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NTO: X10 Accelerated Propeller Hub Wear - 3 May 2024

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Skydio › Notice to Operators › Notice to Operators

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Safety Risk: Flight hours primarily accumulated via high-stress flight conditions may create accelerated wear of the propeller's quick-release attachment point, which may lead to an inflight loss of motor sync, resulting in an unrecoverable flight upset and crash.

Products affected: Skydio X10 and Skydio X10D

Description, Identification, and Manifestation

Skydio X10 and X10D propellers are designed for up to 250 hours of useful life under normal flight conditions. Useful life may be reduced for vehicles accumulating substantial flight hours in high-stress flight conditions, including:

- Sustained flight airspeed above 33 mph (53 km/h)
- Aggressive or max throttle, pitch, and yaw
- Flights conducted in high wind or gust conditions

Skydio analysis of vehicle flight telemetry and physical propeller inspection, indicates a limited number of customers with flight

Help

ahead of the existing 250 hour replacement interval to assure safe flight.

Mitigation and Resolution

Skydio Actions

Skydio Customer Support is contacting X10 customers with high stress flight profiles. X10D customers will need to follow inspection recommendations as telemetry monitoring is not available. Skydio will provide customers with replacement propeller sets if accelerated wear conditions are found. Skydio is also actively working on enhanced analytics to monitor and alert customers to signs of propeller hub wear, regardless of the cause. Skydio is developing design and material changes to increase the propeller hub's useful life in high-stress flight conditions. All customers will be provided new design propeller sets when they become available.
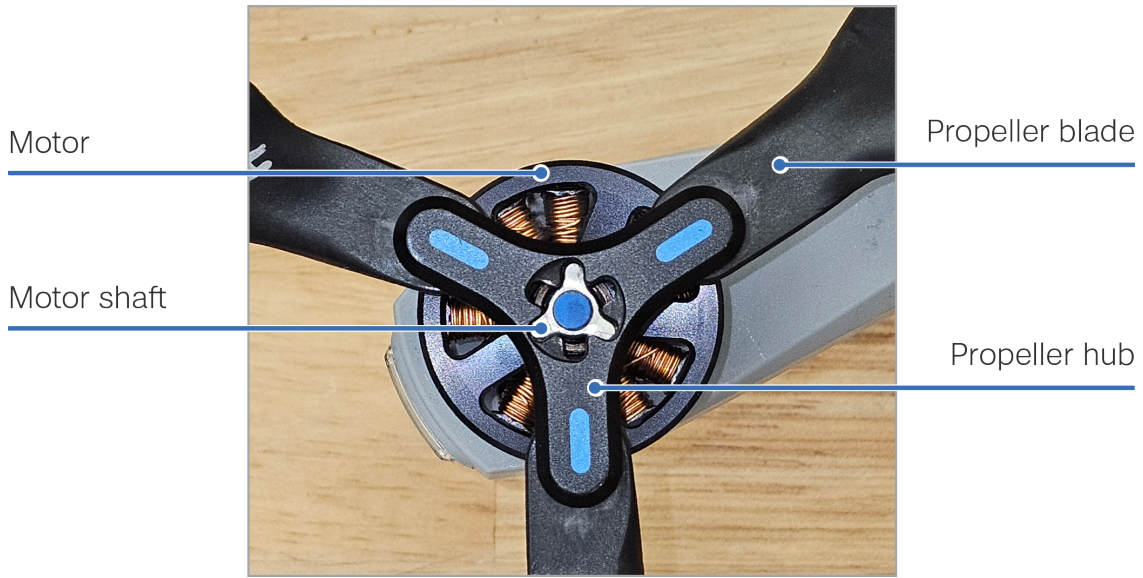
Operator Actions

Based on this data, Skydio recommends vehicles accumulating flight hours primarily via high-stress profile conditions (described above) undergo a short visual propeller hub inspection every 5 flight hours.

If not flying in high-stress profile conditions, out of an abundance of caution, Skydio recommends all operators perform the propeller hub inspection every 50 flight hours.

Inspection Procedure

The inspection procedure involves observing the degree of movement in the propeller hub and the motor shaft.

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Step 1 - Place Skydio X10 on a table flat surface with elements...

