacturer's aircraft/component, maintenance, overhaul, replacement, inspection, and life limit requirements.

14. The operator must carry out its maintenance, inspections, and record keeping requirements, in accordance with the operating documents. Maintenance, inspection, alterations, and status of replacement/overhaul component parts must be noted in the aircraft records, including total time in service, description of work accomplished, and the signature of the authorized person returning the UAS to service.

15. Each UASs operated under this exemption must comply with all manufacturer Safety Bulletins.

16. The authorized person must make an entry in the aircraft record of the corrective action taken against discrepancies discovered between inspections.

17. The PIC must possess at least a private pilot certificate and at least a current third- class medical certificate.

18. The operator may not permit any PIC to operate unless the PIC meets the operator's qualification criteria and demonstrates the ability to safely operate the UAS in a manner consistent with how the UAS will be operated under the exemption, including evasive and emergency maneuvers and maintaining appropriate distances from persons, vessels, vehicles and structures. PIC qualification flight hours must be logged in a manner consistent with 14 C.F.R. § 61.51(b). Flights for the purposes of training the operator's PICs are permitted under the terms of the exemption. However, training operations may only be conducted during dedicated training sessions. During training, proficiency, and experience-building flights, all persons not essential for flight operations are considered nonparticipants, and the PIC must operate the UA with appropriate distance from nonparticipants in accordance with 14 C.F.R. § 91.119.

19. UAS operations may not be conducted during night, as defined in 14 C.F.R. § 1.1. All operations must be conducted under visual meteorological conditions (VMC). If flight at night is required, a special request will be made at the FAA office closest to proposed area of operations. Flights under special visual flight rules (SVFR) are not authorized.

20. The UA may not operate within 5 nautical miles of an airport reference point as denoted on a current FAA-published aeronautical chart unless a letter of agreement with that airport's management is obtained, and the operation is conducted in accordance with a NOTAM as required by the operator's COA. The letter of agreement with the airport management must be made available to the Administrator upon request.

21. The UA may not be operated less than 500 feet below or less than 2,000 feet horizontally from a cloud or when visibility is less than 3 statute miles from the PIC.

22. If the UA loses communications or loses its GPS signal, it must return to a pre-determined location within the planned operating area and land or be recovered in accordance with the operating documents.

23. The PIC must abort the flight in the event of unpredicted obstacles or emergencies in accordance with the operating documents.

24. The PIC is prohibited from beginning a flight unless (considering wind and forecast weather conditions) there is enough power to fly at normal cruising speed to the intended landing point and land the UA with 25% battery power remaining.

25. The operator must obtain an Air Traffic Organization (ATO) issued Certificate of Waiver or Authorization (COA) prior to conducting any operations under the grant of exemption. This COA will also require the operator to request a Notice to Airman (NOTAM) not more than 72 hours in advance, but not less than 48

hours prior to the operation. All operations shall be conducted in accordance with airspace requirements in the ATO issued COA including class of airspace, altitude level and potential transponder requirements.

26. All aircraft operated in accordance with the exemption must be identified by serial number, registered in accordance with 14 C.F.R. part 47, and have identification (N- Number) markings in accordance with 14 C.F.R. part 45, Subpart C. Markings must be as large as practicable.

27. Before conducting operations, the radio frequency spectrum used for operation and control of the UA must comply with the Federal Communications Commission (FCC) or other appropriate government oversight agency requirements.

28. The documents required fewer than 14 C.F.R. 91.9 and 91.203 must be available to the PIC at the Ground Control Station of the UAS any time the UAS is operating. These documents must be made available to the Administrator or any law enforcement official upon request.

29. The UA must remain clear and yield the right of way to all manned aviation operations and activities at all times.

30. The UAS may not be operated by the PIC from any moving device or vehicle.

31. Flight operations must be conducted at least 500 feet from all nonparticipating persons (persons other than the PIC, SO, operator trainees or essential persons), vessels, vehicles, and structures unless:

    a. Barriers or structures are present that sufficiently protect nonparticipating persons from the UA and/or debris in the event of an accident. The operator must ensure that nonparticipating persons remain under such protection. If a situation arises where nonparticipating persons leave such protection and are within 500 feet of the UA, flight operations must cease immediately and/or;

    b. The UA is operated near vessels, vehicles or structures where the owner/controller of such vessels, vehicles or structures has granted permission and the PIC has made a safety assessment of the risk of operating closer to those objects and determined that it does not present an undue hazard, and;

    c. Operations nearer to the PIC, SO, operator trainees or essential persons do not present an undue hazard to those persons per § 91.119(a).

32. All operations shall be conducted over private or controlled-access property with permission from the land owner/controller or authorized representative. Permission from land owner/controller or authorized representative will be obtained for each flight to be conducted.

33. Any incident, accident, or flight operation that transgresses the lateral or vertical boundaries of the operational area as defined by the applicable COA must be reported to the FAA's UAS Integration Office (AFS-80) within 24 hours. Accidents must be reported to the National Transportation Safety Board (NTSB) per instructions contained on the NTSB Web site: www.ntsb.gov.

2. Reasons Why An Exemption From The Requirements Of Section 61.113(a) And (b) Would Not Adversely Affect Safety.

Christopher Ryan Welsh submits that the equivalent level of safety established by Section 61.113(a) and (b) will be maintained because no PIC will be allowed to operate the YUNCEE Q500 Typhoon or Blade 350 QX3 UASs unless that PIC has demonstrated, by meeting minimum flight-hour and currency requirements, that the PIC is able to safely operate the YUNCEE Q500 Typhoon or Blade 350 QX3 UAS in a manner consistent with the exemption, including evasive and emergency maneuvers and maintaining appropriate distances from people, vessels, vehicles and structures.

Considering Christopher Ryan Welsh's proposed area of operations, and the operating limitations set forth-above; the parallel nature of private pilot aeronautical knowledge requirements to those of commercial pilot requirements (See Exemption No. 11062); and the airmanship skills necessary to safely operate the YUNCEE Q500 Typhoon or Blade 350 QX3 UAS, Christopher Ryan Welsh submits that the additional manned airmanship experience of a commercially certificated pilot would not correlate to the airmanship skills necessary for Christopher Ryan Welsh's specific proposed flight operations.

The FAA has previously granted relief from Section 61.113(a) and (b) specific to UAS, in circumstances similar, in all material respects, to those presented herein (e.g. Exemption Nos. 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11110, 11112, 11136, 11138, 11150, 11153, 11156, 11158, 11159, 11160, 11161).

Christopher Ryan Welsh will not allow any PIC to operate the YUNCEE Q500 Typhoon or Blade 350 QX3 UAS unless that PIC has demonstrated, by meeting minimum flight-hour requirements of the YUNCEE Q500 Typhoon or Blade 350 QX3 UAS training and currency requirements, that the PIC is able to safely operate the YUNCEE Q500 Typhoon or Blade 350 QX3 UAS in a manner consistent with this exemption, including evasive and emergency maneuvers and maintaining appropriate distances from people, vessels, vehicles and structures.

Specifically, the PIC must have accumulated and logged, in a manner consistent with 14 C.F.R. § 61.51(b), 25 hours of total time as a UAS rotorcraft pilot (with a minimum of 5 hours of those hours as a UAS pilot operating the same make and model of UAS to be used for operations under the exemption). In addition to the hour requirements, the PIC must accomplish 3 takeoffs and landings in the preceding 90 days (for currency purposes).

As in Exemption Nos. 11062, 11138, and 11153, prior documented flight experience that was obtained in compliance with applicable regulations will ensure an equivalent level of safety during Christopher Ryan Welsh's proposed operations. The Administrator has held that prior documented flight experience that was obtained in compliance with applicable regulations would ensure safe operations, stating as follows:

> In Exemption No. 11062, the FAA required that prior to conducting operations for the purpose of motion picture filming (or similar operations), the PIC must have accumulated and logged, in a manner consistent with 14 CFR 61.51(b), 25 hours of total time as a UAS rotorcraft pilot including at least 10 hours logged as a UAS pilot with a multi-rotor UAS. Prior to operations under Exemption No. 11062, the PIC must also have accumulated and logged a minimum of 5 hours as a UAS pilot operating the same make and model of UAS to be used for operations under the exemption. For clarification, the FAA considers these minimum hour requirements to be inclusive rather than additive; i.e. 5 hours make and model time may be included in the 10 hours of multi-rotor time and the 10 hours may be included in

> the total 25 hours of UAS rotorcraft time. In addition to the hour requirements, the PIC must accomplish 3 takeoffs and landings in the preceding 90 days (for currency purposes). The FAA finds that at a minimum, the flight-hour requirements in Exemption No. 11062 are appropriate to practice and build proficiency in the skills necessary to safely conduct the petitioner's proposed operations. The FAA also finds that prior documented flight experience that was obtained in compliance with applicable regulations would satisfy this requirement. Training, proficiency, and experience-building flights can also be conducted under the grant of exemption to accomplish the required flight time. During training, proficiency, and experience-building flights the PIC is required to operate the UA with appropriate distances in accordance with 14 C.F.R 91.119.

Exemption No. 11138 at page 15.

Accordingly, Christopher Ryan Welsh will ensure safe operations by not allowing any PIC to operate the YUNCEE Q500 Typhoon or Blade 350 QX3 UAS unless that PIC has demonstrated, by meeting minimum flight-hour and currency requirements, that the PIC is able to safely operate the YUNCEE Q500 Typhoon or Blade 350 QX3 UAS in a manner consistent with the exemption, including evasive and emergency maneuvers and maintaining appropriate distances from people, vessels, vehicles and structures.

3. Reasons Why An Exemption From The Requirements Of Section 91.7(a) Would Not Adversely Affect Safety.

The equivalent level of safety established by Section 91.7(a) will be maintained because prior to every flight, Christopher Ryan Welsh will ensure that the YUNCEE Q500 Typhoon or Blade 350 QX3 UAS is in an airworthy condition based upon the UAS's compliance with its operating documents and as stated in the conditions and limitations herein.

Additionally, the FAA has previously granted relief from Section 91.7(a) specific to UAS, in circumstances similar, in all material respects, to those presented herein (e.g. Exemption Nos. 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11110, 11112, 11136, 11138, 11150, 11153, 11156, 11157, 11158, 11159, 11160, 11161).

4. Reasons Why An Exemption From The Requirements Of Section 91.121 Would Not Adversely Affect Safety.

The equivalent level of safety established by Section 91.121 will be maintained because the altitude information of the YUNCEE Q500 Typhoon and Blade 350 QX3 UAs will be provided to the PIC via GPS equipment and a radio communications telemetry data link, which downlinks from the UA to the GCS for active monitoring of the flight path and altitude. This altitude information, combined with software limiting of maximum altitude (400' AGL) and Christopher Ryan Welsh's operation of the YUNCEE Q500 Typhoon and Blade 350 QX3 UAs within visual line of sight, at or below 400 feet AGL, will ensure a level of safety equivalent to Section 91.121. The altitude information will be generated by GPS equipment installed onboard the aircraft. Prior to each flight, a zero altitude initiation point is automatically established by the UASs at ground level.

The FAA has previously granted relief from Section 91.121 specific to UAS, in circumstances similar, in all material respects, to those presented herein (e.g. Exemption Nos. 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11112, 11136, 11138, 11150, 11153, 11156, 11157, 11158, 11159, 11160, 11161).

5. Reasons Why An Exemption From The Requirements Of Section 91.151(b) Would Not Adversely Affect Safety.

A grant of this exemption would ensure an equivalent level of safety established by 14 C.F.R. Section 91.151(b) as a result of (1) the technical specifications of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs; (2) the limitations on the proposed flight operations; and (3) the location of the proposed flight operations. Accordingly, Christopher Ryan Welsh will ensure that it will safely operate the battery powered YUNCEE Q500 Typhoon and Blade 350 QX3 UAs during daylight hours in VFR conditions, with enough

battery power to fly for a total duration of 15 minutes to the first point of intended landing and, assuming normal cruising speed, to fly after that for at least 5 minutes.

Here, as in Exemption No. 11109, the technical specifications of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs; the limitations on the proposed flight operations; and the location of the proposed operations, will ensure an equivalent level of safety established by 14 C.F.R. Section 91.151(b). Furthermore, safety will be ensured as the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs provide audible, tactile and visual warnings to the PIC at the GCS when the UAs experiences low battery voltage, the first warning occurring at approximately 20% remaining battery power, and again at approximately 10% remaining battery power. At the critically low battery level, the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs will descend and land automatically.

Significantly, previous exemptions granted by the FAA concerning Section 91.151 establish that safety is not adversely affected when the technical characteristics and operating limitations of the UAS are considered. Relief has been granted for manned aircraft to operate at less than the minimums prescribed in Section 91.151, including Exemption Nos. 2689, 5745, and 10650. Moreover, the FAA has previously granted relief from Section 91.151 specific to UAS, in circumstances similar, in all material respects, to those presented herein (e.g. Exemption Nos. 8811, 10808, 10673, 11042, 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11110, 11136, 11138, 11150, 11153, 11156, 11157, 11158, 11159, 11160, 11161).

6. Reasons Why An Exemption From The Requirements Of Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), And 91.417(a) & (b) Would Not Adversely Affect Safety.

In seeking this exemption, Christopher Ryan Welsh submits that the equivalent level of safety with regard to the regulatory maintenance and alteration requirements

established by Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) will be met because Christopher Ryan Welsh will use his experience as an FAA certificated A&P Mechanic and lifetime hobby of operating model aircraft to perform maintenance, alterations, or preventive maintenance on the UASs using the methods, techniques, and practices prescribed in the operating documents (i.e., Aircraft Maintenance Log, YUNCEE Q500 Typhoon and Blade 350 QX3 Instruction Manuals). Furthermore, Christopher Ryan Welsh will document and maintain all maintenance records for the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs.

Since the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs will be inspected as prescribed by the operating documents, Christopher Ryan Welsh will maintain the equivalent level of safety established by Sections 91.405(a), 91.409(a)(1), and 91.409(a)(2). A copy of the YUNCEE Q500 Typhoon and Blade 350 QX3 Instruction Manuals are attached hereto as Exhibit C and D; a copy of the YUNCEE Q500 Typhoon and Blade 350 QX3 Aircraft Maintenance log is attached hereto as Exhibit E.

Likewise, the exemption sought will not adversely affect safety because Christopher Ryan Welsh will use his experience as an FAA certificated A&P Mechanic and lifetime hobby of operating model aircraft to perform maintenance on the UAS using the methods, techniques, and practices prescribed by the operating documents.

Furthermore, the exemption sought would maintain an equivalent level of safety established by Sections 91.407, 91.417(a) and 91.417(b), because all maintenance of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs will be performed by Christopher Ryan Welsh. Maintenance will be documented and maintained utilizing the Aircraft Maintenance log.

Significantly, previous exemptions granted by the FAA concerning Sections 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b) establish that safety is not adversely affected when the technical characteristics and operating limitations of the UAS are considered.

In consideration of Christopher Ryan Welsh's proposed operating limitations, the operating documents, and the technical aspects of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs, Christopher Ryan Welsh submits that safety will not be adversely affected by granting exemption from 14 C.F.R. Sections 91.405(a), 91.407(a)(1) and (a)(2), 91.409(a)(2), and 91.417(a) and (b). The FAA has previously granted relief specific to UAS in circumstances similar, in all material respects, to those presented herein (e.g. Exemption Nos. 11062, 11063, 11064, 11065, 11066, 11067, 11080, 11109, 11110, 11112, 11136, 11138, 11150, 11153, 11156, 11157, 11158, 11159, 11160, 11161).

7. The FAA May Prescribe Any Other Conditions For Safe Operation.

In accordance with Section 333 of the FAA Modernization and Reform Act of 2012 (FMRA) and 14 C.F.R. § 21.16 entitled Special Conditions, Christopher Ryan Welsh requests that the FAA prescribe special conditions for the intended operation of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs, which contain such safety standards that the Administrator finds necessary to establish a level of safety equivalent to that established by 14 C.F.R. Part 21, Subpart H, and 14 C.F.R §§ 61.113(a) & (b), 91.7 (a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b). Such special conditions will permit safe operation of the UAs for the limited purpose of conducting aerial video and photography within the National Airspace System for compensation or hire. FMRA Section 333 sets forth the requirements for considering

whether a UAS will create a hazard to users of the NAS or the public, or otherwise pose a threat to national security; and further, provides the authority for such UAS to operate without airworthiness certification in accordance with any requirements that must be established for the safe operation of the UAS in the NAS.

Likewise, the Administrator may prescribe special conditions pursuant to 14 C.F.R. § 21.16, for operation of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs, since the airworthiness regulations of 14 C.F.R. Part 21 do not contain adequate or appropriate safety standards, due to the novel or unusual design features of the aircraft. Section 21.16, entitled Special Conditions, states the following:

> If the FAA finds that the airworthiness regulations of this subchapter do not contain adequate or appropriate safety standards for an aircraft, aircraft engine, or propeller because of a novel or unusual design feature of the aircraft, aircraft engine or propeller, he prescribes special conditions and amendments thereto for the product. The special conditions are issued in accordance with Part 11 of this chapter and contain such safety standards for the aircraft, aircraft engine or propeller as the FAA finds necessary to establish a level of safety equivalent to that established in the regulations.

See 14 C.F.R. § 21.16.

Therefore, in accordance with FMRA Section 333 and 14 C.F.R. § 21.16, the FAA may prescribe special conditions for Christopher Ryan Welsh's intended operation of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs, which contain such safety standards that the Administrator finds necessary to establish a level of safety equivalent to that established by 14 C.F.R. Part 21, Subpart H, and 14 C.F.R Sections 61.113(a) & (b), 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b).

