

Routine Drone Maintenance Checklist

Run this checklist after 10 flights or 2 weeks, whatever comes first, so that any repairs or replacements can be scheduled and the drone maintained in working order.

Task Summary

1	Introduction:
2	Preparation:
3	<input type="checkbox"/> Record basic details
4	Structural inspection:
5	<input type="checkbox"/> Clean chassis of mud and dirt
6	<input type="checkbox"/> Inspect chassis for cracks
7	<input type="checkbox"/> Check for loose screws
8	<input type="checkbox"/> Check propellers for damage
9	<input type="checkbox"/> Check propellers are free-spinning
10	<input type="checkbox"/> Check motors for debris and obstructions
11	<input type="checkbox"/> Check state of wiring and solder joints
12	<input type="checkbox"/> Check unit camera is clean
13	<input type="checkbox"/> Check landing gear condition
14	<input type="checkbox"/> Inspect antennae
15	<input type="checkbox"/> Check control station for faulty components
16	Battery check:
17	<input type="checkbox"/> Inspect charger for visible damage
18	<input type="checkbox"/> Inspect battery packs for bulges or leakage

19	<input type="checkbox"/> Charge all batteries
20	Software/firmware:
21	<input type="checkbox"/> Update drone firmware
22	<input type="checkbox"/> Update control station software
23	Finishing up:
24	<input type="checkbox"/> Forward maintenance report
25	Sources:
26	Related checklists:

1 Introduction:



UAV systems, especially those deployed as part of a larger fleet are subject to the wear and tear of constant use, and thus require regular maintenance checks to ensure everything is in working order.

This checklist is designed to suit the needs of routine maintenance checkups and can be applied as frequently as necessary, but it is most efficient to perform maintenance on a per-flight basis, rather than a set timeframe. That way, scheduling more accurately reflects the likelihood of the drone requiring service.

Whatever the case, you will likely already have your own processes in place to decide how and when to perform maintenance. **Run this checklist to ensure all systems are in working order** and that **any repairs or replacements can be carried out** before the next flight.

2 Preparation:

3 Record basic details

Record pilot identification and drone model details for the unit being serviced.

The **form fields below** will detail exactly what information you need to provide. **Be sure they are all filled in** and leave any additional comments at the end of the task.

Technician first name *

Technician last name *

Date of maintenance *

Drone model name *

Drone model number *

Drone ID number (serial) *

Drone weight (kg) *

Additional comments

Repair technician email *

4 Structural inspection:

5 Clean chassis of mud and dirt

Before performing any kind of structural check, **make sure all battery packs are disconnected and the drone is fully powered down.**

Over time, your drone will gather layers of dirt and matter from the rigors of flight, transport, and storage. You should clean the whole unit regularly.

Using an air duster in combination with a microfiber cloth and a little water, **remove most of the dirt and build-up.**

Tougher stains may require more extensive cleaning solutions, but **make sure that you take care when dealing with sensitive electronic components.**

Check that you have the following equipment on hand before you start cleaning the drone.

- 1 Anti-static cloth *
 - 2 Small cleaning brush (for tight crevices) *
 - 3 Compressed air canister (air duster) *
 - 4 Anti-static wristband *
 - 5 Isopropyl alcohol *
- 6 Inspect chassis for cracks
-

Carefully inspect the chassis for damage. You should perform these checks on a regular basis and ensure all parts are serviced accordingly.

Even the smallest crack can cause critical problems if left unnoticed.

During routine maintenance, **check each component extremely carefully and make a note of the damage you find.**

Comments on chassis damage

- 7 Check for loose screws
-



Ensure every component is secured tightly in place. During maintenance or repairs, it is likely that some components will need to be removed and replaced.

In this case, and even in older parts, be sure to **double check the fastenings and bolts.**

Don't over-tighten. This can lead to excess strain on joints and do even more damage. The joints should be tight and secure, but not fastened with an excess of force.

