



# H520 Maintenance Guide

*Revised 9.14.17*

*Yuneec recommends this document become part of any organizational Policy/Procedures/Operations manual. There are two categories of maintenance; Preventive and Directed. Preventive maintenance is user-managed and is user-performed at manufacturer's recommendation. Directed maintenance is a required maintenance/replacement following Yuneec guidelines and must be performed at scheduled times. This maintenance may occur at a Yuneec Authorized Service Center or performed by user (except where noted in this manual).*

## HARDWARE FOR BASIC MAINTENANCE

We recommend a tool kit consisting of:

#00 size Phillips screwdriver

#0 size Phillips screwdriver

#1 size Phillips screwdriver

1.5mm Hex Driver

2.0mm Hex Driver

2.5mm Hex Driver

Small pair of Hemostats

Bottle of bearing lubricant: we recommend Tri-Flow w/needle applicator

Magnifying glass

Microfiber Cleaning cloth

Lens Cleaning Cloth

Can of compressed air

Tube of extra-fine graphite lubricant (dry)

Small Vacuum

Small bristle brush

## FIRMWARE

We recommend always installing the latest Firmware/software for all Yuneec aircraft and all related components.

Failure to update aircraft, Ground Control Station, and Camera system may result in flight error for which Yuneec cannot be held responsible. Visit [www.yuneec.com](http://www.yuneec.com) for more information. The OTA application for Yuneec DataPilot™ will auto-update all firmware and software applications at user-demand.

Yuneec recommends launching/landing on clean, level surfaces. Dust, dirt, sand, leaves, and other light-weight matter may reduce operational time and may cause mid-air failures from foreign object damage (FOD). Launch and land from a clean surface such as clean concrete, wood, plastic or dry fabric. A clean launch pad is recommended for takeoff and landing. The launch pad should be made of a heavy material, and secured without the sides lifting from the rotor wash. Ensure the pad is large enough to accommodate the landing gear and downpressure from the propellers.

*Never launch directly from sand, soft soil, or dirty concrete.*

## INSPECTIONS OF AIRCRAFT

This guide provides the basics of inspections. However, it's important to remember that the sUAS inspection is only a single component of flight safety. Always remember to check local weather, airspace, flight restrictions, and the area in which the sUAS will be flying. Ensure there are no persons, property, or ground hazards/objects in the determined flight areas that may be impacted during flight operations.

Logging maintenance is an industry best-practice, and in some regions, required for regulatory compliance.

Always abide by local flight regulations.

## ROUTINE MAINTENANCE

### PREFLIGHT/EACH FLIGHT:

#### Aircraft

- Check motors for smooth rotation
- Batteries fully charged
- Battery fully seated/locked to airframe
- Check propellers for lock on motor
- Check propellers for nicks, cuts, or other damage (Replace if necessary)
- Check propellers for symmetry (Replace if necessary)
- Landing gear for matched angle
- Gimbal properly attached to pin rails
- Gimbal vibration dampers properly seated, pinned for safety
- Check camera for full motion
- If aircraft is further than 5 miles from point of last calibration, re-calibrate compass/GPS

#### ST16SS

- Fully charged
- A minimum of 7 satellites for flight
- Antenna(s) firmly seated
- Vents not blocked
- Always hover UAS at a height of approximately 10' (*to avoid being at eye level*) and perform a controllability check with each flight. Check forward/backward/up/down/side/yaw prior to undertaking a mission.

## 25 FLIGHT MAINTENANCE (approx 15 hours per cycle)

#### Aircraft

- Clean gimbal vibration dampers of dust/debris
- Check arm locks for positive operation
- Check the motor wire sleeves leading into the airframe for wear
- Clean motors of debris, dust, using compressed air can. Manually spin to assure no grit is inside, and all props spin freely and identically
- Clean leg actuators of debris, dust, check for leg tightness
- Inspect camera rails for wear
- Inspect camera filter threads for thread integrity
- Verify all screws are secure. Hand tighten if necessary
- Listen to cooling fan for consistency/no unusual noise
- Wipe arms/legs of dust
- Clean Sonar Ports , removing dust/debris
- Calibrate the Compass, Accelerometer, and Gimbal

## 25 Flight Maintenance (cont'd)

### ST16S Ground Station Control

Verify all screws are secure. Hand tighten if necessary (picture of screw locations)

Check vents for debris/dust. Vacuum if necessary. Yuneec does not recommend blowing compressed air into these vents.