Motor

Propeller blade

Motor shaft

Propeller hub

Step 2 - Grasp the motor between your index finger and thumb with one hand, then grasp the propeller hub with your other hand
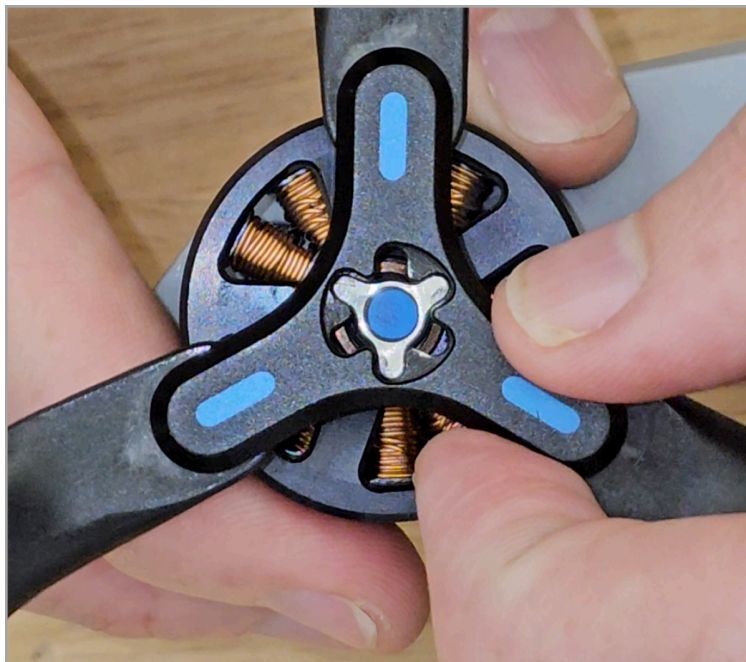
Step 3 - Apply firm opposite torsion between the propeller hub and the motor in both directions without pressing downward
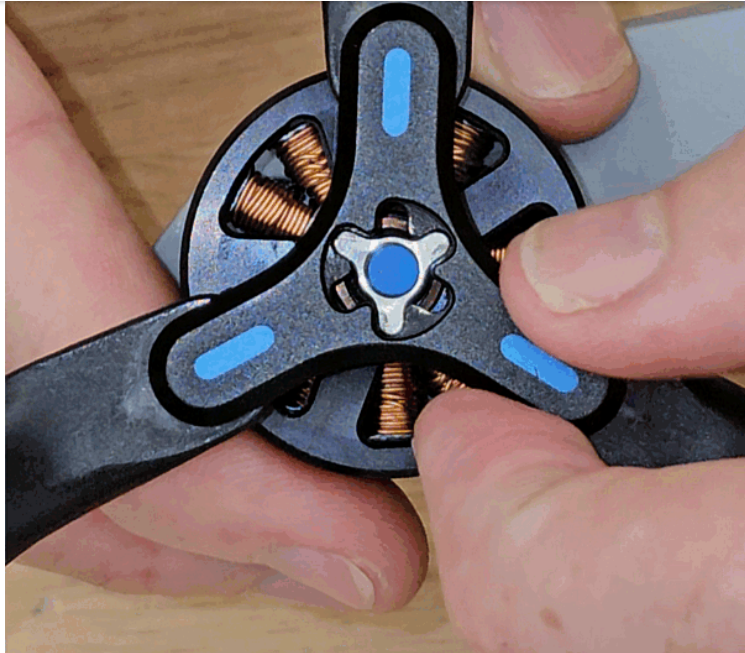
Step 4 - Look and feel for movement of the motor shaft compared to the pocket it rests in within the propeller hub

Flightworthy:

- Propellers with less than 10 degrees of movement (unworn propellers will exhibit about 2 degrees of relative movement)

- The top surface of the motor shaft is not occluded by any portion of the propeller hub

- No accumulation of gray dust around the top surface

Expected 2-degree movement of unworn propellers:

Do not fly:

- Propellers with 10 degrees or more of relative movement

- The top surface of the motor shaft is occluded by the propeller hub

- Accumulation of gray dust around the top surface

Moderate gap | Visible overhang

Large gap | Large overhang

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Step 6 - Repeat the inspection process on the remaining three propeller hubs

- If you observe accelerated pocket movement in any propeller hubs, replace all four propeller hubs

- If in doubt, contact Skydio Support and provide close-up photos of the propeller hub assembly, or arrange for no-charge replacement propeller sets to be sent to you

Step 7 - When replacing propellers, Skydio recommends inspecting the motor shaft spring. Please see the Skydio X10 Maintenance Manual for details.

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