8 Check propellers for damage

The propellers are some of the more delicate parts in your system. You will need to **inspect them very closely for cracks** and **be sure that they are not loose.**

Even if your last flight went off without a hitch, you should be extremely thorough with your examination. Propeller damage can go unnoticed until it proves critical, and the last thing you want is your unit breaking down mid-flight due to a small crack you didn't notice during a routine maintenance.

Replace broken parts and proceed to test the motors more thoroughly.

Comments on propeller damage

9 Check propellers are free-spinning

Double check the battery pack is disconnected before performing this check.

Rotate each propeller in succession to assess whether there are additional obstructions that inhibit the full range of motion.

Ideally, the propeller will spin smoothly and without resistance.

Should there be any difficulty in spinning the propellers freely like this, **consult your unit's manual** on propeller disassembly and **perform a thorough cleaning of each component** in the motor-propeller module.

10 Check motors for debris and obstructions

The motor chamber can become obstructed with debris such as grit or dirt, and even organic matter caught in the openings around the top of the armature.

As well as wiping down the casing, **be sure that there is nothing lodged in the negative space** between the propeller and motor.

You should **remove the propellers** for direct access to the motor chamber, and **clean out all foreign matter**.

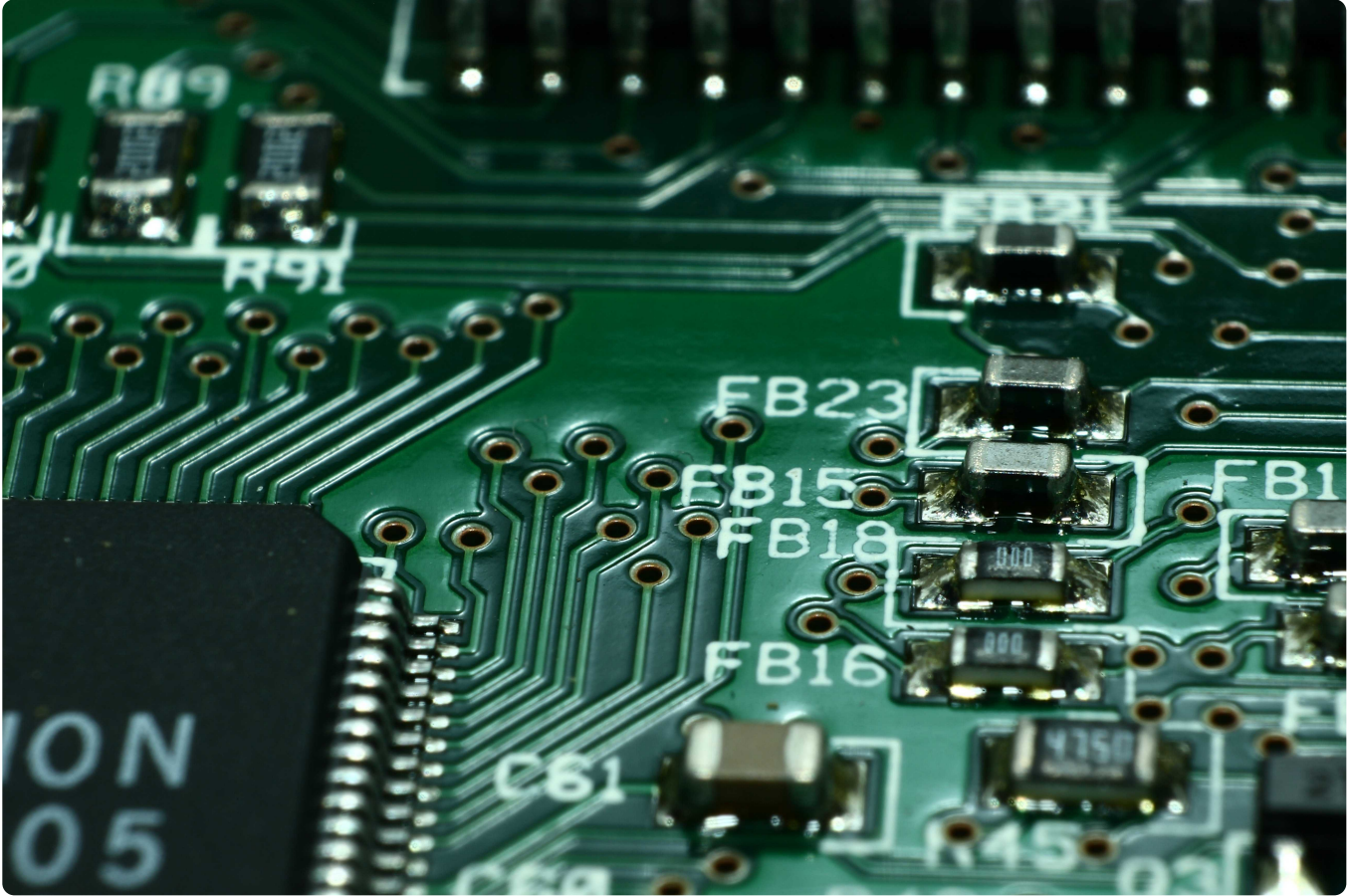
It may be necessary to further disassemble the drone to remove difficult debris; if this is the case, be sure to **consult your model-specific instruction manual** for proper disassembly and re-assembly procedure.