F. A Summary That Can Be Published In The Federal Register, stating: The Rules From Which Christopher Ryan Welsh Seeks Exemption:

Christopher Ryan Welsh seeks exemption from the requirements of 14 C.F.R Sections 61.113(a)&(b), 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b).

A Brief Description Of The Nature Of The Exemption Christopher Ryan Welsh Seeks:

This exemption will permit Christopher Ryan Welsh to commercially operate an Unmanned Aircraft System (UAS) for the purpose of conducting aerial video and photography within the National Airspace System (NAS).

G. Any Additional Information, Views, Or Arguments Available To Support Christopher Ryan Welsh's Request.

This Petition is made pursuant to the FAA Modernization and Reform Act of 2012 (FMRA), Section 333, which directs the Secretary of Transportation to determine if certain UAS may operate safely in the NAS. As such, Christopher Ryan Welsh's request for exemption may be granted pursuant to the authority of FMRA Section 333 and 14 C.F.R. Part 11, as set forth above.

FMRA Section 333 sets forth the requirements for considering whether a UAS will create a hazard to users of the NAS or the public, or otherwise pose a threat to national security; and further, provides the authority for such UAS to operate without airworthiness certification.

As discussed in detail above, Christopher Ryan Welsh will operate the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs safely in the NAS, without creating a hazard to users of the NAS, or the public, or otherwise pose a threat to national security.

CONCLUSION

As set forth herein, Christopher Ryan Welsh seeks an exemption pursuant to 14 C.F.R. § 11.61 and Section 333 of the FAA Modernization and Reform Act of 2012

(FMRA), which will permit safe operation of the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs commercially, without an airworthiness certificate, for the limited purpose of conducting aerial video and photography within the National Airspace System. By granting this Petition, the FAA Administrator will be fulfilling the Congressional mandate of the FAA Modernization and Reform Act of 2012, while also advancing the interests of the public, by allowing Christopher Ryan Welsh to safely, efficiently, and economically operate the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs commercially within the NAS.

WHEREFORE, in accordance with the Federal Aviation Regulations and the FAA Modernization and Reform Act of 2012, Section 333, Christopher Ryan Welsh respectfully requests that the Administrator grant this Petition for an exemption from the requirements of 14 C.F.R Sections 61.113(a) & (b), 91.7(a), 91.121, 91.151(b), 91.405(a), 91.407(a)(1), 91.409(a)(1) & (a)(2), and 91.417(a) & (b), and permit Christopher Ryan Welsh to operate the YUNCEE Q500 Typhoon and Blade 350 QX3 UASs commercially for the purpose of conducting aerial video and photography within the National Airspace System.

Dated: March 25, 2015

Respectfully submitted,

Christopher Ryan Welsh

_____

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Appendices:

A – YUNCEE Q500 Typhoon, Specifications Data Sheet
B – Blade 350 QX3, Specifications Data Sheet
C – YUNCEE Q500 Typhoon, Manufacturer's Instruction Manual
D – Blade 350 QX3, Manufacturer's Instruction Manual
E – Aircraft (UA) Maintenance Log
F – BLH8100-LEGAL

APPENDIX – A

YUNEEC Q500 Typhoon TECHNICAL SPECIFICATIONS

Christopher Ryan Welsh only utilizes safe and reliable UASs. YUNEEC is an industry leader in small UAS production. YUNEEC UASs are loaded with ground breaking software enabling the user to set parameters which will not allow flight into controlled airspace. Parameters can also be set to limit flight to no higher than a predetermined and set altitude as well as limit flight to a predetermined and set distance. In addition, YUNEEC software provides real-time altitude and location information to the PIC via the integrated touch screen monitor.

1.1 YUNEEC Q500 Typhoon

1.1.1 Unmanned Aircraft (UA)
- 1.1.1.1 Supported Battery – 5400mAH 3S, 11.1v LiPo Battery
- 1.1.1.2 Takeoff Weight (Including Camera) – 60.0oz (1700g)
- 1.1.1.3 Radio Control Frequency Band – 2.4GHz
- 1.1.1.4 Max Yaw Angular Velocity - 65º/s
- 1.1.1.5 Max Bank Angle - 35º
- 1.1.1.6 Max Climb Rate – 3m/s
- 1.1.1.7 Max Descent Rate – 2m/s
- 1.1.1.8 Max Flight Time – 25 Minutes

1.1.2 Gimbal
- 1.1.2.1 Working Current – 500-600mA @ 12.0V (7.2W max)
- 1.1.2.2 Controllable Range – Pitch: -90º - 0º
- 1.1.2.3 Control Angle Accuracy -- ±0.02º
- 1.1.2.4 Input/Operating Voltage – 7.0V-14.0V DC

1.1.3 Camera
- 1.1.3.1 Operating Temperature Range - 0ºC - 50ºC
- 1.1.3.2 White Balance -- Automatic
- 1.1.3.3 Effective Pixels – 16 Million
- 1.1.3.4 Transmission Band – 5745MHz – 5825MHz (5.8GHz)
- 1.1.3.5 Transmission Range – 600m (1968.5ft)
- 1.1.3.6 HD Video Recording – 1080p 60, 50 or 48 fps
- 1.1.3.7 Recording Field of View - 130º

1.1.4 ST10 GCS
- 1.1.4.1 Operating Frequency, Control – 2.400GHz – 2.4835GHz (2.4GHz)
- 1.1.4.2 Communication Distance – FCC Compliance: 800m (2624.67ft)
- 1.1.4.3 Video Downlink Band – 5.8GHz
- 1.1.4.4 Transmitter Power – FCC Compliance: 100mW
- 1.1.4.5 Working Voltage – 3.7V

APPENDIX – B

Blade 350 QX3 TECHNICAL SPECIFICATIONS

Christopher Ryan Welsh only utilizes safe and reliable UASs. Horizon Hobby LLC is an industry leader in small UAS production. Horizon Hobby LLC UASs are loaded with ground breaking software enabling the user to set parameters which will not allow flight into controlled airspace. Parameters can also be set to limit flight to no higher than a predetermined and set altitude as well as limit flight to a predetermined and set distance.

2.1 Blade 350 QX3

2.1.1 Unmanned Aircraft (UA)
- 2.1.1.1 Supported Battery – 3000mAH 3S, 11.1v LiPo Battery
- 2.1.1.2 Takeoff Weight – 33.7oz (955g)
- 2.1.1.3 Radio Control Frequency Band – 2.4GHz
- 2.1.1.4 Max Flight Time – 20 Minutes

2.1.2 Gimbal
- 2.1.2.1 Working Current – 500-600mA @ 12.0V (7.2W max)
- 2.1.2.2 Controllable Range – Pitch: -90º - 0º
- 2.1.2.3 Control Angle Accuracy -- ±0.02º
- 2.1.2.4 Input/Operating Voltage – 7.0V-14.0V DC

2.1.3 Camera
- 2.1.3.1 Operating Temperature Range - 0ºC - 50ºC
- 2.1.3.2 White Balance -- Automatic
- 2.1.3.3 Effective Pixels – 16 Million
- 2.1.3.4 Transmission Band – 5745MHz – 5825MHz (5.8GHz)
- 2.1.3.5 Transmission Range – 600m (1968.5ft)
- 2.1.3.6 HD Video Recording – 1080p 60, 50 or 48 fps
- 2.1.3.7 Recording Field of View - 130º

2.1.4 DX4 DSMX Transmitter
- 2.1.4.1 Operating Frequency, Control – 2.400GHz – 2.4835GHz (2.4GHz)
- 2.1.4.2 Communication Distance – FCC Compliance: 800m (2624.67ft)
- 2.1.4.3 Transmitter Power – FCC Compliance: 100mW
- 2.1.4.4 Working Voltage – 6V

APPENDIX – C

YUNEEC Q500 Typhoon Manufacturer's Instruction Manual

YUNEEC
ELECTRIC AVIATION

TABLE OF CONTENTS

INTRODUCTION

Change your perspective with the Yuneec Q500 Typhoon aerial photography and videography (APV) system. The system arrives 100% factory-assembled and test flown including the innovative 3-axis CGO2-GB that records full HD 1080p (60, 50 or 48 fps) video and takes 12 megapixel still photos. And the built-in digital video downlink delivers streaming video that can be viewed right on the screen of the included ST10 transmitter and Personal Ground Station. With the Q500 it's never been easier to capture amazing photographs and video footage for a wide variety of uses.

And although the Q500 is nearly ready to fly right out the box, please take the time to read through this entire instruction manual for more information on safety, battery charging, flight controls and more before making your first flight. Please also visit www.Yuneec.com for additional information including product updates, bulletins, videos and more.

SPECIFICTATIONS

Q500

Height: 210mm (8.3 in)
Length (without rotor blades): 420mm (16.5 in)
Width (without rotor blades): 420mm (16.5 in)
Diameter (without rotor blades): 565mm (22.2 in)
Propeller/Rotor Blade Diameter: 330mm (13.0 in)
Weight (without battery and payload): 1130g (40.0 oz)
Takeoff Weight (with battery and CGO2-GB): 1700g (60.0 oz)
Battery: 5400mAh 3S 11.1V LiPo (included)
Charger: DC 3S 11.1V LiPo balancing and AC adapter (included)
Transmitter: ST10 10-channel 2.4GHz with 5.8GHz video link (included)
Flight Time: 20-25 minutes

CGO2-GB

Height: 115mm (4.5 in)
Width: 75mm (2.9 in)
Depth: 135mm (1.4 in)
Weight: 185g (6.5 oz)
Video Resolution: 1080p 60, 50 or 48 fps
Photo Resolution: 12 megapixels
Transmission Distance/Range: Up to 600m (1970 ft) depending on receiving device
Transmission Band: 5.8GHz
Storage (memory): microSD Class 10 up to 128GB

ST10

Number of Channels: 10
RC Band: 2.4GHz
RC Modulation: Yuneec
Video Downlink Band: 5.8GHz
Telemetry/OSD: Yes
SD Card Compatible: Yes
LCD Screen Size: 4.5"
Touchscreen: Yes

NOTICES AND WARNINGS

IMPORTANT NOTE: All safety precautions and warnings, instructions, warranties and other collateral information is subject to change at the sole discretion of Yuneec. For the most up-to-date information please visit the corresponding product page at www.Yuneec.com or contact the nearest Yuneec office or authorized distributor.

The following special language 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 property damage and/or little to no possibility of injury.
CAUTION: Procedures, which if not properly followed, create the probability of property damage and/or a possibility of serious injury.
WARNING: Procedures, which if not properly followed, create the probability of property damage, collateral damage and/or serious injury or create a high probability of superficial injury.

WARNING: Read the ENTIRE quick start guide and 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, property and/or cause serious injury.

WARNING: This is a sophisticated consumer 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 damage to the product, property and/or cause serious injury. 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 Yuneec. The quick start guide and instruction manual contain instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings prior to assembly, setup and/or use in order to operate the product 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

KEEP CLEAR OF THE SPINNING PROPELLERS!

DO NOT FLY NEARBY TALL BUILDINGS/OBSTRUCTIONS (100' MINIMUM CLEARANCE REQUIRED)

THE MAXIMUM FLYING ALTITUDE FOR THIS AIRCRAFT IS 8000FT ABOVE SEA LEVEL!

DO NOT FLY OVER CROWDS!

DO NOT FLY NEAR AIRPORTS!

DO NOT FLY IN WINDS THAT EXCEED 8–12 MPH (13–19 KPH)!

WARNING: Failure to use this product in the intended manner as described in the quick start guide and instruction manual can result in damage to the product, property and/or cause serious injury. A Radio Controlled (RC) multirotor aircraft, APV platform, drone, etc. is not a toy! If misused it can cause serious bodily harm and damage to property.

WARNING: As the user of this product you are solely and wholly responsible for operating it in a manner that does not endanger yourself and others or result in damage to the product or the property of others.

- Keep your hands, face and other parts of your body away from the spinning propellers/rotor blades and other moving parts at all times. Keep items that could impact or become entangled away from the propellers/rotor blades including debris, parts, tools, loose clothing, etc.
- Always operate your aircraft in open areas that are free from people, vehicles and other obstructions. Never fly near or above crowds, airports or buildings.
- To ensure proper operation and safe flight performance never attempt to operate your aircraft nearby buildings or other obstructions that do not offer a clear view of the sky and can restrict GPS reception.
- Do not attempt to operate your aircraft in areas with potential magnetic and/or radio interference including areas nearby broadcast towers, power transmission stations, high voltage power lines, etc.
- Always keep a safe distance in all directions around your aircraft to avoid collisions and/or injury. This aircraft is controlled by a radio signal subject to interference from many sources outside your control. Interference can cause momentary loss of control.
- To ensure proper and safe operation of the automatic landing function in Home Mode you must start the motors with the aircraft in a position that has at least 10 feet (approximately 3 meters) of clear and open space around it and achieve a proper GPS lock.
- Do not attempt to operate your aircraft with any worn and/or damaged components, parts, etc. (including, but not limited to, damaged propellers/rotor blades, old batteries, etc.).
- Never operate your aircraft in poor or severe weather conditions including heavy winds, precipitation, lightning, etc.

- Always operate your aircraft starting with a fully charged battery. Always land as soon as possible after the first level low voltage battery warning or land immediately after the second level low voltage battery warning (as indicated by the vibrations and audible alerts from the transmitter/personal ground station).
- Always operate your aircraft when the voltage of the battery in the transmitter/personal ground station is in a safe range (as indicated by the battery charge status icon on the screen of the transmitter/personal ground station).
- Always keep the aircraft in clear line of sight and under control, and keep the transmitter/personal ground station powered on while the aircraft is powered on.
- Always move the throttle control stick down fully and turn off the motors in the event the propellers/rotor blades come into contact with any objects.
- Always allow components and parts to cool after use before touching them and flying again.
- Always remove batteries after use and store/transport them per the corresponding guidelines.
- Avoid water exposure to all electronic components, parts, etc. not specifically designed and protected for use in water. Moisture causes damage to electronic components and parts.
- Never place any portion of the aircraft or any related accessories, components or parts in your mouth as doing so could cause serious injury or even death.
- Always keep chemicals, small parts and electronic components out of the reach of children.
- Carefully follow the instructions and warnings included with this aircraft and any related accessories, components or parts (including, but not limited to, chargers, rechargeable batteries, etc.).

CAUTION: The electronic speed controls (ESCs) installed in the Q500 are not compatible with any other product, and the Q500 is not compatible with any other ESCs. Use of any other ESCs in the Q500 will cause a crash, which may result in damage to the product, property and/or cause serious injury.

FCC INFORMATION

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.

This product contains a radio transmitter with wireless technology which has been tested and found to be compliant with the applicable regulations governing a radio transmitter in the 2.400GHz to 2.4835GHz frequency range.

Antenna Separation Distance:

Maintain a separation distance of at least 2 in (50mm) between your body (not including your fingers, hands and wrists) and the antennas to meet the RF exposure safety requirements determined by FCC regulations.

- Always operate your aircraft starting with a fully charged battery. Always land as soon as possible after the first level low voltage battery warning or land immediately after the second level low voltage battery warning (as indicated by the vibrations and audible alerts from the transmitter/personal ground station).
- Always operate your aircraft when the voltage of the battery in the transmitter/personal ground station is in a safe range (as indicated by the battery charge status icon on the screen of the transmitter/personal ground station).
- Always keep the aircraft in clear line of sight and under control, and keep the transmitter/personal ground station powered on while the aircraft is powered on.
- Always move the throttle control stick down fully and turn off the motors in the event the propellers/rotor blades come into contact with any objects.
- Always allow components and parts to cool after use before touching them and flying again.
- Always remove batteries after use and store/transport them per the corresponding guidelines.
- Avoid water exposure to all electronic components, parts, etc. not specifically designed and protected for use in water. Moisture causes damage to electronic components and parts.
- Never place any portion of the aircraft or any related accessories, components or parts in your mouth as doing so could cause serious injury or even death.
- Always keep chemicals, small parts and electronic components out of the reach of children.
- Carefully follow the instructions and warnings included with this aircraft and any related accessories, components or parts (including, but not limited to, chargers, rechargeable batteries, etc.).

CAUTION: The electronic speed controls (ESCs) installed in the Q500 are not compatible with any other product, and the Q500 is not compatible with any other ESCs. Use of any other ESCs in the Q500 will cause a crash, which may result in damage to the product, property and/or cause serious injury.

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

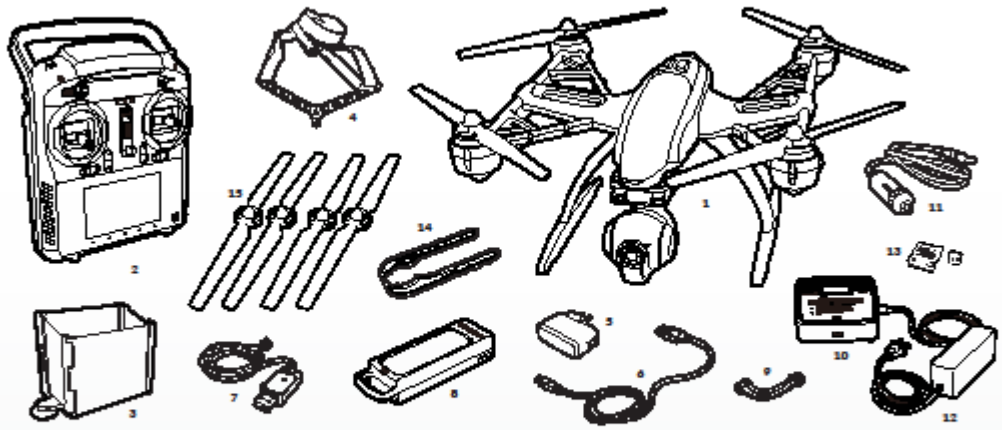
This product contains a radio transmitter with wireless technology which has been tested and found to be compliant with the applicable regulations governing a radio transmitter in the 2.400GHz to 2.4835GHz frequency range.

