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SKYNEX GLOBAL DRONES™

SKYNEX BLUE BOOK TO DRONE MAINTENANCE + FLIGHT PLANNING

Generally Accepted + Recommended Best Practices…

All comments, suggestions for revisions, and additions to the within drone maintenance and flight planning manual are welcome at mail@skynexglobaldrones.com.

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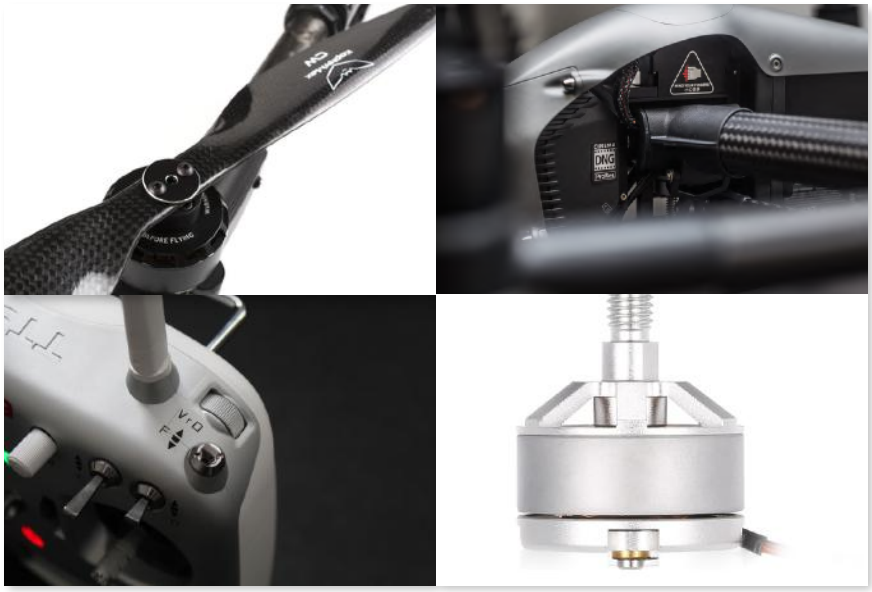
Properly maintaining and preserving your drone will ensure safer flights, longer drone life, and optimized flight performance for better end-results.



OVERVIEW

• Drone Maintenance: Importance + Relevance

Properly maintaining your fleet of drones is important not only to ensure your drones will continue to fly for many years ahead, but also as a matter of safety and protection to drone operators, staff, spectators, by-standers, property, and the general public. Within the context of commercial and industrial drone operations, whether it be for conducting industrial surveys, inspections, photography, or some other purpose, proper drone maintenance also means ensuring your drone delivers its full potential for optimum results.

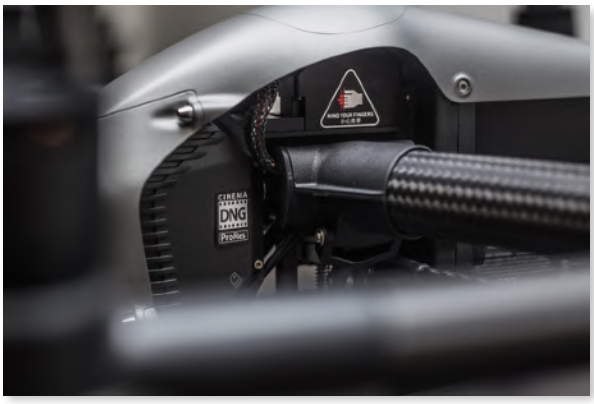
• What To Expect, and What To Find Herein

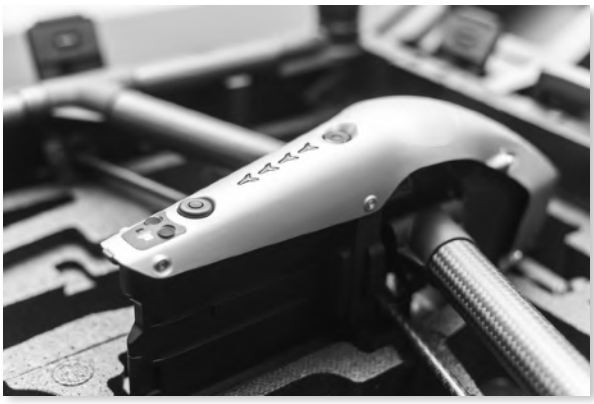
The within work distills or, extracts from the wealth of online information on drone maintenance into one set of general best practices. For greater clarity, coherence, and ease of reference to the reader, we've structured drone maintenance into a six-step cycle: **(1)** Drone maintenance prior to a schedule drone operation; **(2)** Drone maintenance prior to take-off; **(3)** Take-off; **(4)** In-between sets; **(5)** landing; and **(6)** post-mission flight drone maintenance. Critical to note while reading through these six steps is that each drone has its own unique features and characteristics, and therefore, its own unique maintenance needs. The information provided in this post offers general tips and advice on drone maintenance. Under no circumstances should information contained in this post replace any drone-specific maintenance information provided by the manufacturer. Drone-specific maintenance information provided by the manufacturer should take precedence over any information contained in this post. In fact, drone owners and operators should become intimately acquainted with any information on maintenance provided by their drone manufacturer. It is also recommended that new drone owners become intimately familiar with their new drone: understand how your drone functions; learn every part of your drone, how it attaches to it, what it does, and how it works. Lastly, regional factors can have an effect on how you maintain your drone. For instance, drone owners in Alaska will have different maintenance needs than a drone owner/operator with the same drone living in Texas. Local, regional, and national regulatory authorities are a good source to obtain location-specific maintenance tips and advice. Drone owners and operators will want to ensure compliance with any laws, rules, and/or regulations affecting drone maintenance, flight, and safety.