1 Motors are free from debris *

2 Motors are in good condition *

Comments on motor damage

11 Check state of wiring and solder joints



If your unit has any exposed wiring, you should check that first, because it will be subject to the highest risk of damage.

Look for visibly worn or frayed points and make sure nothing is loose.

You will also need to **open the chassis and inspect the internal wiring.**

Solder any loose connections, but make sure you **reference your unit's manual** beforehand. You run the risk of damaging or breaking circuitry if you solder a wire incorrectly or do not exercise proper precaution when dealing with internal components.

Comments on wiring damage

12 Check unit camera is clean

Wipe the lens of the camera clean, and **remove dirt and debris on the body and frame.**

Insect splatter and other environmental factors can cause a large buildup of matter on this component, so it should be properly cleaned as part of a routine check.

13 Check landing gear condition



Make sure the legs and feet of the unit are not bent or cracked, and that all rubber shock absorbers are intact.

Without this module, the drone would not be able to perform a safe landing.

If any parts are damaged or missing **they will need to be ordered from your manufacturer and re-fitted.**

Comments on landing gear damage

14 Inspect antennae

The antennae are responsible for maintaining wireless signal between the ground control station and the mobile drone unit.

Damaged or improperly fitted antennae can reduce connectivity and lead to fatal loss of control.

Be sure that each antennae are in good shape and is screwed properly into the unit and record your findings below.

- 1 Antennae are in good condition *
- 2 Antennae are properly screwed into the unit *

Comments on antennae damage

- 15 Check control station for faulty components

Your control station is a complex modular system with many points of failure. Maintaining and servicing these modules is just as important as your drone.

Visually inspect each component for damage and complete the sub-checklist below as you go.

- 1 Remote controller antenna *
- 2 Remote controller chassis *
- 3 Extended range transmitter/reciever (if applicable) *
- 4 Control station smart phone *
- 5 Control station laptop computer *

Comments on control station damage

- 16 Battery check:

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- 17 Inspect charger for visible damage

Often overlooked is the docking station for each battery pack. This component can often go for years without being properly serviced and is a surprisingly common cause of battery-related issues.

As well as a visual check, you should ensure the voltage specified by the dock is compliant with that of the battery pack.

- 1 Inspect charger for visible damage *
- 2 Take voltage reading *

Comments on charger damage

- 18 Inspect battery packs for bulges or leakage

Next, **examine each battery pack carefully**. Bulges or deformities are signs of leakage and affected packs must be replaced immediately.

Battery pack maintenance should not be overlooked and proper care should be taken to preserve and extend their lifespan.

Active packs along with spares should be checked and **replaced if necessary**.



Example of a bulging LiPo battery pack that will need to be replaced.