Antenna Separation Distance:

Maintain a separation distance of at least 2 in (50mm) between your body (not including your fingers, hands and wrists) and the antennas to meet the RF exposure safety requirements determined by FCC regulations.

Q500 RTF CONTENTS

The Q500 RTF includes everything needed to fly right out of the box. There's nothing extra to buy or provide!



1 Q500 RTF Airframe w/Installed CGO2-GB
2 ST10 Transmitter and Personal Ground Station
3 ST10 LCD Screen Sun Shade/Shield
4 ST10 Neck Strap
5 AC to DC USB Adapter/Charger
6 USB to Micro USB Cable
7 USB Interface/Programmer
8 5400mAh 3S 11.1V LiPo Battery
9 3S 11.1V LiPo Balance Connector Charge Lead
10 DC 3S 11.1V LiPo Balancing Charger
11 DC Automobile Accessory Socket/ Cigarette Lighter Receptacle Adapter
12 AC to DC Adapter/Power Supply
13 8GB microSD Card w/Adapter
14 Motor Holder/Prop Installation Tool
15 Propellers/Rotor Blades (2 sets)

BATTERY WARNINGS AND USAGE GUIDELINES

WARNING: Lithium Polymer (LiPo) batteries are significantly more volatile than alkaline, NiCd or NiMH batteries. All instructions and warnings must be followed exactly to prevent property damage and/or serious injury as the mishandling of LiPo batteries can result in fire. By handling, charging or using the included LiPo battery you assume all risks associated with LiPo batteries. If you do not agree with these conditions please return the complete product in new, unused condition to the place of purchase immediately.

- You must always charge the LiPo battery in a safe, well-ventilated area away from flammable materials.
- Never charge the LiPo battery unattended at any time. When charging the battery you must always remain in constant observation to monitor the charging process and react immediately to any potential problems that may occur.
- After flying/discharging the LiPo battery you must allow it to cool to ambient/room temperature before recharging.
- To charge the LiPo battery you must use only the included charger or a suitably compatible LiPo battery charger. Failure to do so may result in a fire causing property damage and/or serious injury.
- If at any time the LiPo battery begins to balloon or swell, discontinue charging or discharging immediately. Quickly and safely disconnect the battery, then place it in a safe, open area away from flammable materials to observe it for at least 15 minutes. Continuing to charge or discharge a battery that has begun to balloon or swell can result in a fire. A battery that has ballooned or swollen even a small amount must be removed from service completely.
- Do not over-discharge the LiPo battery. Discharging the battery too low can cause damage to the battery resulting in reduced power, flight duration or failure of the battery entirely. LiPo cells should not be discharged to below 3.0V each under load.
- Store the LiPo battery at room temperature and in a dry area for best results.
- When charging, transporting or temporarily storing the LiPo battery the temperature range should be from approximately 40–120° F (5–49° C). Do not store the battery or aircraft in a hot garage, car or direct sunlight. If stored in a hot garage or car the battery can be damaged or even catch fire.
- Never leave batteries, chargers and power supplies unattended during use.
- Never attempt to charge low voltage, ballooned/swollen, damaged or wet batteries.
- Never allow children under 14 years of age to charge batteries.
- Never charge a battery if any of the wire leads have been damaged or shorted.
- Never attempt to disassemble the battery, charger or power supply.
- Never drop batteries, chargers or power supplies.
- Always inspect the battery, charger and power supply before charging.
- Always ensure correct polarity before connecting batteries, chargers and power supplies.
- Always disconnect the battery after charging.
- Always terminate all processes if the battery, charger or power supply malfunctions.

IMPORTANT NOTE: It's safer and better for the longevity of the battery to store it only partially charged for any length of time. Storing the battery approximately 50% charged (which is around 3.85V per cell) is typically best, however, it will take some careful management of the charge time and the use of a volt meter to achieve this voltage. If you have the equipment and skills to achieve the 50% charge level for storage it is recommended. If not, simply be sure to not store the battery fully charged whenever possible. In fact, as long as the battery will be stored at approximately room temperature and for no more than a few weeks before the next use, it may be best to store the battery in the discharged state after the last flight (as long as the battery was not over-discharged on the last flight).

CHARGING THE BATTERIES

WARNING: Lithium Ion (LiIon) and Lithium Polymer (LiPo) batteries are significantly more volatile than alkaline, NiCd or NiMH batteries. All instructions and warnings must be followed exactly to prevent property damage and/or serious injury as the mishandling of LiIon/LiPo batteries can result in fire. By handling, charging or using the included LiIon/LiPo batteries you assume all risks associated with them. If you do not agree with these conditions please return the complete product in new, unused condition to the place of purchase immediately.

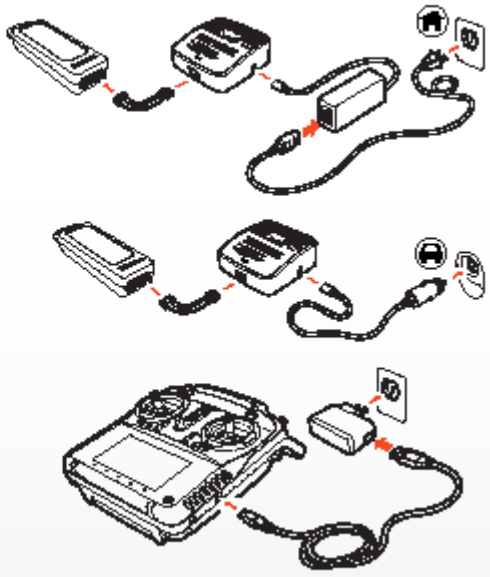
CHARGING THE LIPO FLIGHT BATTERY

You can power the SC3500-3 charger from a 100-240V AC outlet using the AC adapter/power supply, or from a 12V DC accessory socket/cigarette lighter receptacle in a vehicle using the corresponding adapter. Once you've verified the charger is powered on and ready to charge (green blinking LED), plug the balance connector charge lead into the charger, then connect the LiPo flight battery to the charge lead. The battery will begin charging (red blinking LED) and it will take approximately 2 hours to charge a fully discharged (not over-discharged) battery.

CHARGING THE LI-ION ST10 BATTERY

You can charge the LiIon battery installed in the ST10 from a 100-240V AC outlet using the USB adapter/charger, or from a suitable USB power source (2.0 amps max), with the USB to micro USB cable. While the ST10 is powered off connect the cable to the USB adapter/charger, then plug it into the USB connector/charging port on the right side. After approximately 30-45 seconds the LED indicator for the battery will blink blue while the battery is charging, and will glow solid blue when the battery is fully charged. It will take approximately 5.5 hours to charge a fully discharged (not over-discharged) battery.

NOTE: The AC plug type will vary depending on the region in which the product was imported/purchased (AU = Australian; EU = European; UK = United Kingdom; US = United States).



PREPARING THE CGO2-GB

WARNING: Before installing the flight battery and powering on the Q500 you MUST remove the cover/lock from the rear of the CGO2-GB by carefully sliding it backward. Failure to remove the cover/lock can result in damage to the Q500 and the CGO2-GB!

QUICK TIP: It's a good idea to re-install the cover/lock after each flying session and while transporting/storing the Q500 (just remember to remove the cover/lock before powering on the Q500 and CGO2-GB!).

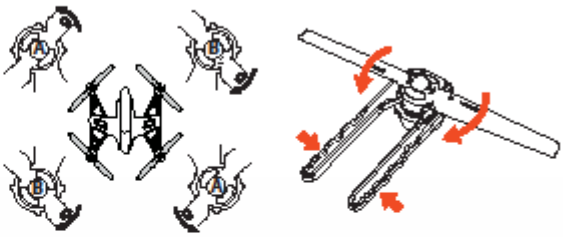
Step 1) Remove the cover/lock from the rear of the CGO2-GB by carefully sliding it backward.

Step 2) Slide the microSD card into the corresponding slot on the bottom of the CGO2-GB. You can use the included 8GB card or any Class 10 microSD card up to 128GB.

Step 3) Carefully remove the protective material from the camera lens.

INSTALLING THE PROPELLERS

WARNING: We recommend wearing gloves and using extreme care when installing the propellers/rotor blades.



Each motor and propeller are marked with an 'A' or 'B' to ensure easy installation in the correct positions (for example: install propellers marked with 'A' on motors marked with 'A').

IMPORTANT NOTE: It is NOT possible to install a propeller marked with 'A' on a motor marked with 'B'. The threads go in different directions for the 'A' and 'B' motors/propellers.

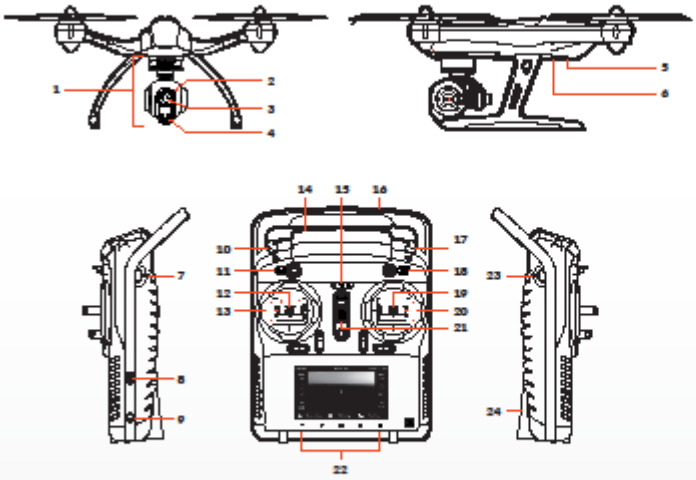
Step 1) Use the special tool (included) to hold the motor so it cannot spin.

CAUTION: Do not over-tighten the propellers when using the tool.

Step 2) Install the corresponding propeller by rotating it trialing edge first until it's secure against the o-ring located at the bottom of the motor shaft.

Step 3) Repeat steps 1 and 2 to install the three remaining propellers securely.

Q500, CGO2-GB AND ST10 OVERVIEW



The ST10 is equipped with an internal cooling fan and components that deliver vibrating and audible alerts.

IMPORTANT NOTE: Although the ST10 is equipped with digital 'trims' (located below the control sticks) they are not active/functional when controlling the Q500.

Q500 / CGO2-GB

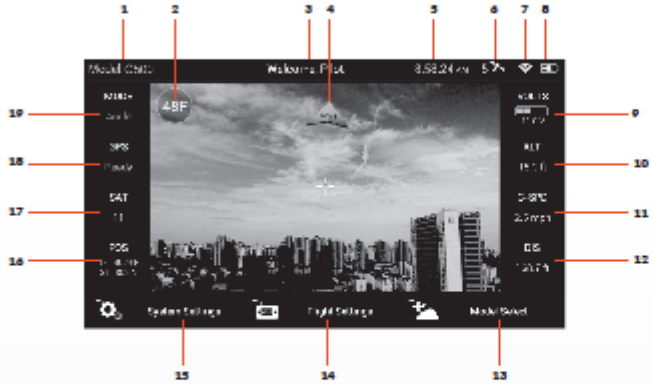
1 CGO2-GB Gimbal Camera
2 Camera LED Status Indicator
3 Camera Lens
4 5.8GHz Antenna
5 Main LED Status Indicator
6 Power Switch

ST10

7 Proportional Control Rate Slider
8 USB Connector/Charging Port
9 Audio/Earphone Jack
10 Take Still Photo Button
11 Start/Stop Motors Button
12 Rudder/Yaw Control *(for Mode 2 and Mode 1)*
13 Throttle/Altitude Control *(for Mode 2)*
Elevator/Pitch Control *(for Mode 1)*
14 5.8GHz Antenna *(located inside the case)*
15 Status Indicators *(for ST10 battery, 5.8GHz WiFi and GPS)*
16 2.4GHz Antenna *(located inside the handle)*
17 Start/Stop Video Recording Button
18 Flight Mode Selection Switch
19 Aileron/Roll Control *(Mode 2 and Mode 1)*
20 Elevator/Pitch Control *(Mode 2)*
Throttle/Altitude Control *(Mode 1)*
21 Power Switch
22 Volume and Navigation Touch-Activated Buttons *(Volume Down/Volume Up/Menu/Home/Back)*
23 CGO2-GB Pitch Angle/Position Control Slider
24 SD Card Slot *(located under the battery)*

ST10 DISPLAY

The ST10 is equipped with a touchscreen display that allows for changing various settings and viewing real-time telemetry data and streaming video during flight.



1 Model Name
2 Frames Per Second for Video Recording Button
3 Status Information
4 Direction to Home Point
5 Clock/Current Time
6 GPS Status and Number of Satellites for ST10
7 5.8GHz WiFi Video Link Status
8 ST10 Battery Charge Level Status Icon
9 Aircraft Battery Voltage
10 Altitude of Aircraft (Above Ground Level)
11 Ground Speed of Aircraft
12 Distance of Aircraft from Home Point
13 Model Select Menu Button
14 Flight Settings Menu Button
15 System Settings Menu Button
16 Latitude/Longitude Position of Aircraft
17 Number of Satellites for Aircraft
18 GPS Status for Aircraft
19 Flight Mode of Aircraft

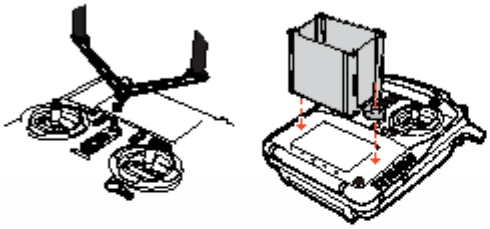
QUICK TIP: Double tap on the screen to increase the size of the video viewing area to full-screen and double tap again to return to the standard size).

WARNING: NEVER attempt to fly the Q500 via First-Person View (FPV). There's a slight 'lag' in the CGO2-GB streaming video downlink to the ST10, and as a result the streaming video/FPV should only be used for aligning camera shots and not for flying! Attempting to fly via FPV can result in a crash that will cause damage to the product, property and/or cause serious injury.

IMPORTANT NOTE: Streaming video from the CGO2-GB to the ST10 and to a separate phone/tablet (or another Yuneec transmitter/personal ground station) at the same time is NOT recommended as it will result in a very significant lag in the video downlink.

ST10 ACCESSORIES

You can install the included and optional-use Neck Strap to help hold and support the ST10. You can also install the included and optional-use LCD Screen Sun Shade/Shield to help improve viewing in sun light.

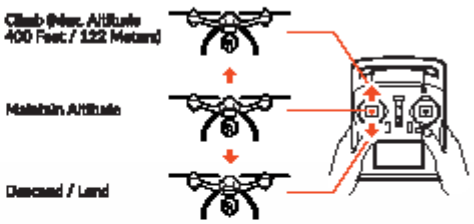


QUICK TIP: It may be helpful to apply suitable anti-glare screen protector material over the LCD screen to further improve viewing in sun light.

FLIGHT CONTROLS

NOTE: The information in this and the following sections refers to the default 'Mode 2' control configuration of the ST10. The left-hand stick on the ST10 controls the throttle (climb/descend) and rudder (yaw left/right) channels.. When the left-hand stick (also known as the throttle stick) is in the middle position during flight the Q500 will maintain the current altitude. As you move the stick upward the Q500 will climb, and as you move the stick downward the Q500 will descend. The farther away from the middle position you move the stick the faster the Q500 will climb or descend.

IMPORTANT NOTE: The maximum altitude is limited to 400 feet (122 meters) AGL (Above Ground Level) in both Smart and Angle (Pilot) Mode. And although this limit can be adjusted using the USB interface/programmer and software we strongly recommend using the default limit at all times.



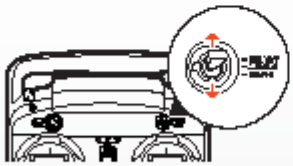
Moving the left-hand stick to the left will turn (yaw) the nose of the Q500 to the left about the vertical axis. And moving the stick to the right will turn (yaw) the nose of the Q500 to the right.

PROPORTIONAL CONTROL RATE SLIDER

The Proportional Control Rate Slider located on the right side of the ST10 allows you to set the overall climb/descend and directional control rates. Use the turtle position for the lowest control rates (best for first-time pilots and required when flying between 5000 feet and 8000 feet Above Mean

SELECTING A FLIGHT MODE

The Q500 is programmed with three (3) flight modes that can be selected via the Flight Mode Selection Switch located just above the right-hand control stick.

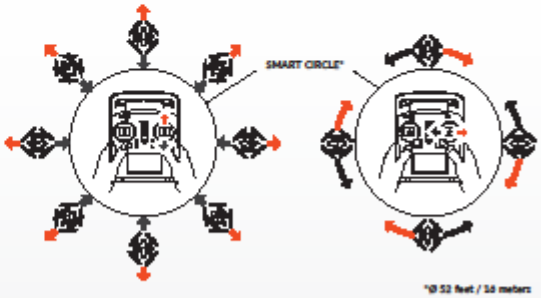


FLIGHT CONTROLS - SMART MODE

When the Flight Mode Selection Switch is the top position the Q500 will be in Smart Mode.

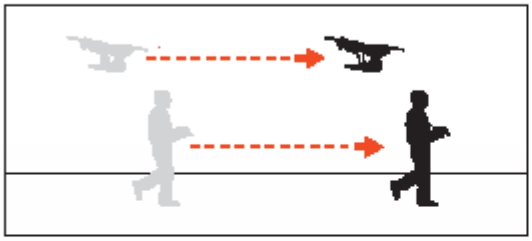
Although we recommend learning to fly the Q500 in Angle (Pilot) Mode as soon as possible, Smart Mode is typically the best mode for first-time pilots to fly in and also features 'Follow Me' .