✓ DAY-PRIOR TO FLIGHT

	Comply with region-specific drone laws and regulations:
	Permits, licenses, registrations, notices
	Flight restrictions, limitations, requirements, etc. (e.g. max. altitude)
	Install latest drone software, firmware, and App updates:
	Check online forums for drone-specific reports on bugs
	Drone dependent on peripheral devices (Tablet, Smartphone, etc.):
	Install latest updates on peripheral device(s)
	Ensure drone receiver properly bound to drone transmitter
	Monitor local daily weather forecast
	Wind strength and direction
	Humidity percentage (%)
	Cloud formation and density
	Percentage (%) chance of precipitation
	Smog, fog, or smoke
	Extreme temperatures (battery life shortened in cold weather)
	Drone range test (if necessary):
	Drone-specific range capabilities may be available online
	Pre-plan your drone flight trajectory intelligently (including w/ “Waypoint Flight” Mode)
	Identify and anticipate possible drone flight hazards or obstacles:
	Airports, military bases, sky-diving, and other restricted air spaces
	Power lines, phone lines, buildings, mountains, trees, water fronts, etc.
	Structures and objects likely to cause drone signal interference
	Determine best and safest location for drone pilot stationing
	Back against blinding sunlight, wind, etc.

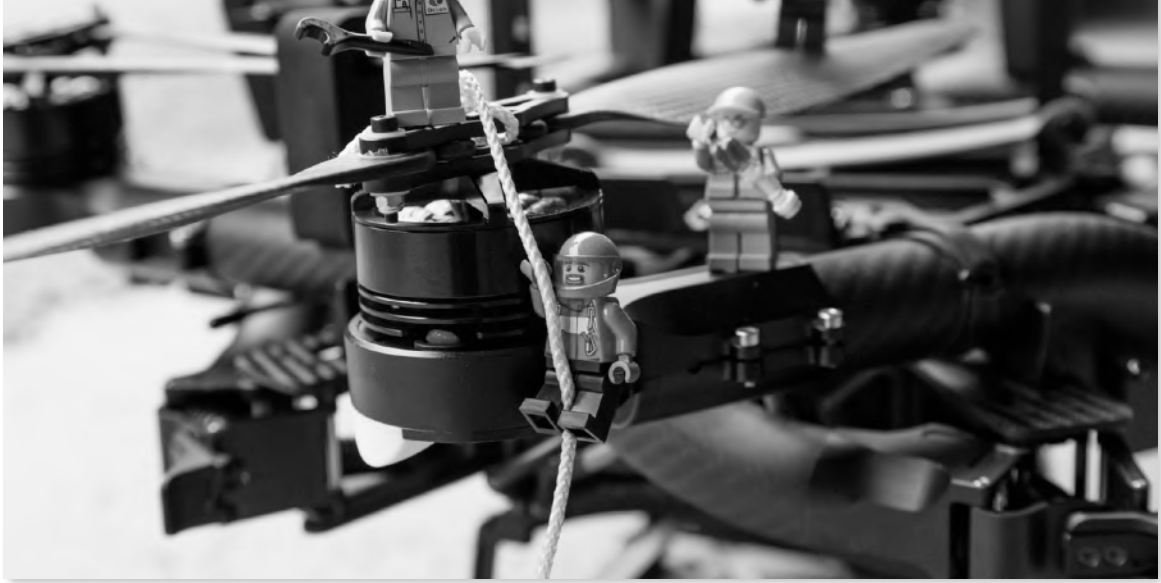
	- Avoid unwanted attention or distractions, crowds, other drone pilots, etc.
	- Stay clear from roadways, highways, railways, etc.
	- Avoid unwanted human attention or distractions, crowded areas, etc.
	- Area cleared and secured from dangerous wildlife (e.g. poisonous snakes)
	- Properly sheltered from extreme cold or hot temperatures, UV rays, etc.
	- Find stable ground
	Determine best and safest take-off and landing points
	Determine best time-of-day to accomplish drone flight mission
	- Factor-in weather conditions, lighting, etc.
	Determine total distance or zone that needs to be covered, and best flight trajectory
	Calculate an estimate of time needed to cover round-trip distance, or zone
	- Determine best flight trajectory (if available, recall previous flight path)
	- How much flight time does one fully charged battery offer?
	- What factors, if any, will affect total flight time, e.g.:
	- Wind, drone payload weight, extreme temperature
	- Determine best drone flight altitude
	- How many batteries are needed to cover the full distance or zone?
	- How long does it take to charge one battery to full capacity?
	- How many battery chargers will you bring, if any?
	Note: always use full charged drone batteries