- 1 Inspect drone batteries for damage *
- 2 Inspect controller batteries for damage *
- 3 Inspect additional component batteries for damage *
- 4 Replace damaged batteries (if necessary) *

Comments on drone battery damage

Comments on controller battery damage

- 19 Charge all batteries

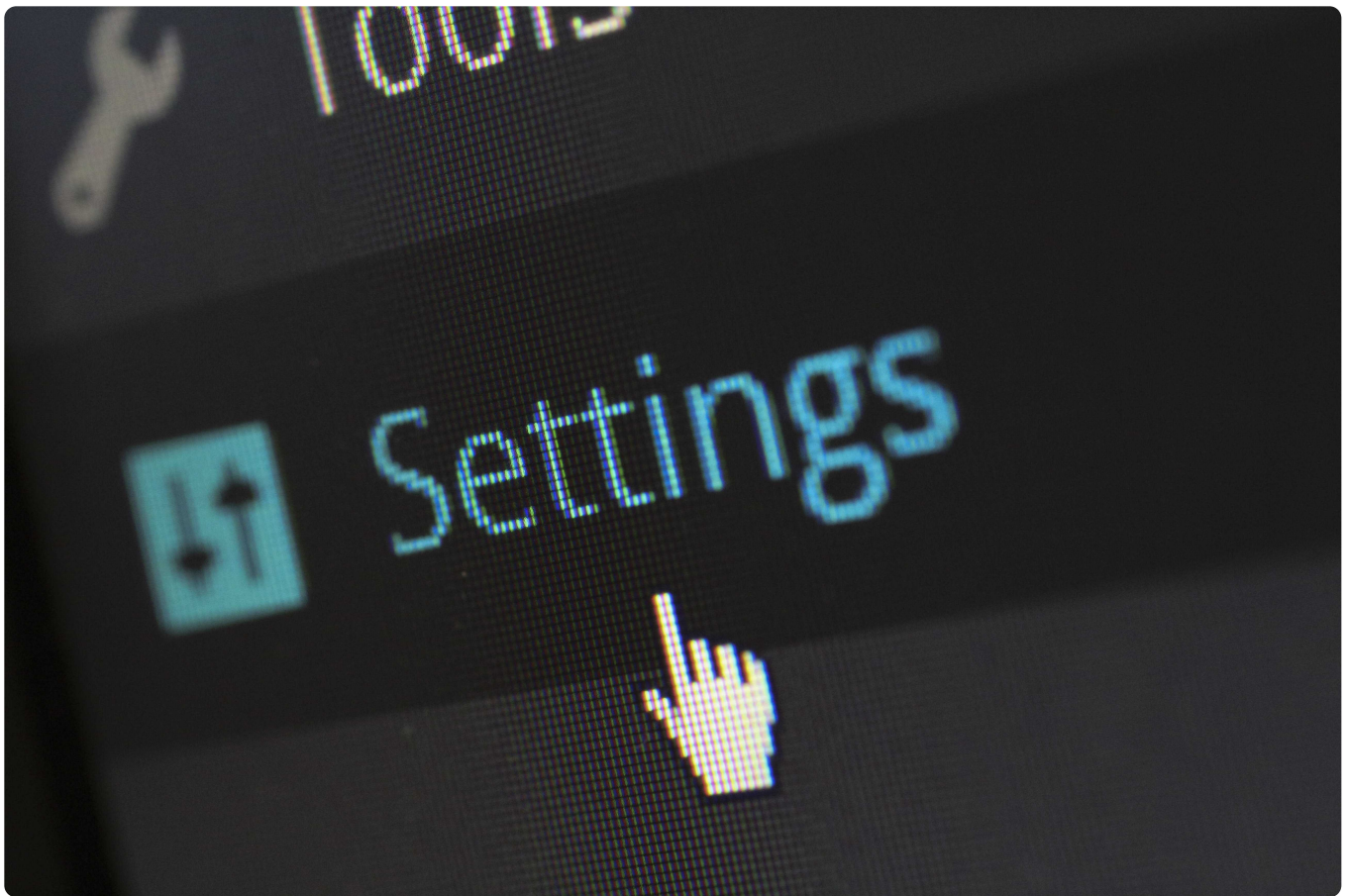
Once inspected and replaced if necessary, **ensure each pack retains at least 75% charge** before completing this task.

