

REVISION	CHANGE	APPROVED	DATE
1	Published release	JTS	29/05/2025
1a	Formatted for website PDF	JTS	27/11/2025



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## ASI-7-5-1

# PROPELLER STRIKES GUIDELINES

### GUIDE



#### SUBJECT:

Repairs & Upgrades

#### ASSEMBLY NO:

AP-xxx

#### APPLICABILITY:

All propeller models excluding  
AP332.

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## 1. TOPIC

### 1.1 Introduction

This document outlines the necessary actions in the event of a propeller ('prop') strike and details the assessment and repair protocols implemented by Airmaster Propellers Ltd.

### 1.2 Airmaster Prop Strike Policy

All prop strike repairs must be completed by Airmaster Propellers Ltd. Airmaster commits to a 3-strike policy whereby the hub shell must be replaced if it has been subjected to three propeller strike incidents.

A prop strike is considered as an event where the propeller is subjected to impact, or reasonable force is applied to the propeller blades. This may occur even when the engine is not running. Typical examples include bird strikes, water submersion, ground contact, impact by foreign object debris, or collision with other infrastructure.

Since the severity and nature of propeller strikes can vary widely, Airmaster assesses each case individually to form an appropriate repair schedule. This assessment considers several factors including the type and extent of damage, the age and specification of the propeller, and the total time in service.

It is important for owners to note that some propeller components are intentionally designed to be sacrificial and must be replaced after a strike. It is imperative that all propeller strikes are reported to Airmaster, and that the manufacturer's recommendations are followed.

### 1.3 Immediate Action

Once the aircraft is safely grounded and all occupants are safe, perform the following actions:

- Inspect the propeller for signs of damage.
- Record observations and capture clear photos of any affected areas.
- Log the incident in the propeller logbook, including the date, time, and service hours at the time of the strike.
- Report the incident to Airmaster by e-mailing [support@propellor.com](mailto:support@propellor.com) with photos.

#### **WARNING**

*After a prop strike, the propeller must remain grounded and should not be operated until it is reconditioned and approved for return to service by Airmaster Propellers Ltd.*

#### **WARNING**

*Other aircraft features such as the airframe, undercarriage and engine may be damaged due to a prop strike. These components must be assessed in accordance with the manufacturer's advice.*

### 1.4 Repair Process Overview

#### 1.4.1 Repair Form

Upon receiving notification of a propeller strike, Airmaster will request that customers fill out a repair form detailing the incident and the propeller asset. This information is essential for evaluating viable repair options and determining the best course of action.

### 1.4.2 Repair Estimate

Upon request, Airmaster may provide a preliminary repair estimate before receiving the damaged propeller. This estimate is intended solely as a provisional figure to support insurance claims, or to assist the customer's decision on whether to proceed with the repair. It does not constitute a formal quotation. Airmaster reserves the right to revise the estimate once the damaged propeller has been assessed.

### 1.4.3 Repair Deposit

In some cases, Airmaster may request a deposit payment in advance. This enables the pre-ordering of replacement blades to reduce overall lead times.

### 1.4.4 Repair Assessment

Propeller strikes can give rise to a variety of failure modes that may compromise the structural integrity of the propeller. Some damage may be concealed, or the severity may go unnoticed. For this reason, all critical propeller components - including the hub and blade assemblies - must be returned to Airmaster for assessment.

This assessment includes stripping the assemblies, cleaning the assemblies and all components for damage.

### 1.4.5 Repair Quotation

Following this assessment, Airmaster will form a repair schedule, and share a formal quotation for the customer's review.

Repair work will only be scheduled upon receipt of a signed copy of the quotation to indicate acceptance. Estimated lead times may be provided at this time.

**ⓘ Note**

*Propeller strikes are not covered under the product's warranty scheme. The final balance for the repair job is invoiced once the repair is complete.*

**ⓘ Note**

*Airmaster allows up to 10% variance of the quoted figure to account for any unforeseen repair work that is required. If this margin is exceeded, Airmaster will seek approval before proceeding.*

## 1.5 Requirements for Repairing Propeller Sub-Assemblies

### 1.5.1 Hub Assembly

The propeller's hub assembly must be returned to Airmaster for assessment and repair. Certain hub components such as the pitch change slide (a sacrificial component) are mandatorily replaced after any propeller strike incident.

