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 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 lightweight 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 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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