In Smart Mode the Q500 will always move in the direction the right-hand control stick is pushed relative to the pilot and no matter which way the front/nose is pointed. So if you push the stick to the left the Q500 will always move to the left, regardless of the direction the nose is pointing and even if it's spinning. This mode can also be helpful for pilots that lose orientation while flying in Angle (Pilot) Mode.

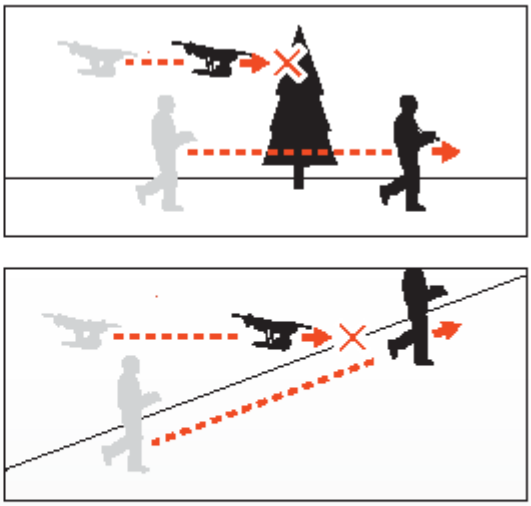


*Ø 33 feet / 10 meters

The Follow Me feature the Q500 Typhoon to follow the pilot, adjusting its location to the location of the ST10. The Follow Me feature is enabled when the number of connected satellites is 6 or more. When Follow Me is active the Q500's Main LED Status Indicator will blink white every three seconds. If the Q500's Main LED Status Indicator remains solid green, the Follow Me feature is not enabled.



When using the FOLLOW ME feature, keep in mind that the aircraft will maintain a constant altitude and can not detect obstacles. Pilots who change their altitude by for example, moving to higher ground, during flight should be mindful of this.



Additional Smart Mode Features:

***SMART CIRCLE**

In most cases the Smart Circle will keep the Q500 from coming within approximately 26 feet (8 meters) of you (as long as you position yourself at least 26 feet/8 meters behind the Q500.

GEO-FENCE

The geo-fence is a virtual 'barrier' that will keep the Q500 from traveling farther than 300 feet (91 meters). And although this limit can be adjusted using the USB interface/programmer and software we strongly recommend using the default limit at all times.

WARNING: Smart Mode only works when the Q500 has a suitable GPS signal/lock. If you take off in Smart Mode and the Q500 loses GPS signal/lock it will switch to Angle (Pilot) Mode automatically. This is why we strongly recommend learning to fly in Angle (Pilot) Mode as soon as possible. Otherwise, if you lose GPS signal/lock and are not able to properly control the Q500 in Angle (Pilot) Mode the aircraft may crash or even 'fly away'.

IMPORTANT NOTE: Crash damage and 'fly aways' are NOT covered under warranty.

FLIGHT CONTROLS - ANGLE (PILOT) MODE

When the Flight Mode Selection Switch is the middle position the Q500 will be in Angle (also known as Pilot) Mode.

Angle (Pilot) Mode is the mode preferred by experienced RC/drone pilots because the Q500 will move in the direction the control stick is pushed relative to the front/nose of the aircraft. So if you push the right-hand stick to the left the Q500 will bank toward the left side and move to the left. This means if the front/nose of the Q500 is pointing away from you it will move to the left, but if the front/nose is pointing at you the Q500 will move to the right.

Additional Angle (Pilot) Mode Features:

POSITION HOLD AND SELF-LEVELING

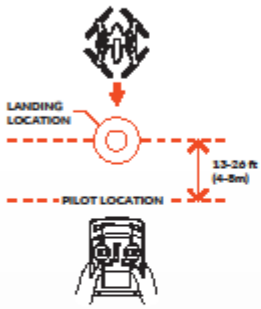
The Q500 will automatically hold its position (with a suitable GPS signal/lock) and maintain a level attitude when the right-hand stick is centered.

WARNING: If you do not properly control the Q500 in Angle (Pilot) Mode the aircraft may crash or even 'fly away'.

IMPORTANT NOTE: Crash damage and 'fly aways' are NOT covered under warranty.

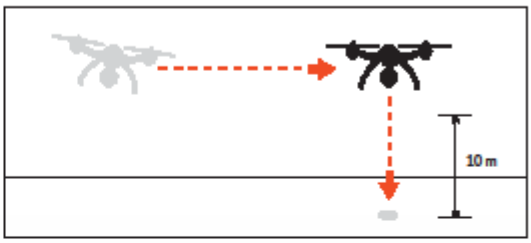
FLIGHT CONTROLS - HOME MODE

When the Flight Mode Selection Switch is in the bottom position the Q500 will be in Home (also known as Return to Home) Mode.

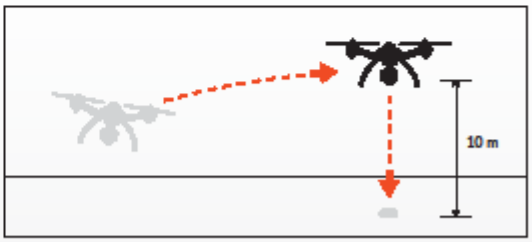


In Home Mode the the Follow Me feature will fly back the Q500 in a straight line in the direction of the pilots' current location, and automatically land within 13-26 ft (4-8m) of the pilot. This can be very helpful for first-time pilots who aren't quite ready to land the Q500 themselves. It can also be helpful for pilots that lose orientation during flight; simply activate Home Mode until the Q500 automatically moves toward the home position, and once you've confirmed orientation switch back to Angle (Pilot) Mode. And if the Q500 ever loses the link with the ST10 it will automatically enter Home Mode. **When Home Mode is activated the Q500 will respond as follows:**

A) When flying higher than 33 feet (10 meters) the Q500 will maintain the current altitude, fly back to the home point, then descend vertically until it lands.



B) When flying lower than 33 feet (10 meters) the Q500 will climb to 33 feet (10 meters) while flying back to the home point, then will descend vertically until it lands.



CAUTION: You must be certain there are no obstacles in the 'Return to Home' flight path otherwise the Q500 may come into contact with them and crash. And while the Q500 is in Home Mode you will have a limited amount of directional control to help avoid obstacles, however, we strongly recommend switching to Smart or Angle Mode to avoid the obstacle (then you can switch back to Home Mode).

WARNING: Home Mode only works when the Q500 has a suitable GPS signal/lock. If the Q500 loses GPS signal/lock it will switch to Angle (Pilot) Mode automatically. This is why we strongly recommend learning to fly in Angle (Pilot) Mode as soon as possible. Otherwise, if you lose GPS signal/lock and are not able to properly control the Q500 in Angle (Pilot) Mode the aircraft may crash or even 'fly away'.

IMPORTANT NOTE: Crash damage and 'fly aways' are NOT covered under warranty.

LED STATUS INDICATIONS

LED STATUS INDICATIONS DURING STARTUP

Main LED Status Indicator	
Initialization in progress	Flashes red, green and blue (2 times per second)
Initialization failed	Pulses red (3 times per second)
The aircraft is in 'bind' mode	Flashes orange very rapidly (10 times per second)
The aircraft is not connected/linked to the transmitter	Flashes blue rapidly (5 times per second)
The aircraft is in a no-fly zone*	Flashes red and white rapidly (5 times per second)

*Please see the instruction manual for more information regarding no-fly zones

LED STATUS INDICATIONS BEFORE/DURING FLIGHT

Main LED Status Indicator	
The aircraft is in Smart Mode with GPS lock	Glows solid green
The aircraft is in Smart Mode without GPS lock	Flashes green (3 times per second) then off (for 1 second)
The aircraft is in Angle Mode with GPS lock	Glows solid purple
The aircraft is in Angle Mode without GPS lock	Flashes purple (3 times per second) then off (for 1 second)
The aircraft is in Home Mode	Flashes red rapidly (5 times per second)
First level low voltage battery warning	Flashes red, green and blue every 3 seconds

Second level low voltage battery warning	Flashes red, green and blue continuously
GPS lost	Flashes purple (1 flash per second)
Compass calibration required	Flashes orange twice between any LED indication (when in the air)
Below Motor LED Status Indicators	
Low voltage battery warning	Flash rapidly (5 times per second)
GPS disabled/lost	Flash 3 times per second then off 1 second second

LED STATUS INDICATIONS FOR CALIBRATION MODES

Main LED Status Indicator	
Compass calibration Mode entered	Flashes red and green slowly (2 times per second)
Compass calibration started	Flashes red and green rapidly (5 times per second)
Accelerometer calibration started	Flashes red, green and blue rapidly (3 times per second)
Accelerometer calibration Mode entered/data collection finished	Flashes red, green and blue slowly (1 time per second)
Calibration failed	Glows solid white

CGO2-GB CAMERA LED STATUS INDICATIONS

WiFi / camera initialization in progress	Glows solid red
MicroSD card error or missing microSD card	Flashes yellow (1 time per second)
Ready	Glows solid green
Taking still photo	Glows solid blue (1 time for 2 seconds)
Recording video	Flashes green, blue slowly (1 time per 2 seconds)

TAKING PHOTOS AND RECORDING VIDEO

The ST10 seamlessly integrates control of the CGO2-GB so you can easily take still photos and start/stop video recording using the corresponding buttons located on top:

TO TAKE A STILL PHOTO

Press the button located near the top left corner of the ST10. You'll hear an audible 'shutter' sound from the ST10 and the LED indicator on the front of the CGO2-GB will change from glowing solid green to glowing solid blue. It will take approximately 5 seconds to capture the photo and before you can take another still photo.

IMPORTANT NOTE: You cannot take still photos while recording video. You MUST stop recording video in order to take still photos.

TO START/STOP RECORDING VIDEO

Press the button located near the top right corner of the ST10. You'll hear an audible indication from the ST10 each time the recording starts/stops. And while video is recording the LED indicator on the front of the CGO2-GB will flash blue and green, and there will be a red dot next to the time length of the recording near the upper right-hand corner on the screen of the ST10.

IMPORTANT NOTE: You can choose to record video at 48, 50 (PAL) or 60 (NTSC) frames per second by tapping the corresponding button near the upper left-hand corner on the screen of the ST10. And keep in mind that the delay in the live video stream will be lowest at 48 and 50 as compared to 60 frames per second.

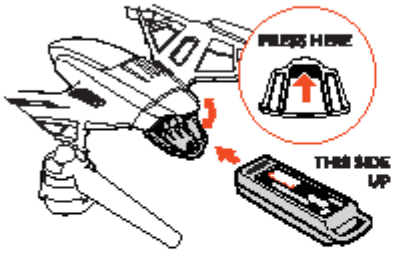
The slider located on the left side of the ST10 allows you to set the pitch/tilt position of the CGO2-GB from approximately straight ahead (when the slider is in the uppermost position) to approximately straight down (when the slider is in the lowermost position). And you can easily set a position in between by adjusting the slider accordingly.

QUICK TIP: There's an adjustable counterbalance located on the rear of the CGO2-GB. This counterbalance has been adjusted at the factory to provide the best balance and performance overall so typically it should NOT need to be adjusted. However, if you find that the CGO2-GB is making any 'buzzing' sounds while powered on, carefully twist the counterbalance in or out until the sound stops in order to achieve the best balance, performance and photo/video quality.

INSTALLING THE FLIGHT BATTERY

After the flight battery has been fully charged it's ready to be installed in the Q500:

IMPORTANT NOTE: Keep the Q500 level relative to the ground when installing the battery.



STEP 1) Push the area at the top of the battery door to release the latch/lock, and then open the door.

STEP 2) With the side of the battery cartridge that has the 'UP' arrow marking oriented upward, hold the handle and slide the battery into the battery compartment until you feel the connector make a positive connection.

NOTE: If you do not install the battery in the correct orientation it will not be possible to make a positive connection.

STEP 3) Close the battery door by pushing the area at the top to engage the latch/lock.

NOTE: If the door will not close because it's coming into contact with the handle on the battery cartridge, the battery is not inserted far enough to engage the connector properly.

GPS FUNCTIONALITY

The Q500 requires a suitable GPS signal/lock in order to start the motors and to be flown. This means it should only be operated outdoors in open areas that are free from people, vehicles and other obstructions. And in order to acquire a suitable GPS signal/lock it's critical that the GPS antenna installed in the top of the Q500 always have a clear view of the sky (100° minimum clearance required).

WARNING: Do NOT attempt to fly near or between tall buildings/obstructions, near or under dense vegetation, structures or indoors. Do NOT attempt to fly the Q500 with GPS enabled indoors or in any location known to have poor GPS coverage. And do NOT disable/turn off GPS unless you're able to properly control the Q500 in Angle (Pilot) Mode without GPS assistance and accept ALL responsibility and liability for crashes or 'fly aways'.

If the Q500 loses GPS signal/lock while flying it can only be flown in Angle (Pilot) Mode. Smart Mode and Home Mode, along with their corresponding features, will no longer work. And the Main LED Status Indicator will flash purple and the Below Motor LED Status Indicators will flash three (3) times per second then will stay off for one (1) second when the Q500 loses GPS signal/lock (or if GPS has been disabled/turned off).

If the GPS signal/lock is reacquired (after receiving 5–10 seconds of suitable GPS signal), Smart Mode and Home Mode will work again.

WARNING: Loss of GPS signal/lock may result in a crash or even a 'fly away'.

IMPORTANT NOTE: Crash damage and 'fly aways' are NOT covered under warranty.

NO-FLY ZONES

With a suitable GPS signal/lock it will not be possible to start the motors, takeoff or fly the Q500 in the 'No-Fly Zones' within a 4 mile (6.4 kilometer) radius of most major airports.

PREPARING TO FLY

WARNING: Before flying you MUST review and understand all of the NOTICES AND WARNINGS and the GENERAL SAFETY PRECAUTIONS AND WARNINGS found near the beginning of this instruction manual. Failure to operate this product in a safe and responsible manner could result in damage to the product, property and/or cause serious injury.

WARNING: Always operate the Q500 in open areas (approximately 10000 square feet/930 square meters or more) that are free from people, vehicles, trees and other obstructions. Never fly near or above crowds, airports or buildings.

Never attempt to operate the Q500 nearby tall buildings/obstructions that do not offer a clear view of the sky (a minimum clearance of 100').

After selecting a suitable flying area, please follow these steps:

Step 1) ALWAYS turn the ST10 on and allow it to boot up fully BEFORE turning the Q500 on.

IMPORTANT NOTE: If you're a first-time pilot we strongly recommend putting the Flight Mode Selection Switch (located just above the right-hand control stick) in the top position to activate Smart Mode. Or, if you're an experienced RC/drone pilot we strongly recommend putting the switch in the middle position to activate Angle (Pilot) Mode.

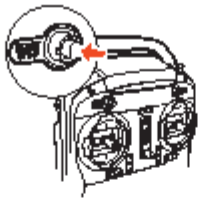
Step 2) Place the Q500 on a level and stable surface then slide the power switch to the 'ON' position. **DO NOT TOUCH OR MOVE THE Q500 UNTIL THE INITIALIZATION PROCESS IS COMPLETE.** The Main LED Status Indicator on the bottom of the Q500 will show one of the following indications when initialization is complete:

- The Q500 is in Smart Mode with GPS lock Glows solid green
- The Q500 is in Smart Mode without GPS lock Flashes green (3 times per second) then off (for 1 second)
- The Q500 is in Angle (Pilot) Mode with GPS lock Glows solid purple
- The Q500 is in Angle (Pilot) Mode without GPS lock Flashes purple (3 times per second) then off (for 1 second)

Step 3) If you do not have a GPS lock move the Q500 to a different area, turn it off, then back on again. Or, if you have a GPS lock, proceed to the next step.

Step 5) Step back approximately 26 feet (8 meters) behind the Q500.

Step 6) Press and hold the red START/STOP button for approximately three (3) seconds to start the motors. Or you can lower the left-hand stick all the way, move it all the way to the left, then all the way to the right and back to the middle to start the motors.



FLYING

TAKEOFF

WARNING: Do not attempt to operate the Q500 in winds that exceed 8–12 miles per hour (13–19 kilometers per hour).

To takeoff, slowly raise the left-hand stick to slightly above the center position. The Q500 will takeoff and climb slowly (or raise the stick further until it does). Allow the stick to return to the center position when the Q500 reaches the desired altitude.

FLYING

Take your time learning how the Q500 responds to various control inputs while flying. In Smart Mode the Q500 will always move in the direction the right-hand control stick is pushed relative to the pilot and no matter which way the front/nose is pointed. In Angle (Pilot) Mode the Q500 will move in the direction the control stick is pushed relative to the front/nose of the aircraft (and the 'angle' of movement is determined by how far you push the stick away from the center position). And please see the corresponding sections of this instruction manual for more information on Smart Mode and Angle (Pilot) Mode.

IMPORTANT NOTE: If at any time during flight you feel like the Q500 is drifting out of/beyond your control, simply release both control sticks. The Q500 will automatically self-level and will even hold its position (with a suitable GPS signal/lock) when both control sticks are centered. You can also activate Home Mode so the Q500 automatically flies itself back to the home point and lands.

LANDING

There are two ways to land the Q500:

1) Position the Q500 above the area where you would like to land. Slowly lower the left-hand stick to below the center position. The Q500 will descend slowly and land. After the Q500 lands, press and hold the red START/STOP button for approximately two (2) seconds to stop the motors.

2) Activate Home Mode and the Q500 will automatically fly itself back to the home point and will land within a 10 foot (3 meter) diameter circle around it.