Check Switch Retainer Rings for tightness

### Perform inspection flight

### Log inspection/maintenance

## 100 FLIGHT MAINTENANCE (approx 45 hours per cycle)

### Aircraft

Inspect play of motors by lifting each motor and adding some pressure to the side. If any motor is showing signs of play, replace

Inspect motor wire sleeves leading into the airframe for wear

Check the propellers for any cracking, stress marks, or pitting

Check cooling fan for smooth spin. Replace if necessary

Check venting areas for debris/dust

Check arm locking mechanism and adjust if necessary

Brush, Blow, or vacuum dirt from actuators, motors, cooling fan

Replace gimbal vibration dampers

Replace gimbal vibration damper locks

Check gimbal rail for any wear or stress marks, replace if necessary

Check gimbal rail screws for tightness

Apply a small amount of graphite lubricant to a tissue and brush lengthwise on the gimbal rails

Check gimbal arms for smooth rotation

Inspect camera quick contact pins for wear and clean if necessary. Electronic cleaning solution applied to a paper towel or cleaning cloth is recommended.

Inspect camera lens threads for thread integrity

Check propeller locks for integrity, wear, and operation. If wear is noticed, replace the propeller lock and springs

Clean motors of debris, dust, manually spin to assure no grit, imbalanced grind, all props spin identically

Remove the landing gear actuators and check for contact wear and clean if necessary. A very small amount of graphite lubricant may be necessary

Remove the antennas from their sleeves and check for any wear, or frayed wires

Clean leg actuators of debris, dust, check for leg tightness

Check leg locks for integrity

Check landing gear feet for wear and replace if necessary

Check all screws and Hand Tighten if necessary

### ST16S Ground Station Control

Remove battery and check connections for any grime

Clean air vents/fans using computer vacuum or hand blower (do not use compressed air)

Clean Joystick pivot points with small brush  
Check gimbal control for tightness and adjust if necessary  
Check throttle control for tightness and adjust if necessary  
Replace screen protector if necessary  
Check stand/handle screws  
Check switch retainer rings for tightness

**Perform post-inspection flight**

**Log inspection/maintenance**

# ANNUAL FLIGHT MAINTENANCE

(recommended to be done at Yuneec factory/authorized facility)

Open shell, generally clean dust, debris  
Perform all actions of 100 Flight maintenance recommendations

AND

- Check shell for cracks/breaks
- Check motherboard for cracks/breaks
- Inspect all legs and connectors for cracks and tight connection
- Check all connections for integrity
- Clear dust/debris from GPS module
- Check all solder joints for integrity
- Replace battery connection board
- Replace landing pads on legs
- Replace gimbal vibration dampers
- Replace gimbal vibration damper safety pins
- Lubricate gimbal attachment points
- Thread lock any metal to metal screw points
- Replace gimbal rails
- Open camera housing
- Clear lens board of dust/debris
- Clean antennas of grime/dust/debris
- Check antenna connection for integrity
- Check antenna lobes for uniformity
- Check attachment points for integrity
- Replace arm locks and springs
- Clean motors of debris, dust, manually spin to assure no grit, imbalanced grind, all props spin identically and inspect bearings for lubrication and wear
- Clean leg actuators of debris, dust, check for leg tightness
- Check all moving parts for strength, integrity of function
- Remove and re-tighten all hex screws
- Remove and re-tighten all other fasteners
- Verify all sensors are optimized and functioning properly
- Update Firmware
- Calibrate Compass, GPS, Accelerometer, Gimbal

## ST16S Ground Station Control

- Update Firmware
- Update all software applications
- Remove battery
- Remove screws on back panel
- Clean air vents/fans using computer vacuum or hand blower (do not use compressed air)
- Lubricate fan bearings using dry graphite
- Clean Joystick connection points with Contact Cleaning spray
- Remove and clean gimbal control potentiometer with Contact Cleaning spray
- Remove and clean throttle control potentiometer with Contact Cleaning spray