The propeller hub shall undergo a complete disassembly and cleaning process. The hub shell threads shall be subjected to non-destructive dye-penetrant testing (NDT) to verify the absence of cracks in accordance with ASTM-E1417-21e1: Type 1, Method D, Sensitivity Level 4, Form d.

### 1.5.2 Blade Assemblies

Airmaster does not repair propeller blades but may service the mounted blade retention assemblies. If damage is deemed minor (limited to cosmetic defects only), advice from the blade manufacturer may be sought as to whether the blade(s) may be refurbished. Otherwise, all blades must be replaced (by Airmaster) due to the following reasons:

- Blades are supplied by manufacturers as matching, pre-balanced sets. Attempting to replace some blades within a set typically leads to imbalance or tracking issues that cannot be resolved within the allowable limits of blade modification.
- Airmaster does not retain stock of incomplete blade sets or individual spares; and will not dissolve a complete set.

Airmaster will advise customers on the most viable option for repair or replacement of the blade assemblies (and therefore whether they should be returned) from one of the three options below:

#### **Option A:** **Refurbish Blades & Remount Retentions**

If the blades are deemed repairable, the complete set must be sent to Airmaster for disassembly before they can be sent to the blade manufacturer for refurbishment.

The blade retention assemblies shall be dismounted for assessment at Airmaster, and airworthy components will be salvaged to remount the refurbished blades.

##### **⚠ Caution**

*Do not attempt to dismount the retention assemblies from the blades. The specialised jigs and tooling required for this task are only available at Airmaster.*

#### **Option B:** **Replace Blades & Remount Retentions**

If the blades are deemed non-repairable, they shall be removed from service and replaced. Customers may choose to return the blade retention assemblies to Airmaster for assessment where airworthy components will be salvaged for remounting a new set of blades.

It is recommended that customers saw the blades off approximately 2 inches above the ferrule nut. This allows the retention assemblies to be wound into the hub ports and shipped to Airmaster within one package.

##### **⚠ Caution**

*Protect the blade retention assemblies to avoid damage and dust contamination. Carbon dust is harmful and appropriate protective equipment should be worn (e.g. gloves, respirator, goggles).*

##### **⚠ Caution**

*Do not attempt to dismount the retention assemblies from the blades. The specialised jigs and tooling required for this task are only available at Airmaster.*

#### **Option C:** **Replace Entire Blade Assemblies (No Repair)**

In some cases, the most viable option is to replace the complete set of blade assemblies outright. This is generally applicable for older blade specifications incorporating legacy components that are no longer serviced. Airmaster will notify the customer when this situation applies.

##### **ⓘ Note**

*One example of a legacy component is the Aluminium version of the blade ferrule and ferrule nut incorporated in older revisions of the AP332 propellers. These parts have since been upgraded to a steel version with enhanced fatigue properties. The legacy revision Aluminium parts are not serviceable and would be retired from service and replaced at the customer's cost.*

### 1.5.3 Mount Kit

The propeller hub mounting bolts should be replaced after any prop strike. Replacement bolts and Nord-Lock® washers will be supplied with the repaired propeller.

The propeller mount kit (i.e. spacer, extension or adapter assembly) may be returned for review.

### 1.5.4 Spinner Assembly

Remove the spinner cone from the backplate. Inspect the spinner cone, back plate and front support for signs of damage (e.g. cracks or dents).

No damage to the spinner cone is acceptable, and repairs are not permitted. Airmaster does not repair spinner cones. If damage is found, request a replacement part spinner cone; do not return to Airmaster.

Check for deformation to the backplate using a straight edge. No deformation is acceptable. Damaged backplates must be replaced but may be returned as-is (fitted to the hub).

### 1.5.5 Controller

The controller may be returned for firmware update, or optional upgrades including:

- Replacement of the controller front panel (visible part of the controller inside the cockpit).
- For AC200 controllers, the hardware may be upgraded to enable diagnostic functionality (this feature was not included for older AC200 controllers that are hardware version 4 or lower).