WARNING: Always land as soon as possible after the first level low voltage battery warning, or land immediately after the second level low voltage battery warning (as indicated by the vibrations and audible alerts from the ST10, and by the Below Motor LED Status Indicators flashing rapidly). And if at any time the Aircraft Battery Voltage shown on the screen is below 10.7V, land the Q500 immediately.

AFTER LANDING

ALWAYS turn off the Q500 BEFORE turning off the ST10. Then remove the battery from the Q500 and allow it to cool to ambient/room temperature before recharging.

WARNING: Do NOT leave the ST10 and Q500 powered on and do NOT leave the flight battery installed in the Q500 as doing so can over-discharge and damage the batteries. Over-discharging can cause damage to the batteries resulting in reduced performance or failure of the batteries entirely.

IMPORTANT NOTE: Battery damage, crash damage and 'fly aways' are NOT covered under warranty.

DISABLING GPS

WARNING: Smart Mode and Home Mode, along with their corresponding features, only work when GPS is active and the Q500 has a suitable GPS signal/lock. If you disable/turn off GPS the Q500 can only be flown in Angle (Pilot) Mode. And if you cannot properly control the Q500 in Angle (Pilot) Mode the aircraft may crash or even 'fly away'.

IMPORTANT NOTE: Crash damage and 'fly aways' are NOT covered under warranty.

We do not typically recommend disabling GPS for any reason, especially if you're a first-time or low-time pilot. However, if you're an experienced pilot that's able to properly control the Q500 in Angle (Pilot) Mode, and you do not exceed any altitude/distance limits or fly in any 'no fly zones' in your area, you can disable/turn off GPS. And do NOT disable/turn off GPS unless you accept ALL responsibility and liability for crashes or 'fly aways'.

IMPORTANT NOTE: Every time you turn the Q500 on it will default to having GPS active/on (even if you disabled GPS the last time is was powered on).

Step 1) While the ST10 and Q500 are powered on and linked (and the motors are NOT running), move the Proportional Control Rate Slider on the right side of the ST10 to the uppermost (rabbit) position.

Step 2) Move the right-hand stick all the way to the right and hold it there until step 3 is completed.

Step 3) Move the Flight Mode Selection Switch from Smart to Home and Home to Smart mode 4 times in 3 seconds.
When GPS has been disabled successfully the Q500 will emit an audible indication and the GPS status on the ST10 screen will show 'Disabled'. Also, the Main LED Status Indicator will flash purple and the Below Motor LED Status Indicators will flash three (3) times per second then will stay off for one (1) second.

GRAPHICAL USER INTERFACE (GUI)

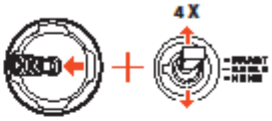
You can download the graphical user interface (GUI) software on the Q500 product page at www.Yuneec.com. Follow the on-screen instructions to install and operate the software which allows you to see the status of all sensors, to adjust various settings, check GPS accuracy, update firmware and more using the included USB Interface/Programmer.

COMPASS CALIBRATION

Step 1) Do not calibrate the compass inside parking structures, near buildings or surfaces with metal in them (like roads parking lots with rebar). Only calibrate the compass in open areas/fields far away from power lines and other metallic or concrete surfaces/structures.

Step 2) Turn on the transmitter and allow it to boot up fully before turning on the aircraft. And when the transmitter and aircraft are powered on and linked proceed to the next step.

Step 3) Move the Proportional Control Rate Slider on the right side of the ST10 to the uppermost (rabbit) position.



Step 4) Move the left-hand stick all the way to the left and hold it there. Then move the Flight Mode Selection Switch from Smart to Home and Home to Smart mode 4 times.

Step 5) When the main LED status indicator flashes red and green slowly (2 times per second) you have entered compass calibration mode. Pick up the aircraft and hold it flat with the nose pointed to the north. After 5 seconds the main LED status indicator should flash red and green rapidly (5 times per second).

Step 6) Slowly rotate the aircraft 360 degrees toward the north (as illustrated) until it's flat and upright in your hands again.

Step 7) Rotate the aircraft 45 degrees to the left. Then slowly rotate the aircraft 360 degrees toward the north (as illustrated) until it's flat and upright in your hands again.

Step 8) Rotate the aircraft 45 degrees to the left. Then slowly rotate the aircraft 360 degrees toward the north (as illustrated) until it's flat and upright in your hands again.

Step 9) Rotate the aircraft 45 degrees to the left. Then slowly rotate the aircraft 360 degrees toward the north (as illustrated) until it's flat and upright in your hands again.

IMPORTANT NOTE: Steps 6 to 9 must be completed in less than 30 seconds in order to successfully complete compass calibration.

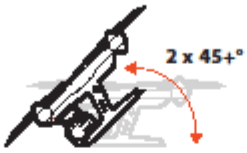
Step 10) The main LED status indicator should be flashing red and green rapidly (5 times per second). Hold the aircraft as still as possible until it main LED status indicator stops blinking rapidly.

Step 11) If you hear an audible indication after the main LED status indicator stops blinking rapidly you have successfully completed compass calibration.

IMPORTANT NOTE: If compass calibration fails the main LED status indicator will glow solid white and you must restart the calibration process.

ST10 AND RECEIVER BINDING

Step 1) Turn on the Q500, and after the Main LED Status Indicator begins to flash blue rapidly, lift the back end upward approximately 45° then back down to 'level' two (2) times to put the aircraft/receiver into bind mode. The Main LED Status Indicator will begin to the flash orange very rapidly when the aircraft/receiver are in bind mode.



Step 2) Turn on the ST10, and if required tap the screen (outside of the pop up status window) to bypass the RC and WiFi connection process.

Step 3) Tap the 'Model Select' button, and if required press 'OK' to bypass any pop up warnings/alerts.

Step 4) Select the existing model (for example: 'Q500') you would like to bind to (or create a 'New Model'), and if required press 'OK' to bypass any pop up warnings/alerts.

Step 5) Tap the 'Flight Settings' button, and if required press 'OK' to bypass any pop up warnings/alerts.

Step 6) Tap the 'Bind' button and select the 'SR12S_XXXXX' receiver listed in the column under 'Model', then tap 'OK' after the connection has been established.

Step 7) Tap the 'Back' button two (2) times to return to the main screen and the model/receiver should automatically connect to the ST10.

ST10 AND CGO2-GB BINDING

Step 1) Turn on the ST10, and if required tap the screen (outside of the pop up status window) to bypass the RC and WiFi connection process.

Step 2) Tap the 'Model Select' button, and if required press 'OK' to bypass any pop up warnings/alerts.

Step 3) Select the existing model (for example: 'Q500') you would like to bind to (or create a 'New Model'), and if required press 'OK' to bypass any pop up warnings/alerts.

Step 4) Turn on the Q500 and ensure that the CGO2-GB is powered on.

Step 5) If required tap the screen (outside of the pop up status window) to bypass the RC and WiFi connection process, then tap the 'Flight Settings' button and press 'OK' to bypass any pop up warnings/alerts.

Step 6) Tap the 'Bind' button and select the 'CGO2_XXXXXX' camera listed in the column under 'Camera', then enter the password '1234567890' when prompted and tap 'OK' after the connection has been established.

Step 7) Tap the 'Back' button two (2) times to return to the main screen and the camera should automatically connect to the ST10.

IMPORTANT NOTE: Streaming video from the CGO2-GB to the ST10 and to a separate phone/tablet (or another Yuneec transmitter/personal ground station) at the same time is NOT recommended as it will result in a very significant lag in the video downlink.

TROUBLESHOOTING

ISSUE	POSSIBLE CAUSE	SOLUTION
Q500 will not initialize	The Q500 was moved during initialization.	Turn the Q500 off then back on again, and ensure it does not move during the initialization process.
Flight battery will not charge (red LED on charger glows solid red).	The Q500 flight battery needs to be replaced.	Replace the Q500 flight battery.
Q500 GPS will not lock (ST10 indicates GPS Disabled)	Overcast, thick clouds blocking GPS reception.	Wait for lighter cloud cover or disable GPS*.
	Solar flares in progress.	Wait for disturbance to subside or disable GPS*.
	Q500 is indoors.	Move the Q500 outside or disable GPS*.
	Objects blocking 100 degrees of clear view of the sky.	Disable GPS. Flying indoors/disabling GPS NOT Recommended.
	(Possibly underneath a metallic or glass cover, inside a vehicle, near tall buildings, etc...)	Move Q500 to a clear and open area.
	Video transmitter nearby, such as an aftermarket video downlink system.	Reposition or remove the video transmitter.
	Raised threat level by the U.S. government.	Wait for the threat level to be reduced or disable GPS*.
Q500 GPS has reduced precision	The GPS module is possibly damaged.	Replace the GPS module.
	The compass has been exposed to a magnet.	Move the Q500 away from the magnetic source. If problem persists, calibrate compass.
Q500 GPS functions not operating properly	The GPS module is possibly damaged.	Replace the GPS module.
	GPS lock has not been acquired.	Ensure GPS antenna has clear view of sky and GPS lock has been acquired.

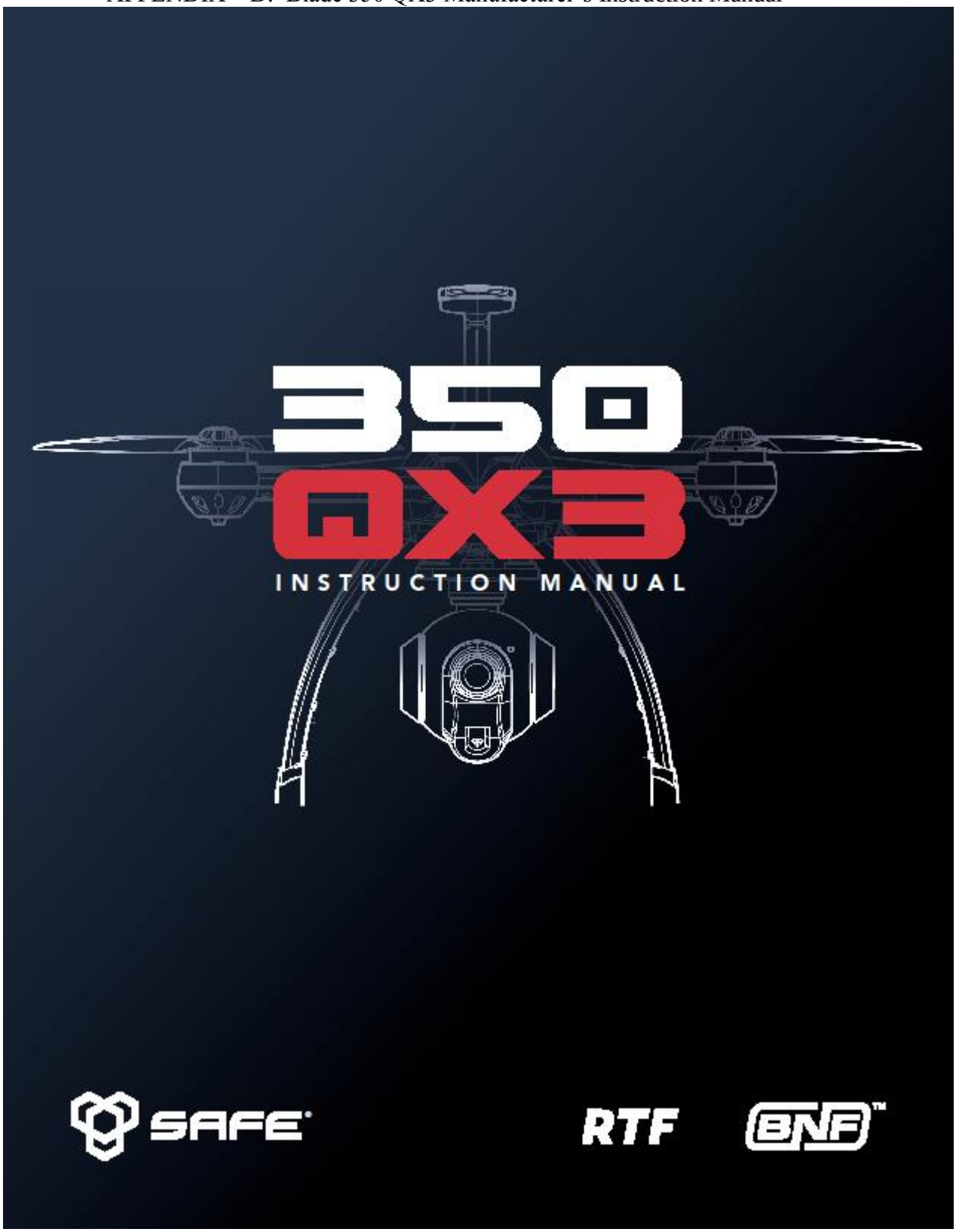
ISSUE	POSSIBLE CAUSE	SOLUTION
Q500 Motors won't start	'Compass error' is indicated by the LED.	See below for troubleshooting 'compass error'.
	Q500 is in No Fly Zone.	Move at least 4 miles away from no fly zone. Most major airports are no fly zone areas.
	Q500 is above 8,000 feet above MSL.	Move Q500 below 8,000 feet above MSL.
	Incorrect motor start up procedure.	Review Motor Starting/Stopping procedure in manual.
	Q500 is too close to a metal object or metal surface .	Move Q500 away from large metal objects or surfaces.
Q500 Flashes orange twice between indications	Compass needs to be calibrated .	Calibrate compass.
Q500 beeps constantly and motors won't start	EMERGENCY Mode. Possibly due to obstructed propeller during motor start up.	Check that nothing is obstructing any propeller/motor, turn the Q500 off then back on again.
Q500 Won't hold position in hover	Weak GPS signal.	Confirm that the flying area has 100 degrees of clear view of the sky.
	U.S. Government has raised threat level.	Wait for threat level to be reduced before flying.
	Vibration levels high, indicated by shaky landing gear.	Check to ensure propellers are not bent, nicked or damaged in any way. Replace damaged propellers.

WARRANTY INFORMATION

Yuneec products and accessories are guaranteed against manufacturing defects for six (6) months from the original date of purchase. Yuneec's sole obligation in the event of such defects during this period is to repair or replace the defective part or product with a comparable part or product at Yuneec's sole discretion. Except for such repair or replacement, the sale, processing or other handling of this product is without warranty, condition or other liability. Damage (including crash damage) resulting from use, accident, or normal wear and tear is not covered by this or any warranty. Yuneec assumes no liability for any accident, injury, death, loss, or other claim related to or resulting from the use of this product. In no event shall Yuneec be liable for incidental or consequential damages relating to or resulting from the use of this product or any of its parts. Please review the instructions carefully when using the products. Returns or replacements of parts and/or products may be subject to shipping, handling, replacement and/or restocking fees.

IMPORTANT NOTE: Crash damage is NOT covered under warranty.

APPENDIX – D: Blade 350 QX3 Manufacturer's Instruction Manual



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 QX3 are not compatible with any other product, and the 350 QX3 is not compatible with any other ESCs. Use of any other ESCs on the 350 QX3 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.

Before operating this product, consult all applicable local and national regulations, as well as any accredited modeling associations in your area. In the US, airspace regulations are governed by the Federal Aviation Administration (FAA) and applied in part by the Academy of Model Aeronautics (AMA). You are responsible for both how and where you fly your aircraft.
FAA Website: *http://www.faa.gov/*
AMA Website: *http://www.modelaircraft.org/*

350 QX3 INSTRUCTION MANUAL

Table of Contents

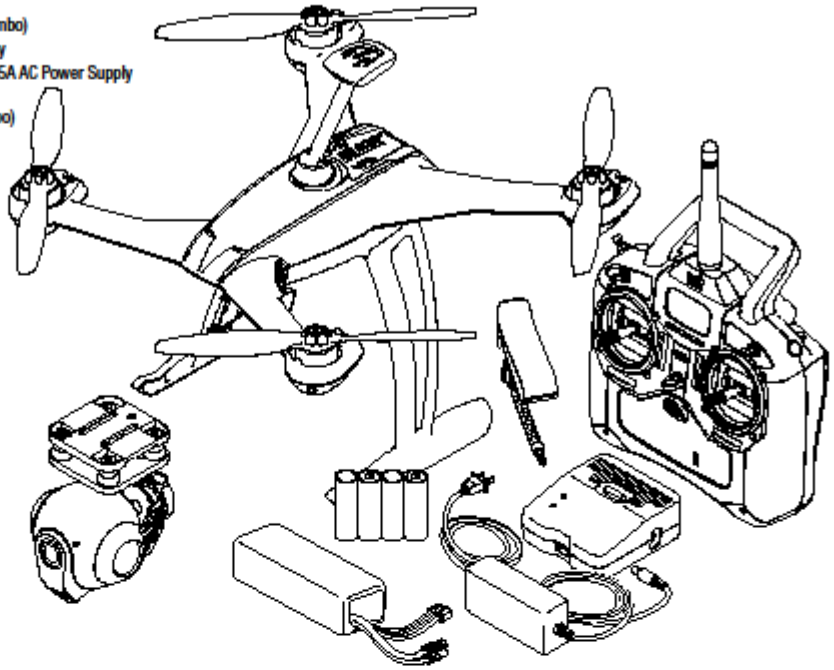
Components	
Airframe	Blade® 350 QX3 Quadcopter
Motors	4x Brushless Outrunner Motor, 1100Kv
ESCs	4x 10-Amp Brushless ESC
Battery	3000mAh 3S 11.1V 20C Li-Po Battery
Charger	3S DC Li-Po Balancing Charger with 5A AC Power Supply
Transmitter	Spektrum™ DX4 DSMX® 4-Channel Transmitter (RTF, AP Combo)
Camera/Gimbal	CG02 GB 1080p HD (AP Combo)

Specifications	
Length	18.30 in (465mm)
Height	7.48 in (190mm)
Rotor Diameter	22.80 in (580mm)
Flying Weight	33.7 oz (955 g)

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

Box Contents

- Blade 350 QX3
- CGO2 3-Axis Camera/Gimbal (AP Combo)
- 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, AP Combo)
- 4 AA Batteries (RTF, AP Combo)
- Cell Phone Mount



Charging Warnings

WARNING: Failure to exercise caution while using this product and comply with the following warnings could result in product malfunction, electrical issues, excessive heat, FIRE, and ultimately injury and property damage.