- Re-install gimbal and throttle control potentiometers
- Check gimbal control for tightness
- Check throttle control for tightness
- Clear electronic components of dust/debris
- Check stand/handle screws
- Check all connectors for integrity
- Clean battery connector points with Contact Cleaning spray
- Check toggle mount threads for tightness

**Log inspection/maintenance**

**Log Manufacture Maintenance Sticker and inspection flight (Yuneec facility only)**

# MANUFACTURER RECOMMENDED PART REPLACEMENT

## 20 Flights

Propellers

## 100 Flights

Landing pads/feet

## 200 Flights

Replace batteries every 200-250 cycles. Battery cycles should be logged in aircraft log book. If multiple batteries are in use, identify each battery for logging purposes. Dispose of batteries by first draining them to empty, then place the battery in a salt water bath for 24 hours. Deliver to a recycling center.

## 400 Flights

Replace motors  
Replace landing gear actuators  
Replace motor arm lock/catch  
Replace internal cooling motor  
Replace ST16S Ground Station Control fan  
Replace ST16S Ground Control Station battery

## TBO (Time Between Overhaul)

500 hours of operation, at Authorized Yuneec repair station  
Users may choose to set a more conservative TBO

## BATTERIES

Batteries may fail due to overheating, being dropped, or any number of other causes. Any battery that is bulged or distorted in the casing should be immediately disposed of to avoid impending failure that may lead to mid-air power loss or explosion. Self-contained batteries may not be repaired.

Dispose of batteries by placing the battery in a salt water bath for 24 hours. Deliver to a recycling center or dispose of them safely.



# Inspection Checklist

Owner: \_\_\_\_\_ Date: \_\_\_\_\_

Unit Tested: \_\_\_\_\_ Serial Number: \_\_\_\_\_

- Firmware Updated to current version
- Checked ST16SS nuts and toggle mounts
- Motor Shafts and Propellers Good
- Battery Slides properly and locks in place
- Landing gear in good condition/properly extending/retracting
- Camera installed and in good condition
- Camera rails in good condition
- Frame inspected for structural damage
- Full Transmitter System Check
- Battery Cells Balance normal (if included)
- LED Indicators checked
- Telemetry Data accurate and functioning
- Startup sequence normal
- Accelerometer Test Complete
- Compass Calibration Checked
- GPS Signal locked and acquired sufficient Satellites
- Stationary Hover Test Completed
- Range Tested and within spec
- Max altitude tested and within specs
- Picture Tested at altitude
- Camera tested for functionality and quality
- Tested Manual/no GPS flight response
- Tested WayPoint/Survey functions
- Tested RTL and Auto Landing
- GPS Locked throughout flight
- Motors and Battery Tested for Normal Temperature
- Video/Picture examined for any discrepancies
- Product Cleaned

Maintenance by: \_\_\_\_\_ Date: \_\_\_\_\_

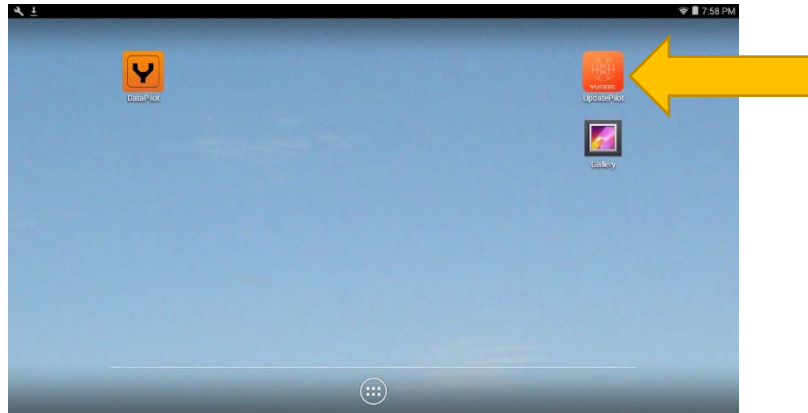
\*Note to Owner

-Record in maintenance log

Notes:

## USING UPDATEPILOT

UpdatePilot™ (Installed on the ST16SS multi-function display) may be used to update the the H520 AutoPilot, Gimbal, Camera firmware, DataPilot™, and even itself.