You shouldn't overcharge your batteries; nor should you allow them to completely drain. **Ideally, the charge should be kept within the range of 30 - 90%.**

- 1 Charge drone batteries to 75% *
- 2 Charge controller batteries to 75% *
- 3 Charge additional component batteries to 75% *
- 4 Charge spare batteries to 75% *

20 Software/firmware:

-
- 21 Update drone firmware
-



By updating your drone's firmware, you can rest assured that everything is up to date and working properly. Keeping your system up-to-date reduces risk from security vulnerabilities and will generally mean everything runs smoother.

Updating your firmware is simple - you can either do it wirelessly via an application or through the control station interface or just plug your drone into a computer (via USB or similar cable) and manually update using the unit-specific software provided.

Use the most appropriate method to **fully update system firmware** and proceed to the next task.

As always, make sure to **refer to your unit-specific documentation** for exactly how to perform firmware updates. Each model and manufacturer will have different methods for exactly how this is performed.



(<https://youtube.com/watch?v=l4kxXwwjrHk>)

How to update the firmware on any of DJI's drone models.

22 Update control station software

Your control station also relies on custom software to keep everything running as expected. Updating this is similar to the drone unit, and your control station will usually incorporate built-in mechanisms for updating its software.

For example, control applications running from phones or tablets will update automatically unless specifically told otherwise, but **you should perform checks anyway**.

If necessary, **update your control station software** using the most appropriate method.

More expansive modules such as portable laptop computers running proprietary software will have similar update mechanisms built-in.

After everything is updated, you should be good to go. All that's left is to perform some basic testing procedures, and the unit will be ready for its next flight.

23 Finishing up:

24 Forward maintenance report

You've finished the checklist and given each component a thorough look-over, so now you'll want to forward your findings to any relevant parties.

The email fields below have been auto-filled based on your data for this checklist, so just **check everything looks good and hit send**.

To

Repair technician email

Subject

Maintenance report for

Body

Below you will find a summary of the maintenance checklist performed on .

Chassis:

Propellers:

Motors:

Wiring:

Landing gear:

Antennae:

Batteries:

Control station:

Regards,

You may want to **print a paper copy or export a .pdf version of the checklist** as well.

The screenshot displays a software interface for drone maintenance. On the left, a checklist is visible with items 11 through 26. Item 24, 'Forward maintenance report', is highlighted. The main content area shows a 'Forward maintenance report' with the following details:

- To:** repair@tech.com
- Subject:** Maintenance report for {{form.Drone_ID_number(serial)_2}}
- Body:** Below you will find a summary of the 1324354657678 maintenance checklist performed on Jul 17 2018 4:19PM.
- Chassis:** Damage is present on the base
- Propellers:** form.Comments_on_propeller_damage
- Motors:** form.Comments_on_motor_damage
- Wiring:** form.Comments_on_wiring_damage
- Landing gear:** form.Comments_on_landing_gear_damage
- Antennae:** form.Comments_on_antennae_damage
- Batteries:**

On the right, a sidebar contains a 'Complete checklist' section with a dropdown menu for 'Checklist options...'. The 'Print this checklist...' option is highlighted with a red arrow and a text overlay: 'Click this button to print or export your checklist'.

25 Sources:

- FAA - Study on Human Collision Hazards
- Android Central - How to Clean and Take Care of Drones
- Popular Mechanics - Bolt Torque Guide
- Northland College - UAS Maintenance Technician Responsibilities
- DJI - Battery Safety Guidelines
- FAA - Maintenance Guidelines
- NIST - Electronic Appliance Safety Compliance

26 Related checklists:

- Drone Safety Checklist
- UAV Compliance Checklist
- Drone Post-Flight Checklist
- Drone Repair Checklist
- Drone Troubleshooting Checklist
- Drone Testing Checklist
- New Drone Setup Checklist
- Drone Pre-Flight Checklist