- **NEVER LEAVE THE POWER SUPPLY, CHARGER AND BATTERY UNATTENDED DURING USE.**
- **NEVER CHARGE BATTERIES OVERNIGHT.**
- Never attempt to charge dead, damaged or wet battery packs.
- Never attempt to charge a battery pack containing different types of batteries.
- Never allow children under 14 years of age to charge battery packs.
- Never charge batteries in extremely hot or cold places or place in direct sunlight.
- Never charge a battery if the cable has been pinched or shorted.
- Never connect the charger if the power cable has been pinched or shorted.
- Never attempt to dismantle the charger or use a damaged charger.
- Never drop charger or batteries.
- Always use only rechargeable Li-Po batteries designed for use with this type of charger.
- Always inspect the battery before charging.
- Always keep the battery away from any material that could be affected by heat.
- Always monitor the charging area and have a fire extinguisher available at all times.
- Always end the charging process if the battery becomes hot to the touch or starts to change form (swell) during the charge process.
- Always connect the charge cable to the charger first, then connect the battery to avoid short circuit between the charge leads. Reverse the sequence when disconnecting.
- Always connect the positive red leads (+) and negative black leads (–) correctly.
- Always disconnect the battery after charging, and let the charger cool between charges.
- Always charge in a well-ventilated area.
- Always terminate all processes and contact Horizon Hobby if the product malfunctions.

Low Voltage Cutoff (LVC)

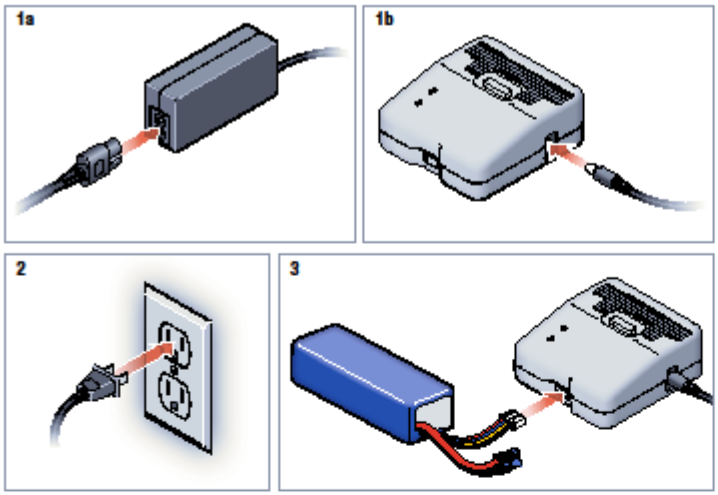
Low voltage cutoff (LVC) protects the Li-Po battery from over-discharge in flight and activates when the battery reaches a preset value. When the battery is discharged to the cutoff point, the aircraft will display rapidly flashing red, green and blue LEDs to warn you it's time to land. When you see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

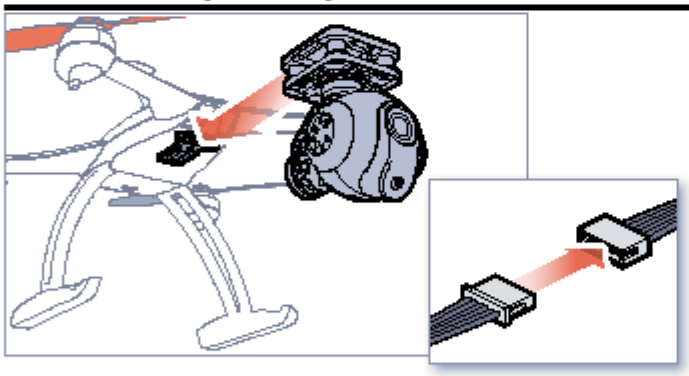
Charger LED Codes

Green Blinking: Power connected
Red Blinking: Charging
Red & Green Blinking: Cells balancing
Green Solid: Charging complete
Red Solid: Error

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.

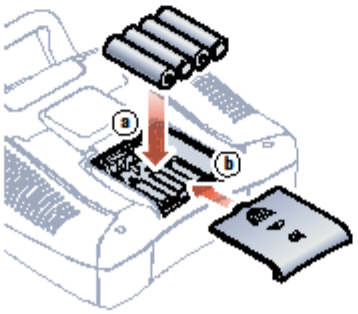
NOTICE: If using a battery other than the included Li-Po battery, refer to your battery manufacturer's instructions for charging.

Install the Gimbal (AP Combo)



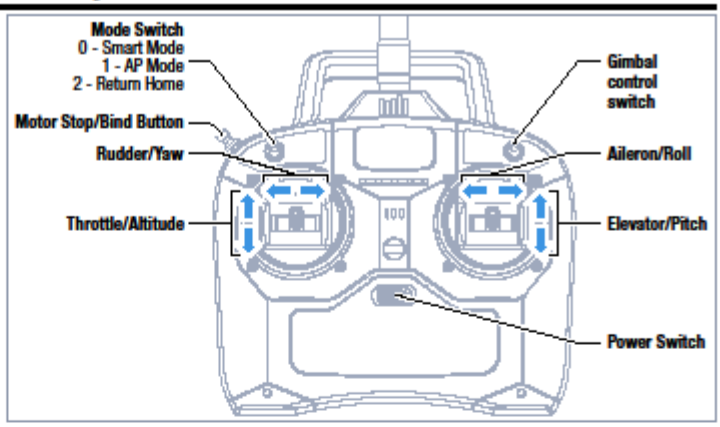
- Slide the gimbal on the mount rails until it locks.
- Connect the wiring harness to the plug on the bottom of the 350 QX3.
- To remove the gimbal, press the tab at the front of the mount and slide the gimbal forward.

Install the Transmitter Batteries (RTF, AP Combo)

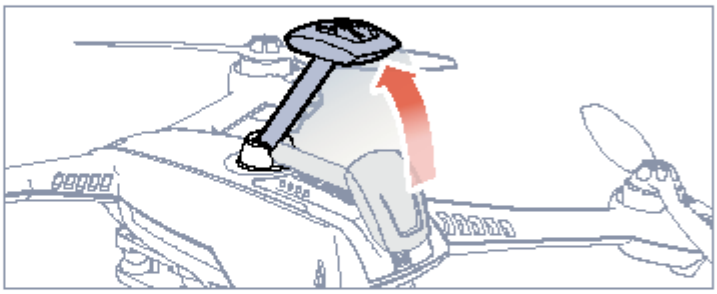


- Install 4 AA batteries in the transmitter as shown.

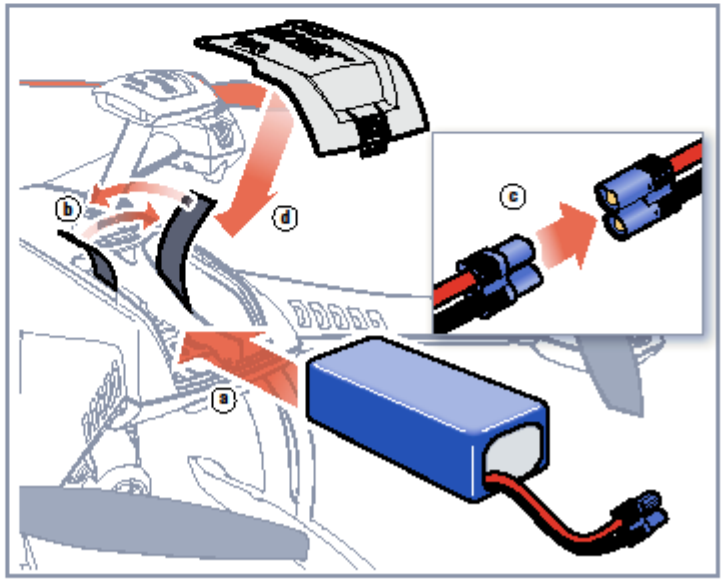
Transmitter Control Layout (RTF, AP Combo)



Extend the GPS Mast



Install the Flight Battery



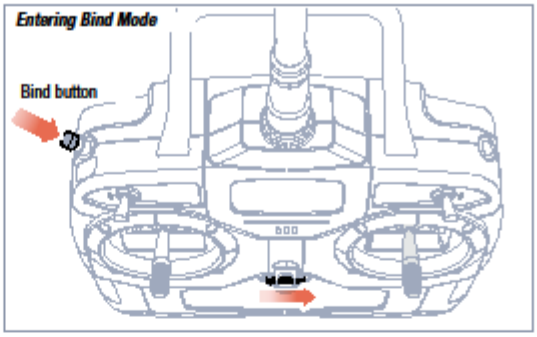
Transmitter Setup (BNF)

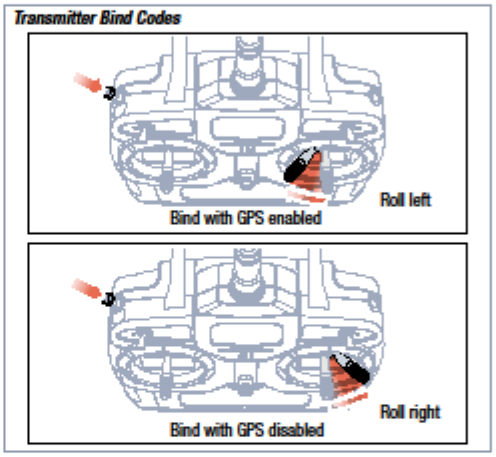
Transmitter	Model Type	Switch Select	Reversing	Throttle Cut	Model Setup	Switch Position
DX6i	acro	n/a	gear - R All others - N	act	Travel Adj: Flap ↑ 120 ↓ 100 Throttle Subtrim: ↑ 10 Flaps: FLAP Norm ↑ 100 land ↓ 100 Mix 1: gear → gear act rate: D –60%, U 0% SW: ele d/r	**Smart Mode** = F Mode (POS. 0) **Return Home** = F Mode (POS. 1) **AP MODE** = ELE D/R (POS 1) **GIMBAL control** = FLAP (POS 1), Throttle controls gimbal angle **Accelerometer calibration** = Set FLAP to POS 0 and cycle Flight Mode switch 4 times **Compass calibration** = Set FLAP to POS 10 and cycle Flight Mode switch 4 times
DX6	airplane	Channel Assign: Channel Input Config (2nd page): Gear: B AUX1: A	Servo setup: AUX1 - R All others - N	Throttle cut: Position: –130% Switch: Switch i	Servo setup: Travel: 120% 140% AX1	**Smart Mode** = Switch B (POS. 0) **AP MODE** = Switch B (POS 1) **Return Home** = Switch B (POS. 2) **GIMBAL Control** = Switch A (POS 1), Throttle controls gimbal angle **Compass calibration** = Switch A (POS 1) and cycle B switch 4 times **Accelerometer calibration** = Switch A (POS 0) and cycle B switch 4 times
DX7s	airplane	Knob: AUX2 Gear: AUX1 Flap: Gear	Servo setup: All NORM	Throttle cut: 0% Trainer	Servo setup: Travel: Aux1 120% 140%	**Smart Mode** = Flap switch (POS. 0) **AP MODE** = FLap switch (POS 1) **Return Home** = Flap switch (POS. 2) **GIMBAL Control** = Gear switch (POS 0), Knob controls gimbal angle **Compass calibration** = Gear switch (POS 0) and cycle FLAP switch 4 times **Accelerometer calibration** = Gear switch (POS 1) and cycle FLAP switch 4 times
DX8	airplane	Gear: AUX1 Knob: AUX2 F Mode: Gear	Servo setup: All NORM	Throttle cut: 0% Trainer	Servo setup: Travel: Aux1 120% 140%	**Smart Mode** = F Mode switch (POS. 0) **AP MODE** = F Mode switch (POS 1) **Return Home** = F Mode switch (POS. 2) **GIMBAL Control** = Gear switch (POS 0), Knob controls gimbal angle **Compass calibration** = Gear switch (POS 0) and cycle FLAP switch 4 times **Accelerometer calibration** = Gear switch (POS 1) and cycle FLAP switch 4 times
DX9/DX18	airplane	Channel Assign: Channel Input Config (2nd page): Gear: B AUX1: A AUX2: R Knob	Servo setup: All NORM	Throttle cut: Position: –130% Switch: Switch i	Servo setup: Travel: 140% 120% AX1	**Smart Mode** = Switch B (POS. 0) **AP MODE** = Switch B (POS 1) **Return Home** = Switch B (POS. 2) **GIMBAL Control** = A switch (POS 0), Knob controls gimbal angle **Compass calibration** = A switch (POS 0) and cycle B switch 4 times **Accelerometer calibration** = Gear switch (POS 1) and cycle B switch 4 times

Binding

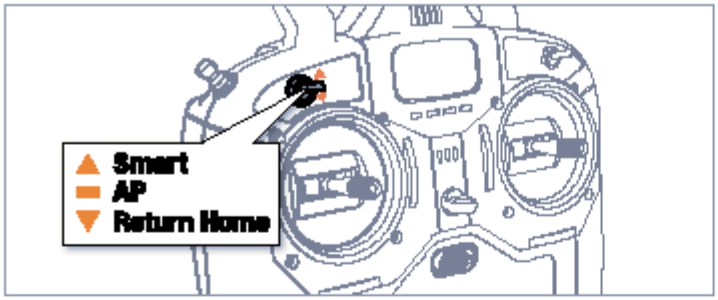
The RTF/AP combo transmitter is bound to the model at the factory. If for any reason the model needs to be re-bound, follow the directions below.

Binding the 350 QX3 To Your Transmitter
1. With the transmitter and quadcopter powered OFF, connect the battery to the 350 QX3.
2. Place the 350 QX3 on a flat level surface.
3. Power the 350 QX3 ON and let it initialize. The status LED will remain off.
4. Hold the 350 QX3 upside down until the status LED flashes blue, indicating it has entered bind mode.
5. Set the quadcopter back upright.
6. On your transmitter, ensure the throttle is in the low position and the throttle trim is at neutral.
7. Power ON your transmitter in bind mode according to the instructions included with your transmitter.
8. When the binding process is successful, the 350 QX3 will emit a quick, 3-beep tone and the LED will flash either green, purple or red, depending on which flight mode is selected. If the LED is flashing red, the 350 QX3 is in Return Home mode. Switch to Smart or AP Mode (green or purple flashing) before attempting to start the motors.
9. Place the quadcopter outdoors in the desired starting position in preparation for flight.





Flight Mode Switch (RTF, AP Combo)



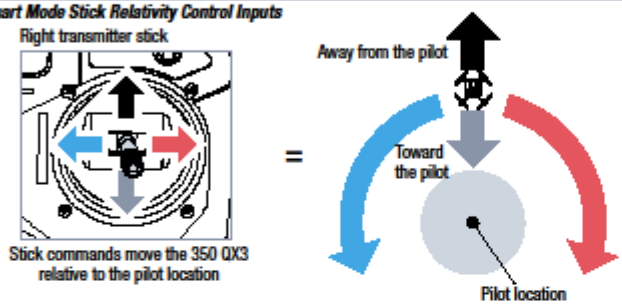
Smart Mode
(Solid Green LED on the 350 QX3)

AP Mode
(Solid Purple LED on the 350 QX3)

Return Home
(Red flashing LED on the 350 QX3)

Flight Modes Explained

Smart Mode Stick Relativity Control Inputs



Stick commands move the 350 QX3 relative to the pilot location

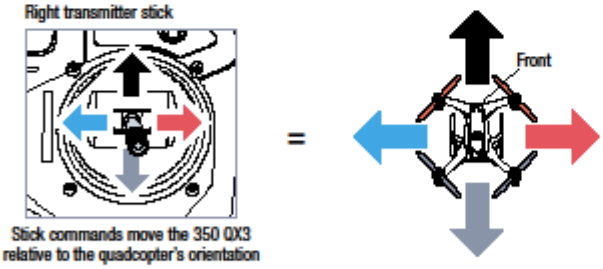
Smart Mode

Solid Green LED

This flight mode is intended for the beginner pilot. For best results while using **Smart Mode,** it is recommended the pilot always turn to face the 350 QX3 while flying.

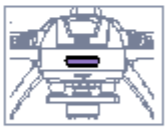
- *Stick Relativity*– While in **Smart Mode,** the path of the aircraft will always follow the control stick input direction relative to the pilot location, regardless of the direction the nose of the aircraft is pointing.
- *SAFE Circle™ feature*– In most scenarios, the quad will not enter the SAFE Circle.
- *Position Hold*– The aircraft will hold its position when elevator and aileron inputs are at neutral.
- *Self-Leveling*– Brings the 350 QX3 to a level attitude when the elevator and aileron inputs are at neutral.
- *100 m geo-fence*– The 350 QX3 uses GPS information to create a virtual barrier and will not travel farther than 100 meters from the home position.

AP Mode Control Inputs



Stick commands move the 350 QX3 relative to the quadcopter's orientation

AP Mode



Solid Purple LED

This flight mode keeps the 350 QX3 in a steady hover and locked into position while the controls are held at neutral, making it deal for image/video capture.