Connect the ST16S to a WIFI connection.

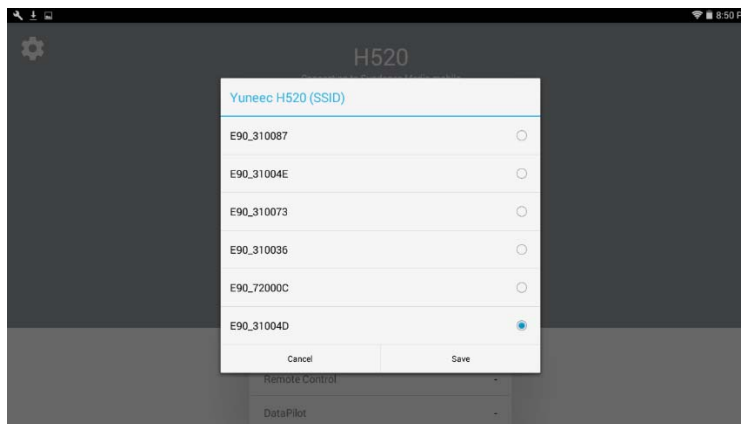
Insert a fully-charged battery in the H520. UpdatePilot will not update firmware if battery levels are less than 50%.

Open DataPilot™ and connect to the aircraft/camera.

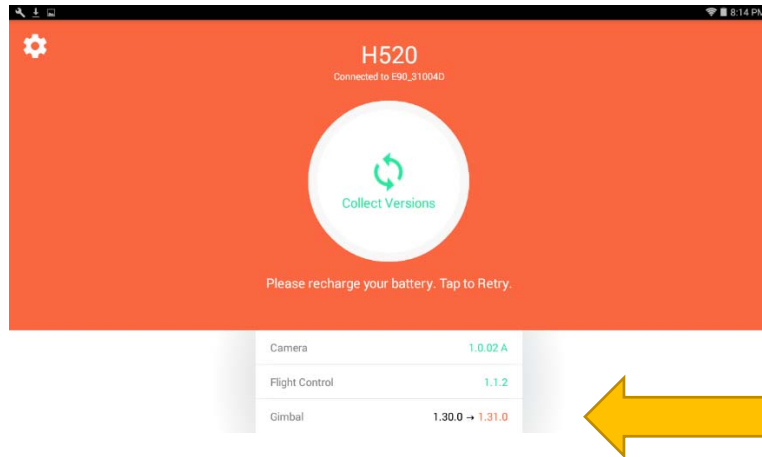
Open the UpdatePilot™ application by tapping on the icon found on the ST16SS screen.

The app will open.

Tap the camera that requires updating. Any camera previously connected will show in the list of devices.

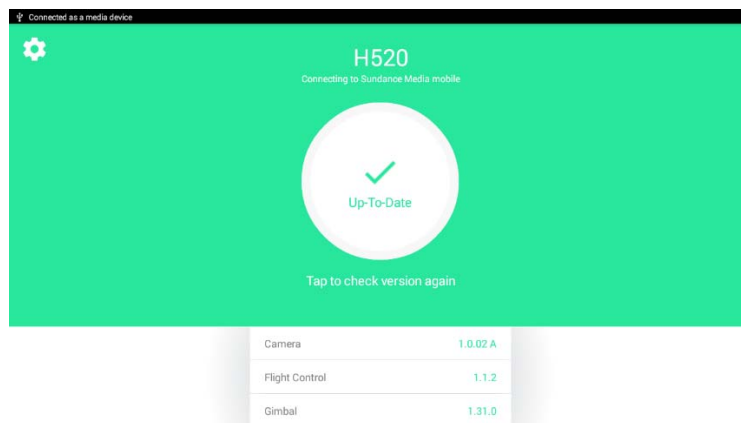


After connecting to the camera, UpdatePilot™ will indicate any firmware/component that is not up to date.



UpdatePilot™ may take time to update all components; be patient while the software downloads all necessary firmware and software updates.

The application will indicate completion of the download/update process through changing the background color of the application.



Close UpdatePilot™, re-start the H520 aircraft and recalibrate prior to next flight (*recalibration is not required. However, it is always a best/standard practice to recalibrate any UAS and its components following a firmware or software update.*)

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