### 1.5.6 Slipring Assembly

Inspect the slipring assembly for signs of damage (e.g. cracks, dents, deformation, gouges).

Light gouges to the slipring tracks may be repaired in some cases by Airmaster. Deformed slipring assemblies must be replaced but may remain fitted to the propeller (if applicable) and returned as-is.

Non-damaged slirings may be returned for cleaning and refacing the slipring tracks if they are worn.

Replacement connectors for the slipring will be supplied with the repaired propeller.

### 1.5.7 Other Propeller Parts

All damaged parts (excluding the spinner cone) must be returned to Airmaster. The following spare parts or tools may be requested if necessary:

- Propeller Logbook
- AC200 Bypass Loom (A0118)
- USB-Serial Cable (A0117)
- Blade Assembly Spanner (AT-x)
- Spare Set of (3) Carbon Brushes (P0265)
- Drive Lug Replacement Tool (A0210-x)

## 1.6 Returning Propeller for Repair

### 1.6.1 Removing Propeller

To remove the propeller from the aircraft, the following general sequence of propeller disassembly should be followed:

- Remove spinner cone from backplate via truss head screws.
- Remove blade assemblies from hub using blade assembly spanner.
- Remove hub from engine flange (or extension assembly if applicable) via hub mounting bolts.

**① Note**

*For more information on the propeller removal process, refer to the procedure outlined in ASI-7-6.*

**① Note**

*Do not remove the spinner backplate or front support from the propeller hub. Standard slippings assemblies may be left fitted to the propeller backplate if applicable.*

### 1.6.2 Packaging Propeller

- If available, reuse original packaging material supplied with the propeller. Otherwise, a sturdy, undamaged cardboard box may be suitable.
- A plywood board may be fashioned as a base to which the propeller hub can be affixed for transit. Secure the propeller hub to the plywood base board using the various packaging spacers, bolts and nuts originally provided.
- If the blade retention assemblies shall be returned (with blades sawn off), wind these into their respective hub ports.
- Lay the hub (secured to the base board) inside the hub box and surround the assembly with packaging spacers to ensure adequate protection during transit. If the original packaging spacers are unavailable, bubble-wrap, packaging foam or similar padding material should be used to protect the contents. Do not return the spinner cone.
- Use the hub top box to store any additional parts, ensuring that any loose items are restrained from movement during transit.

**① Note**

*Charges for replacement packaging may apply if the original packaging is not reused or is damaged during transit.*

### 1.6.3 Shipping Propeller to Airmaster

- Ship the damaged propeller to the Airmaster address below (tracked method preferred):

**Airmaster Propellers Ltd, 20 Haszard Rd, Massey 0614, Auckland, New Zealand**

- Send tracking details to Airmaster.

- Include a commercial invoice stating, “damaged aircraft propeller”, refer to Airmaster for advice on shipment value. Shipment insurance is recommended at the customer’s discretion.
- Mark the shipment “Receiver Pays” for duties and taxes. Airmaster will pay local tax on entry into New Zealand and will reclaim this afterwards.

 **ⓘ Note**

*Airmaster can organise courier collection at an additional cost (this is added to the final invoice). The collection address, box weight and box dimensions must be advised.*

## 1.7 Receiving Repaired Propeller

All repaired propellers are tested and statically balanced at the Airmaster factory before they are returned to the customer.

It is recommended that the following tasks are performed (as applicable) before returning the propeller to service:

- Reinstall hub using the replacement mounting bolts and Nord-Lock® washer pairs supplied.
- Create an entry in the propeller logbook to record the repair work. Note that the blade serial numbers are likely to have changed and should be updated in the leading particulars section at the front of the logbook.
- Perform a dynamic balance of the propeller.
- Verify that spinner cone fits snug and mounting holes align with spinner backplate.
- Perform static ground tests to verify that the propeller’s adjustable pitch limit settings are correct.
- Airmaster may advise customers that the propeller controller must be reprogrammed.