- *Control Input*– While in **AP Mode,** the 350 QX3 follows the control stick input direction relative to the position and orientation of the aircraft rather than the position of the pilot.
- *Position Hold*– The aircraft will hold its position when elevator and aileron inputs are at neutral.
- *Self-Leveling*– Brings the 350 QX2 AP to a level attitude when the elevator and aileron inputs are at neutral.
- *100 m geo-fence*– The 350 QX3 uses GPS information to create a virtual barrier and will not travel farther than 100 meters from the home position.

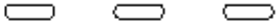
NOTICE: If the 350 QX3 loses GPS signal while flying in either **Smart** or **AP Mode,** the LED will flash either green or purple, depending on which flight mode you are currently using, and the 350 QX3 will default to a stable flight mode with similar control response as AP Mode without the availability of position hold. Return Home will not function. Please familiarize yourself with the controls in AP Mode to ensure a safe return of the 350 QX3 in the event of GPS signal loss.

LED Codes

CAUTION: If you see the LED signal for low battery (10.6V), immediately land your aircraft and recharge the battery.

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

Startup Codes

Radio off or not bound to the quad	No LED
Initialization failed	
IMU initialization	
Fully charged battery	
Fully discharged battery	
Emergency mode (cycle power to reinitialize)	
Bind mode	

Flying Codes

GPS Disabled	
Smart Mode, waiting for GPS	
Smart Mode, GPS lock	
AP Mode, waiting for GPS	
AP Mode, GPS lock	
Return to home mode activated	
GPS lost while in Smart mode (in flight)	
GPS lost while in AP mode or return to home (in flight)	
Battery voltage below 10.9V	
Battery voltage below 10.6V	
Compass calibration needed	

GPS Functionality

To acquire a reliable GPS signal, it is important the 350 QX3 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 cannot acquire a GPS lock at startup, the motors cannot be started in either **Smart Mode** or **AP Mode.** You will have to re-bind the quadcopter with the GPS functions turned off to allow you to start the motors for flight (*see the Binding section*). It is not possible to use **Smart Mode** without having GPS enabled. If the 350 QX3 is initialized with GPS disabled, it will default to **AP Mode** without position hold, but will still be capable of altitude hold.

If you lose the GPS signal while flying, the aircraft will not have Stick Relativity, the SAFE Circle™ feature, Position Hold or Return Home functions available. We recommend maneuvering the 350 QX3 by steering with forward elevator and rudder only if GPS signal is lost.

CAUTION: Do not attempt to fly the 350 QX3 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 QX3 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 QX3 loses GPS lock while flying in **Smart, AP or Return Home** mode, the LED will flash green, purple or red, depending on which flight mode you are currently using. The 350 QX3 will default to a stable flight mode with similar control response to **AP Mode** without the availability of position hold.
- If the 350 QX3 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.
- Once the 350 QX3 has landed in Return Home mode, it will stop the motors.

With **GPS OFF**

- The LED will show solid white.
- The flight mode available will be similar in control response to **AP Mode** without the availability of position hold.
- Altitude hold will function normally.

Loss of GPS Signal

If the 350 QX3 loses GPS signal in flight, it will respond according to the following conditions:

Smart Mode: (Green flashing LED)

If the 350 QX3 loses GPS signal in flight while in Smart Mode the LED will flash green. The stick relativity feature of **Smart Mode** will not function. The 350 QX3 will follow the control stick input direction relative to the position and orientation of the aircraft rather than the position of the pilot, similar to the control response in **AP Mode.** Return home will not function. The aircraft will still use the pressure sensor to maintain altitude and control rate of descent. If GPS signal is reacquired, after receiving 5–10 seconds of reliable GPS signal, the **Smart Mode** functions return.

AP Mode: (Purple flashing LED)

If the 350 QX3 loses GPS signal in flight while in **AP Mode** the LED will flash purple. The quadcopter will not enter GPS position hold when the right stick is returned to center. Return home will not function. If GPS signal is reacquired after receiving 5-10 seconds of reliable signal, **AP Mode** functions return.

Loss of Transmitter Signal

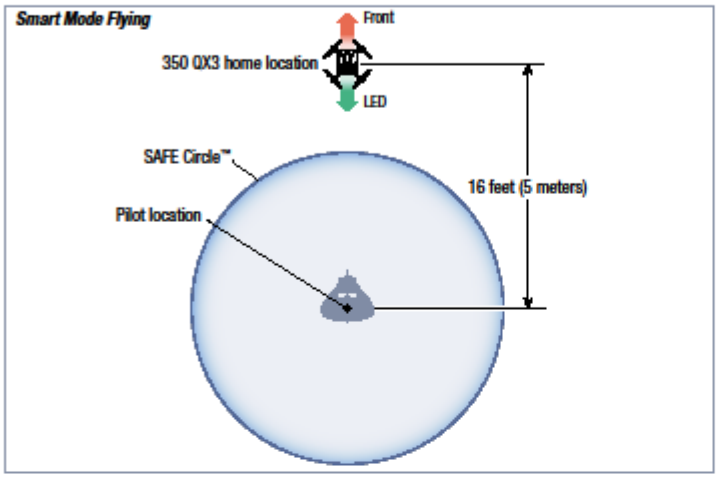
If the transmitter signal is lost for any reason, the 350 QX3 will respond according to the following conditions:

- If the motors are stopped, the 350 QX3 will disarm.
- If the motors are turning but the 350 QX3 is not flying, it will stop the motors and disarm.
- If the 350 QX3 is flying and has a good GPS lock with a home position set, it will activate the Return Home function (rapid red flashing LED) upon the loss of the transmitter signal.
- If the compass is faulty, not connected or if there is no GPS lock, the 350 QX3 descends slowly when the transmitter signal is lost.
- If the pressure sensor is not working, the 350 QX3 reduces power to control the decent when the transmitter signal is lost.

Flight Guidelines and Warnings

- Always inspect the model before flight.
- 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.
- Always follow the most up to date AMA National Model Aircraft Safety Code.

Preparing the 350 QX3 For Flight



1. Power on the transmitter with the flight mode set to **Smart Mode.**
2. Remove the battery hatch. Install a fully charged battery pack, connect the blue EC3™ battery connector and reinstall the hatch.
3. With the quad on a level surface, turn on the power switch and allow the 350 QX3 to initialize. If the GPS is enabled, wait for the GPS signal to be acquired (solid green LED).

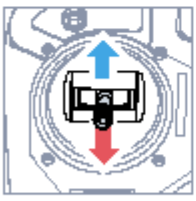
IMPORTANT: While in **Smart Mode,** the motors will not start if a GPS signal has not been acquired.

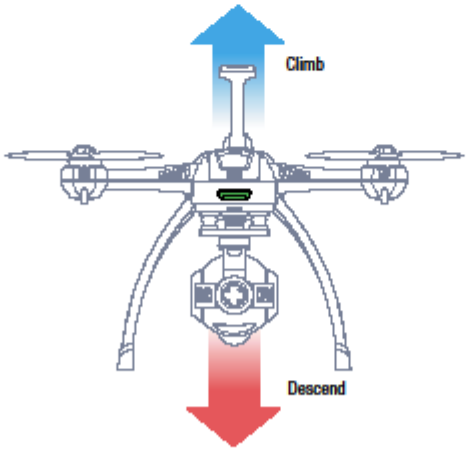
4. Move the aircraft to the desired home location and orient the aircraft pointed away from the pilot.
5. Step back approximately 16 feet (5 meters) from the home location.
6. To start the motors, move both sticks into the bottom inside corners, then back to center.
7. The props will begin to spin. The home position for GPS functions is set and your aircraft is ready to fly.

Lower the throttle stick fully and hold the bind button to stop the motors after flight.

⚠ **CAUTION:** When the home location is set (**step 6**), the 350 QX3 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 QX3





Takeoff

The throttle control for the 350 QX3 changes the altitude of the quadcopter by moving the throttle stick above or below half throttle. As you move the throttle stick above half, the quadcopter will climb. As you move the throttle stick below half, the quadcopter will descend. The farther away from half you move the throttle stick, the faster the quadcopter will climb or descend.

To takeoff, slowly advance the throttle to slightly above half. The 350 QX3 will slowly climb. When the quadcopter reaches the desired height, ease the throttle back to half to hold that altitude.

Explore the flight envelope of the 350 QX2 AP 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** operates more like a conventional RC helicopter or multicopter.

NOTICE: If you begin to lose control, release the control sticks and the model will self-level.

Pay close attention to the LED while flying. If at any time the LED indicates the flight battery voltage is low (below 10.6V), as shown in the LED code section, land the 350 QX3 immediately and charge the flight battery.

Landing

To land the 350 QX2 AP there are two options:

- Guide the aircraft to where you wish to land. Slowly reduce the throttle below half to descend and land. When the quadcopter has landed, lower the throttle completely and press the bind button to stop the motors.
- Activate the Return Home function to return the 350 QX3 to the assigned home location and land automatically.

CAUTION: Do not activate the **Return Home** function if the 350 QX3 is showing the low battery indication. *Manually land the aircraft immediately.*

Return Home

NOTICE: Return home will only function if the 350 QX3 has GPS lock.

- When this feature is activated, the LED will rapidly flash red.
- The 350 QX3 will fly back to its assigned home location and land. After landing, the motors may take up to 5 seconds to stop.
- The return home function may be cancelled by switching back to Smart or AP Mode using the flight mode switch.
- To restart the props after landing in Return Home, move both transmitter sticks to the bottom inside corners and then back to center.

CAUTION: The 350 QX3 will not recognize the *SAFE Circle* feature when Return Home is used. Activating Return Home may cause the 350 QX3 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 QX3.
2. Turn off the power to your transmitter.
3. Unplug and remove the battery from the 350 QX3. Recharge your battery following the charging warnings and instructions.

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.

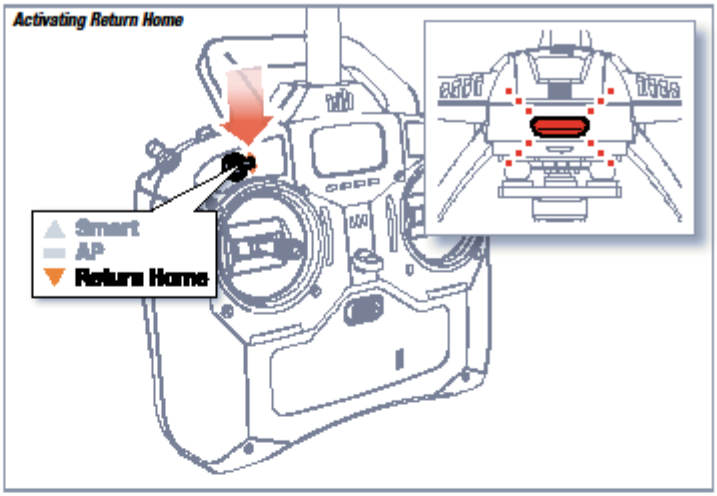
Location alert

The motors will beep under the following conditions:

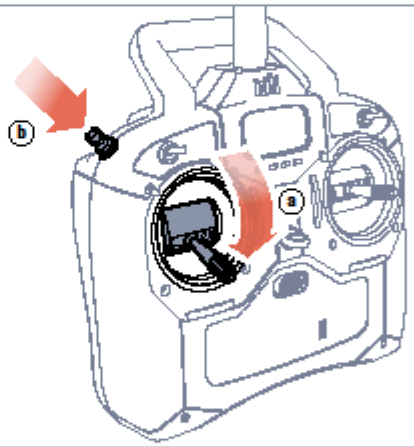
- At any time the props stop spinning after they have been initialized.
- After 30 seconds of no throttle input (waiting armed on the ground).

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.

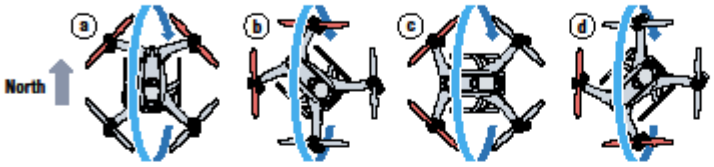
Activating Return Home



Motor Stop



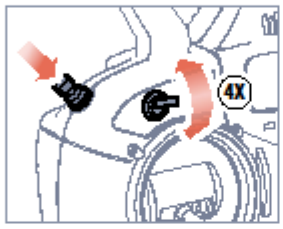
Calibration Procedures



Compass calibration procedure:

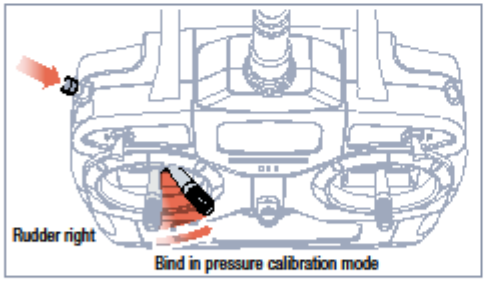
NOTICE: The following procedure has to be completed within 30 seconds after entering compass calibration mode.

1. Power the transmitter.
2. Power on the 350 QX3 and face the quadcopter pointing North.
3. Cycle the top left transmitter switch completely 4 times as shown at the left.
4. The 350 QX3 indicates it has entered compass calibration mode by slowly flashing the LED orange.
5. When the LED begins to flash rapidly, complete all 4 rotations of the 350 QX3 as shown in the illustration at left within 30 seconds, rotating the quad 45° counterclockwise between each rotation.
6. Hold the quad level, facing North and check the LED.
   Green = Ready
   Red = Repeat Compass Calibration



Accelerometer calibration procedure:

1. Power on the transmitter and 350 QX3 and place the quad on a flat, level surface.
2. While holding the bind switch on the transmitter, cycle the top left switch 4 times as shown at the left.
3. The 350 QX3 will emit a series of slow tones followed by a series of rapid tones, indicating the calibration has started.
4. Do not move the 350 QX3 while it performs the accelerometer calibration procedure.
5. When the procedure has completed, the 350 QX3 will emit a "happy" tone and the LED will display green indicating the calibration was successful. If it emits a "sad" tone and the LED displays solid red, repeat the calibration procedure.



Bind in pressure calibration mode

Pressure Sensor Calibration

The pressure sensor is calibrated at the factory on the 350 QX3. Recalibration should only be necessary if you replace the sensor.

1. Place the 350 QX3 in a cold area. Allow it to remain in the cold for 30 minutes or more.
2. Bring the 350 QX3 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 QX3Power the 350 QX3 ON and let it initialize. The status LED will remain off.
4. Hold the 350 QX3 upside down until the status LED flashes blue, indicating it has entered bind mode.
5. Set the quadcopter back upright.
6. Bind your transmitter to the 350QX3 with the rudder stick fully to the right. The LED 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.
7. 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 QX3 displays the failed calibration code, power off the aircraft and then begin the pressure calibration procedure again.

Graphic User Interface

If you need to update the firmware in your quadcopter, download the PC user interface* at http://www.bladehelis.com/ProdInfo/Files/350_QX_PC_Interface.zip

Follow the on-screen instructions for installation and operation.

This graphic user interface allows you to monitor systems, adjust system settings and calibrate sensors.

Sensor Information Screen
- See status of all sensors and speed controls at a glance
- Check battery voltage and accelerometer operation

Calibration Screen
- Calibrate accelerometers and camera gimbal
- Review instructions for compass sensor and DX4 transmitter calibration
- Adjust geo-referenced flight boundaries

GPS Screen
- See number of available satellites and signal strength
- Verify latitude, longitude and altitude indications
- Verify GPS accuracy

Device Information Screen
- See programming software version
- See quad firmware version and vehicle ID
- Update firmware

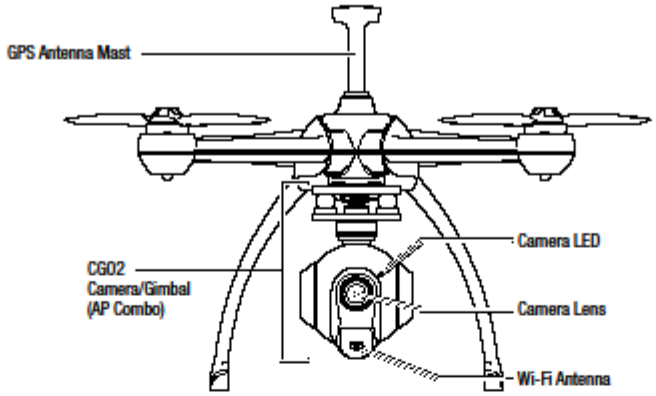
*Requires USB Interface **(BLH7840)** sold separately.