✓ PRE-FLIGHT MAINTENANCE & PLANNING

	Drone, drone parts, and drone equipment checklist:
	Visible take-off and landing pad
	Ground station/drone remote controller
	Peripheral devices (tablets, LCD screens, smartphones, laptops, etc.)
	Drone payload or lens proper to flight mission (4K UHD, thermal, night vision, etc.)
	Drone carrying case or bag appropriate to circumstances of drone flight mission
	Spare batteries required to complete full drone flight-mission
	Proper number of drone battery charges for drone flight mission
	Spare batteries for drone ground station/remote controller, peripheral devices, etc.
	Power inverter(s), adapter(s), etc. appropriate to energy source/outlet (e.g. car)
	Spare drone(s)
	Drone repair and maintenance tool kit
	Wrenches that fit your drone(s') screws
	Needle-nosed pliers
	Spare drone parts:
	Drone propeller set(s)
	Drone motor(s)
	Electronic Speed Controllers (ESCs)
	Drone tool kit:
	Wrenches fitted to drone screws
	Needle-nosed pliers
	Spare drone screws, nuts, and bolts
	First Aid kit
	Signal transmission amplifier
	Ground station anti-reflective/sunshield
	Set drone's home/take-off point
	Remove drone camera lens protector
	Remove gimbal clamp



	Ensure Secure Digital (SD) card is properly inserted in the drone
	Verify transmission signal/satellite strength
	Drone propeller arms and propellers:
	Propeller arms properly affixed or snapped into place
	CCW and CW propellers installed on respective CCW and CW motors
	Drone propellers tightly secured
	Drone propellers able to move unobstructed
	Propellers safely tightened and secured to propeller arms
	Propellers free to move without abnormal resistance
	Drone compass properly calibrated
	Drone battery properly fitted and secured; check battery temperature
	Antennas flipped into proper position
	Conduct a close, top-down, clock-wise visual inspection of drone fuselage for small cracks
	Conduct close, clockwise visual inspection of each drone propellers for small bends or cracks

TAKE-OFF

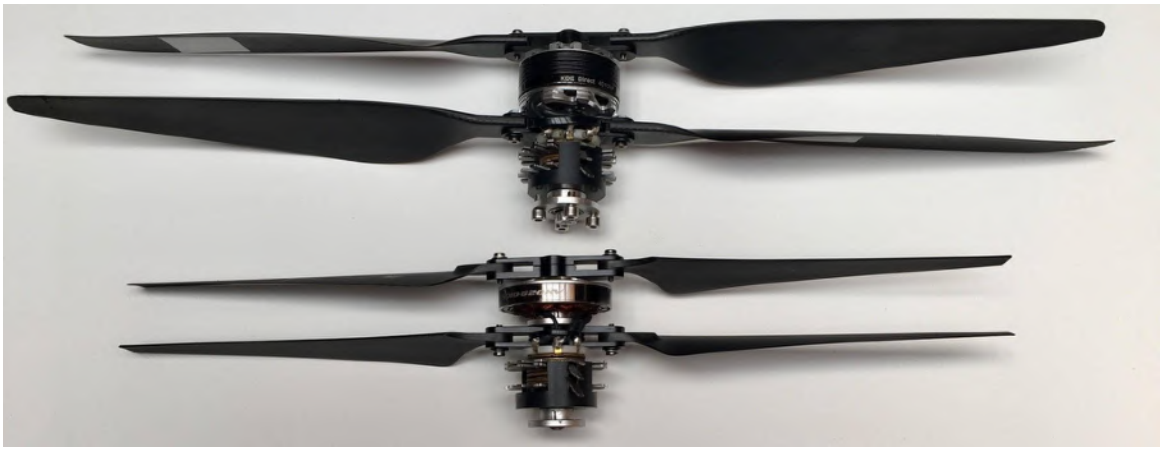
	Power-on the ground station/remote controller first
	Power-on the drone second
	Conduct a 30 seconds to 1 minute test flight to ensure all systems are go
	Carry-out drone flight mission according to plan