Troubleshooting

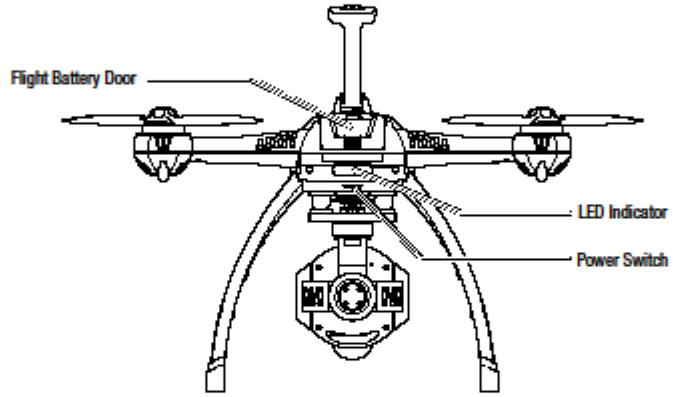
Problem	Possible Cause	Solution
350 QX3 will not initialize	The quadcopter was moved during initialization	Re-arm the aircraft, being cautious to avoid any movement during initialization
GPS will not lock	Heavy overcast	Wait for lighter cloud cover and re-lock or disable GPS
	Solar flares	Wait for disturbance 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
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 using other modes
Motors won't start	GPS lock has not been acquired	Ensure GPS antenna has clear view of sky and GPS lock has been acquired
	'Compass error' is indicated by the LED	See below for troubleshooting 'compass error'
	Incorrect start up procedure	Review start up procedure in manual
Blinking yellow led 'compass error' indication	Model is too close to a metal object or metal surface	Move model away from large metal objects or surfaces
	Compass needs calibration	Calibrate compass (*see calibration reference*)
Steady beeping, motors won't start	Throttle trim is not centered	Calibrate DX4 transmitter (AP or RTF version)
		Center throttle trim (BNF version)
Won't hold position in hover	Weak GPS signal	Check GPS antenna mast is extended
	Compass needs calibration	Calibrate compass (*see calibration guide*)
	Accelerometers need calibration	Calibrate accelerometers (*see calibration guide*)
Motors 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

Parts of the 350 QX3

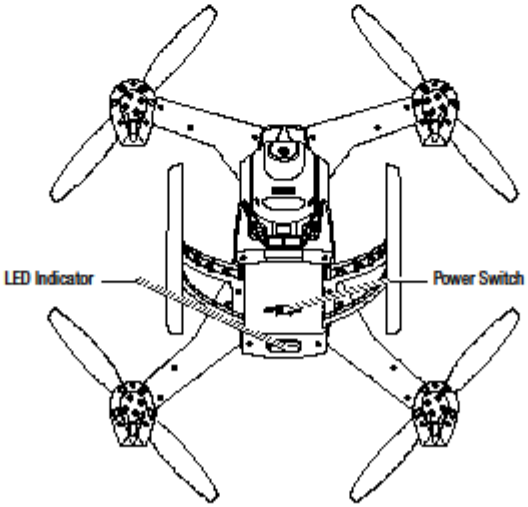
Front



Back



Bottom



APPENDIX – E

UAS Maintenance Log

UAS: _____

DATE:	MAINTENANCE PERFORMED:	MAINTENANCE PERFORMED BY:

DATE:	MAINTENANCE PERFORMED:	MAINTENANCE PERFORMED BY:

DATE:	MAINTENANCE PERFORMED:	MAINTENANCE PERFORMED BY:

BLADE® Warranty, Service and Compliance Information / Garantie, Service und Rechtliche Informationen / Garantie, Réparations et Informations de conformité / Garanzia, Assistenza e Informazioni sulla conformità

Limited Warranty

What this Warranty Covers

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

What is Not Covered

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

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 Li-Po batteries to Horizon. If you have any issue with a Li-Po 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.

ATTENTION: Horizon service is limited to Product compliant in the country of use and ownership. If received, a non-compliant Product will not be serviced. Further, the sender will be responsible for arranging return shipment of the un-serviced Product, through a carrier of the sender's choice and at the sender's expense. Horizon will hold non-compliant Product for a period of 60 days from notification, after which it will be discarded.

Warranty and Service 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/	4105 Fieldstone Rd Champaign, Illinois, 61822 USA
	Horizon Product Support (Product Technical Assistance)	www.quickbase.com/db/bghj7ey8c?a=GenNewRecord 888-959-2304	
	Sales	sales@horizonhobby.com 888-959-2304	
United Kingdom	Service/Parts/Sales: Horizon Hobby Limited	sales@horizonhobby.co.uk +44 (0) 1279 641 097	Units 1–4 , Ployters Rd, Staple Tye Harlow, Essex, CM18 7NS, United Kingdom
Germany	Horizon Technischer Service Sales: Horizon Hobby GmbH	service@horizonhobby.de +49 (0) 4121 2655 100	Christian-Junge-Straße 1 25337 Elmshorn, Germany
France	Service/Parts/Sales: Horizon Hobby SAS	infofrance@horizonhobby.com +33 (0) 1 60 18 34 90	11 Rue Georges Charpak 77127 Lieusaint, France
China	Service/Parts/Sales: Horizon Hobby – China	info@horizonhobby.com.cn +86 (021) 5180 9868	Room 506, No. 97 Changshou Rd. Shanghai, China 200060

FCC Information

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.

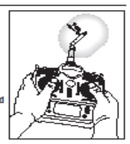
CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This product contains a radio transmitter with wireless technology which has been tested and found to be compliant with the applicable regulations governing a radio transmitter in the 2.400GHz to 2.4835GHz frequency range.

Antenna Separation Distance

When operating your Spektrum transmitter, please be sure to maintain a separation distance of at least 5 cm between your body (excluding fingers, hands, wrists, ankles and feet) and the antenna to meet RF exposure safety requirements as determined by FCC regulations.

The following illustrations show the approximate 5 cm RF exposure area and typical hand placement when operating your Spektrum transmitter.



IC Information

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Compliance Information for the European Union

Declaration of Conformity
(in accordance with ISO/IEC 17050-1)

No. HH20140711203V2

Product(s): Blade 350 QX3 RTF

Item Number(s): BLH8100EU1, BLH8100EU2, BLH8100UK1, BLH8100UK2

Equipment class: 1

The object of declaration described above is in conformity with the requirements of the specifications listed below, following the provisions of the European R&TTE Directive 1999/5/EC, EMC Directive 2004/108/EC and LVD Directive 2006/95/EC:

EN 300-328 V1.8.1
EN 301 489-1 V1.9.2: 2012
EN 301 489-17 V2.1.1: 2009
EN 60950-1:2006+A11:2009+A1:2010+A12: 2011
EN 62311: 2008
EN 55022:2010 + AC:2011
EN 55024:2010
EN 61000-3-2:2006+A1:2009+A2:2009
EN 61000-3-3:2008

CE

Signed for and on behalf of:
Horizon Hobby, LLC
Champaign, IL USA
November 20, 2014

Mike Dunne
Executive Vice President
Product Divisions
Horizon Hobby, LLC

Instructions for disposal of WEEE by users in the European Union

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collections point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

Garantie und Service Informationen

Warnung

Ein ferngesteuertes Modell ist kein Spielzeug. Es kann, wenn es falsch eingesetzt wird, zu erheblichen Verletzungen bei Lebewesen und Beschädigungen an Sachgütern führen. Betreiben Sie Ihr RC-Modell nur auf freien Plätzen und beachten Sie alle Hinweise der Bedienungsanleitung des Modells wie auch der Fernsteuerung.

Garantiezeitraum

Exklusive Garantie Horizon Hobby LLC (Horizon) garantiert, dass dasgekaufte Produkt frei von Material- und Montagefehlern ist. Der Garantiezeitraum entspricht den gesetzlichen Bestimmung des Landes, in dem das Produkt erworben wurde. In Deutschland beträgt der Garantiezeitraum 6 Monate und der Gewährleistungszeitraum 18 Monate nach dem Garantiezeitraum.

Einschränkungen der Garantie

(a) Die Garantie wird nur dem Erstkäufer (Käufer) gewährt und kann nicht übertragen werden. Der Anspruch des Käufers besteht in der Reparatur oder dem Tausch im Rahmen dieser Garantie. Die Garantie erstreckt sich ausschließlich auf Produkte, die bei einem autorisierten Horizon Händler erworben wurden. Verkäufe an dritte werden von dieser Garantie nicht gedeckt. Garantieansprüche werden nur angenommen, wenn ein gültiger Kaufnachweis erbracht wird. Horizon behält sich das Recht vor, diese Garantiebestimmungen ohne Ankündigung zu ändern oder modifizieren und widerruft dann bestehende Garantiebestimmungen.

(b) Horizon übernimmt keine Garantie für die Verkaufbarkeit des Produktes, die Fähigkeiten und die Fitness des Verbrauchers für einen bestimmten Einsatzzweck des Produktes. Der Käufer allein ist dafür verantwortlich, zu prüfen, ob das Produkt seinen Fähigkeiten und dem vorgesehenen Einsatzzweck entspricht.

(c) Ansprüche des Käufers – Es liegt ausschließlich im Ermessen von Horizon, ob das Produkt, bei dem ein Garantiefall festgestellt wurde, repariert oder ausgetauscht wird. Dies sind die exklusiven Ansprüche des Käufers, wenn ein Defekt festgestellt wird.

Horizon behält sich vor, alle eingesetzten Komponenten zu prüfen, die in den Garantiefall einbezogen werden können. Die Entscheidung zur Reparatur oder zum Austausch liegt nur bei Horizon. Die Garantie schließt kosmetische Defekte oder Defekte, hervorgerufen durch höhere Gewalt, falsche Behandlung des Produktes, falscher Einsatz des Produktes, kommerziellen Einsatz oder Modifikationen irgendwelcher Art aus. Die Garantie schließt Schäden, die durch falschen Einbau, falsche Handhabung, Unfälle, Betrieb, Service oder Reparaturversuche, die nicht von Horizon ausgeführt wurden aus. Rücksendungen durch den Käufer direkt an Horizon oder eine seiner Landesvertretung bedürfen der Schriftform.

Schadensbeschränkung

Horizon ist nicht für direkte oder indirekte Folgeschäden, Einkommensausfälle oder kommerzielle Verluste, die in irgendeinem Zusammenhang mit dem Produkt stehen verantwortlich, unabhängig ab ein Anspruch im Zusammenhang mit einem Vertrag, der Garantie oder der Gewährleistung erhoben werden. Horizon wird darüber hinaus keine Ansprüche aus einem Garantiefall akzeptieren, die über den individuellen Wert des Produktes hinaus gehen. Horizon hat keinen Einfluss auf den Einbau, die Verwendung oder die Wartung des Produktes oder etwaiger Produktkombinationen, die vom Käufer gewählt werden. Horizon übernimmt keine Garantie und akzeptiert keine Ansprüche für in der folge auftretende Verletzungen oder Beschädigungen. Mit der Verwendung und dem Einbau des Produktes akzeptiert der Käufer alle aufgeführten Garantiebestimmungen ohne Einschränkungen und Vorbehalte. Wenn Sie als Käufer nicht bereit sind, diese Bestimmungen im Zusammenhang mit der Benutzung des Produktes zu akzeptieren, werden Sie gebeten, dass Produkt in unbenutztem Zustand in der Originalverpackung vollständig bei dem Verkäufer zurückzugeben.

Sicherheitshinweise

Dieses ist ein hochwertiges Hobby Produkt und kein Spielzeug. Es muss mit Vorsicht und Umsicht eingesetzt werden und erfordert einige mechanische wie auch mentale Fähigkeiten. Ein Versagen, das Produkt sicher und umsichtig zu betreiben kann zu Verletzungen von Lebewesen und Sachbeschädigungen erheblichen Ausmaßes führen. Dieses Produkt ist nicht für den Gebrauch durch Kinder ohne die Aufsicht eines Erziehungsberechtigten vorgesehen. Die Anleitung enthält Sicherheitshinweise und Vorschriften sowie Hinweise für die Wartung und den Betrieb des Produktes. Es ist unabdingbar, diese Hinweise vor der ersten Inbetriebnahme zu lesen und zu verstehen. Nur so kann der falsche Umgang verhindert und Unfälle mit Verletzungen und Beschädigungen vermieden werden.

Fragen, Hilfe und Reparaturen

Ihr lokaler Fachhändler und die Verkaufstelle können eine Garantiebeurteilung ohne Rücksprache mit Horizon nicht durchführen. Dies gilt auch für Garantiereparaturen. Deshalb kontaktieren Sie in einem solchen Fall den Händler, der sich mit Horizon kurz schließen wird, um eine sachgerechte Entscheidung zu fällen, die Ihnen schnellst möglich hilft.

Wartung und Reparatur

Muss Ihr Produkt gewartet oder repariert werden, wenden Sie sich entweder an Ihren Fachhändler oder direkt an Horizon. Rücksendungen / Reparaturen werden nur mit einer von Horizon vergebenen RMA Nummer bearbeitet. Diese Nummer erhalten Sie oder Ihr Fachhändler vom technischen Service. Mehr Informationen dazu erhalten Sie im Serviceportal unter www.Horizonhobby.de oder telefonisch bei dem technischen Service von Horizon. Packen Sie das Produkt sorgfältig ein. Beachten Sie, dass der Originalkarton in der Regel nicht ausreicht, um beim Versand nicht beschädigt zu werden. Verwenden Sie einen Paketdienstleister mit einer Tracking Funktion und Versicherung, da Horizon bis zur Annahme keine Verantwortung für den Versand des Produktes übernimmt. Bitte legen Sie dem Produkt einen Kaufbeleg bei, sowie eine ausführliche Fehlerbeschreibung und eine Liste aller eingesendeten Einzelkomponenten. Weiterhin benötigen wir die vollständige Adresse, eine Telefonnummer für Rückfragen, sowie eine Email Adresse.

Garantie und Reparaturen

Garantieanfragen werden nur bearbeitet, wenn ein Originalkaufbeleg von einem autorisierten Fachhändler beiliegt, aus dem der Käufer und das Kaufdatum hervorgeht. Sollte sich ein Garantiefall bestätigen wird das Produkt repariert oder ersetzt. Diese Entscheidung obliegt einzig Horizon Hobby.

Kostenpflichtige Reparaturen

Liegt eine kostenpflichtige Reparatur vor, erstellen wir einen Kostenvoranschlag, den wir Ihrem Händler übermitteln. Die Reparatur wird erst vorgenommen, wenn wir die Freigabe des Händlers erhalten. Der Preis für die Reparatur ist bei Ihrem Händler zu entrichten. Bei kostenpflichtigen Reparaturen werden mindestens 30 Minuten Werkstattzeit und die Rückversandkosten in Rechnung gestellt. Sollten wir nach 90 Tagen keine Einverständniserklärung zur Reparatur vorliegen haben, behalten wir uns vor, das Produkt zu vernichten oder anderweitig zu verwerten.

ACHTUNG: Kostenpflichtige Reparaturen nehmen wir nur für Elektronik und Motoren vor. Mechanische Reparaturen, besonders bei Hubschraubern und RC-Cars sind extrem aufwendig und müssen deshalb vom Käufer selbst vorgenommen werden.

Garantie und Service Kontaktinformationen

Land des Kauf	Horizon Hobby	Telefon/E-mail Adresse	Adresse
Deutschland	Horizon Technischer Service Sales: Horizon Hobby GmbH	service@horizonhobby.de +49 (0) 4121 2655 100	Christian-Junge-Straße 1 25337 Elmshorn, Deutschland

Rechtliche Informationen für die Europäische Union

HORIZON HOBBY – GmbH

Konformitätserklärung

Konformitätserklärung laut Allgemeine Anforderungen (ISO/IEC 17050-1:2004, korrigierte Fassung 2007-06-15); Deutsche und Englische Fassung EN ISO/IEC 17050-1:2010

Declaration of conformity (in accordance with ISO/IEC 17050-1)

No. HH20140711203V2

Horizon Hobby GmbH
Christian-Junge-Straße 1
D-25337 Elmshorn

erklärt das Produkt: Blade 350 QX3 RTF: BLH8100EU1, BLH8100EU2, BLH8100UK1, BLH8100UK2

declares the product: Blade 350 QX3 RTF: BLH8100EU1, BLH8100EU2, BLH8100UK1, BLH8100UK2

Geräteklasse: 1
equipment class: 1

den grundlegenden Anforderungen des §3 und den übrigen einschlägigen Bestimmungen des FTEG (Artikel 3 der R&TTE) entspricht, EMV-Richtlinie 2004/108/EC und LVD 2006/95/EC.

complies with the essential requirments of §3 and other relevant provisions of the FTEG (Article 3 of the R&TTE directive), EMC Directive 2004/108/EC and LVD 2006/95/EC.

Angewendete harmonisierte Normen:
Harmonised standards applied:

EN 300-328 V1.8.1
EN 301 489-1 V1.9.2: 2012
EN 301 489-17 V2.1.1: 2009
EN 60950-1:2006+A11:2009+A1:2010+A12: 2011
EN 62311: 2008
EN 55022:2010 + AC:2011
EN 55024:2010
EN 61000-3-2:2006+A1:2009+A2:2009
EN 61000-3-3:2008

CE

Elmshorn,
20.11.2014

Mike Dunne
Geschäftsführer
Managing Director

Klaus Breer
Geschäftsführer
Managing Director

Horizon Hobby GmbH; Christian-Junge-Straße 1, 25337 Elmshorn
HR Pi: HRB 1909; UStIDNr.:DE812678792; Str.Nr.: 1829812324
Geschäftsführer: Mike Dunne, Klaus Breer Tel.: +49 4121 2655 100
Fax: +49 (0) 4121 2655 111 eMail: info@horizonhobby.de;
Internet: www.horizonhobby.de Es gelten unsere allgemeinen Geschäftsbedingungen, die in unseren Geschäftsräumen eingesehen werden können. Ware bleibt bis zur vollständigen Bezahlung Eigentum der Horizon Hobby GmbH

Anweisungen zur Entsorgung von Elektro- und Elektronik-Altgeräten für Benutzer in der Europäischen Union

Dieses Produkt darf nicht zusammen mit anderem Abfall entsorgt werden. Stattdessen ist der Benutzer dafür verantwortlich, unbrauchbare Geräte durch Abgabe bei einer speziellen Sammelstelle für das Recycling von unbrauchbaren elektrischen und elektronischen Geräten zu entsorgen. Die separate Sammlung und das Recycling von unbrauchbaren Geräten zum Zeitpunkt der Entsorgung hilft, natürliche Ressourcen zu bewahren und sicherzustellen, dass Geräte auf eine Weise wiederverwertet werden, bei der die menschliche Gesundheit und die Umwelt geschützt werden. Weitere Informationen dazu, wo Sie unbrauchbare Geräte zum Recycling abgeben können, erhalten Sie bei lokalen Ämtern, bei der Müllabfuhr für Haushaltsmüll sowie dort, wo Sie das Produkt gekauft haben.