LANDING

	When and where possible, land drone before low-battery alert or other fail-safe system
	When and where possible, avoid fully draining drone batteries
	Engage auto-landing procedure according to your drone user manual
	Alternatively, use drone controls to manually land your drone using appropriate speed
	Make necessary manual adjustments to your drone's landing flight trajectory
	Aim to land your drone on a well-marked, visible landing pad located in a safe and clear area
	Maintain awareness of landing environment and variables that may affect landing (e.g. wind)
	If no auto-turn off, manually-turn off all systems upon safely touching ground and landing

IN-BETWEEN DRONE FLIGHT SETS

	Ensure all systems are powered-off; safely remove drone batteries
	Carefully examine and inspect each propeller for the most minute scratch, wear, and tear
	Tighten and secure any loose screws (flight vibrations may loosen screws)
	Check all arts and components for signs of stress fractures or cracks
	Verify that all wires are tightly connected (flight vibrations can loosen connections)
	Replace drone battery with fully charged extra battery
	Clean/whip drone camera lens
	Allow sufficient time (approximately 5 minutes) for motors and ESCs to cool-down
	Keep all drone motors dry and dust free; if necessary, use canned air to clean motors



POST-LANDING: BATTERY CARE +

***IMPORTANT NOTICE: DEFER TO MANUFACTURER AND/OR REGULATOR-SPECIFIC INSTRUCTIONS**

	Always use fully-charged drone batteries
	Avoid fully draining drone batteries; when safe to do so, land before low-battery alert
	Avoid removing battery while drone is powered on
	Always remove battery from drone when not in use
	Avoid charging batteries immediately after use; allow cool-down before charging
	Avoid charging batteries outside manufacturer-recommended temperature range
	Charge battery at full capacity; refraining from overcharging

	Never leave batteries charging overnight
	Unless otherwise specified by manufacturer, charge battery at room temperature
	Avoid storing drone in direct sunlight
	Store battery in cool, dry environment, away from flammable objects or liquids
	Store batteries in room with functional smoke detector, fire extinguisher, or sprinkler system
	When traveling, store batteries in travel case appropriate to the circumstances
	If traveling by plane, verify latest airline policy regarding battery storage
	Always avoid battery contact with wet surfaces or liquids
	Don’t leave drone batteries fully charged for more than two (2)
	Optimize battery life by fully charging and discharging battery every three (3) months

DRONE TOOLS + ACCESSORIES

	Screw driver(s) fitted to drone screws found on various parts and components of your drone
	Spare screws, nuts, and bolts fitted to various parts and components of your drone
	Isopropyl alcohol for cleaning dust and debris from sensitive drone surfaces
	Canned/compressed air for cleaning dust and debris in tight or confined areas
	A micro fiber cloth for whipping motors, propellers, lenses, and other sensitive areas
	3-in-1 lubricant for motors and other moving parts and components (never use oil)
	Soldering iron and accessories for wiring and other fixtures
	Spare battery(ies)
	Battery charger(s)
	Drone and battery charging cables
	Spare set of drone propellers
	Lanyard
	Drone landing pad
	FPV/3D drone goggles
	Drone and battery carrying backpack, bag, and/or case

	Allen keys (Hex Screw Driver set)
	Micro SD Cards
	GPS Tracker
	Screw drivers set
	Hex Nut Driver/wrench
	Wire cutters and wire strippers for cutting wires and other components
	Pliers for nut wrench or for gripping components while working on others
	Electrical Tape for sticking electrical components together
	Double-sided damping foam tape for sticking parts together
	Scissors
	Old toothbrush with soft bristles to clean dust, dirt, and other debris
	Multimeter for checking voltage, resistant and current
	Lighter for heat shrinking
	Utility knife or box cutter to help with removing certain contents
	Hot glue gun or epoxy glue
	Liquid electric tape with waterproof coating
	Sand paper for smoothening surfaces and edges
	Servo tester to test motors, electronic speed controllers, etc.
	Vernier Calliper/digital ruler for precise measurements
	Digital scale
	Propeller balancer
	Clamp meter to measure currents
	Dremel took kit for cutting drilling, polishing
	Motor Thrust Station
	Oscilloscope to measure electrical signals and noise
	Adjustable Power Supply
	Junior Hacksaw

	Zip ties for securing various parts and components to your drone
	Spare silicon electrical wires
	Servo extension wires for connecting components together
	XT60/JST connectors for lithium polymer batteries
	Spare motor(s)
	Lock nots
	Vibration absorbing foam