



Airmaster Propellers Ltd

Variable Pitch Constant Speed Propellers for Light Aircraft

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SERVICE BULLETIN

APL-SB-14

Date of Issue: 11 October 2002

Applicability: Propeller Models: AP308
Serial Numbers: All.
(Some early production examples may be excluded; see note below.)

Compliance: Initial: At next Periodic Inspection and Lubrication, or within 25 hours. Whichever is sooner.
Subsequent: Nil.

SUBJECT: SEALING OF BLADE ASSEMBLIES TO PREVENT WATER INGRESS INTO HUB

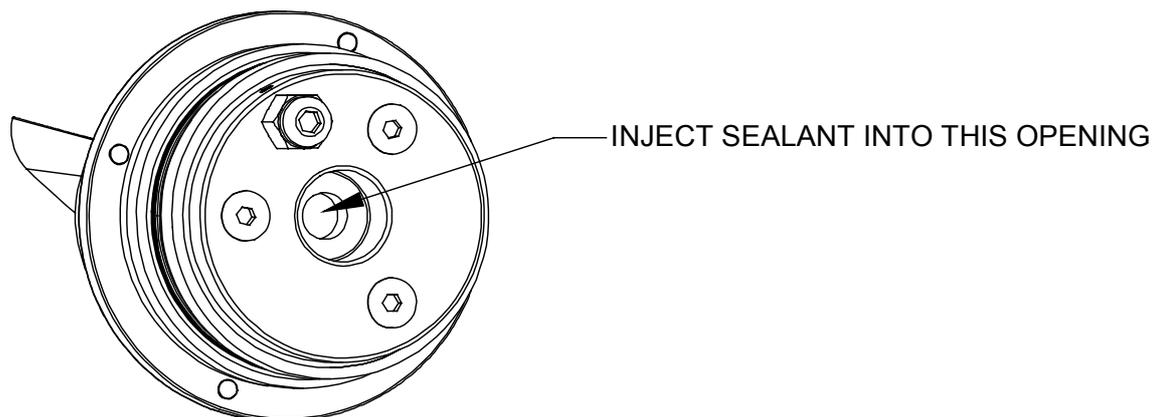
Reason

1. Airmaster AP308 propellers may suffer from water ingress while the propeller is stationary. Water, such as that from rain, is known to be able to enter the blade assembly through the annular gap between the shank of the Warp Drive blade and the ferrule nut. The water then passes down the two gaps between the blade retention sleeves and enters a cavity enclosed by the blade, the blade ferrule and the cam-follower attachment spigot. From this cavity water is able to enter the propeller hub, primarily by passing through the hole for the small spring-pin that retains the cam-follower stud.
2. This service bulletin addresses sealing of this blade cavity and the paths that allow movement of water from the cavity to the propeller hub.

Applicability to Early Production Examples

3. Some early production examples of the AP308 propeller (approximately up to a manufacture date of mid 2000, and approximately up to a serial number of 50) have an earlier design revision of the cam-follower attachment spigot. This earlier design revision allows water ingress to the hub via different paths. This earlier design revision may be identified by a circular recess in the face of the spigot, through which the butt of the Warp Drive blade may be seen.

4. This service bulletin (APL-SB-14) does not address water ingress through the blade assemblies with the earlier design revision spigots, and should not be actioned on affected propellers.
5. Service bulletin ATL-SB-2 covers sealing of blade assemblies with the earlier design revision spigots, and operators of affected propellers should ensure that this service bulletin has been actioned. This may be determined by checking that the hole through the centre of the spigot is sealed by sealant material.



**Figure 1 - Illustration from Service Bulletin ATL-SB-2:
Showing Blade Assembly with Earlier Design Revision Spigot
and Hole that should be Sealed by Sealant**

6. However, service bulletin ATL-SB-2 does not exclude all paths of water entry, and it is recommended that operators of affected propellers use the propeller blade cover supplied in May 2001 whenever the aircraft is parked outside.

Materials and Parts Required

7. A neutral cure, flexible, non-slumping sealant. Suitable products include RTV silicone rubber sealants such as Dow Corning 737 neutral cure sealant, Dow Corning 1080 neutral cure sealant, or Selleys Roof and Gutter Sealant. For ease of application it is recommended that this be purchased in the form of a 310g or 10fl.oz. cartridge for use in a sealant gun.

Caution: Do not use an acid cure sealant such as some bathroom sealants (eg Dow Corning 732 multi-purpose sealant). Acid cure sealants produce acetic acid as they cure, causing corrosion in aluminium.

Action

8. Remove the three blade assemblies from the propeller hub. Do this by loosening the four 10-32UNF set screws that lock the blade assembly until they protrude approximately 4mm (3/16in) from the blade assembly retention nut, and then using the special blade assembly spanner to loosen

the blade assembly retention nut. Clean dirt and remove excess grease from blade assemblies, bearings and the blade assembly mounting bores in hub.

9. Ensure that the propeller hub and blade assemblies are dry. If water is present, blow or wipe off excess water and allow all assemblies to dry in a warm area.

10. Drill a 6mm (1/4in) hole in the centre of the inboard face of the cam-follower attachment spigot as indicated in the following diagram. Material thickness at this point is 4mm of aluminium before the drill bit will enter a cavity. Countersink the hole to ensure a smooth edge, as this face of the cam-follower attachment spigot is a sliding surface against the plastic pitch change slide.

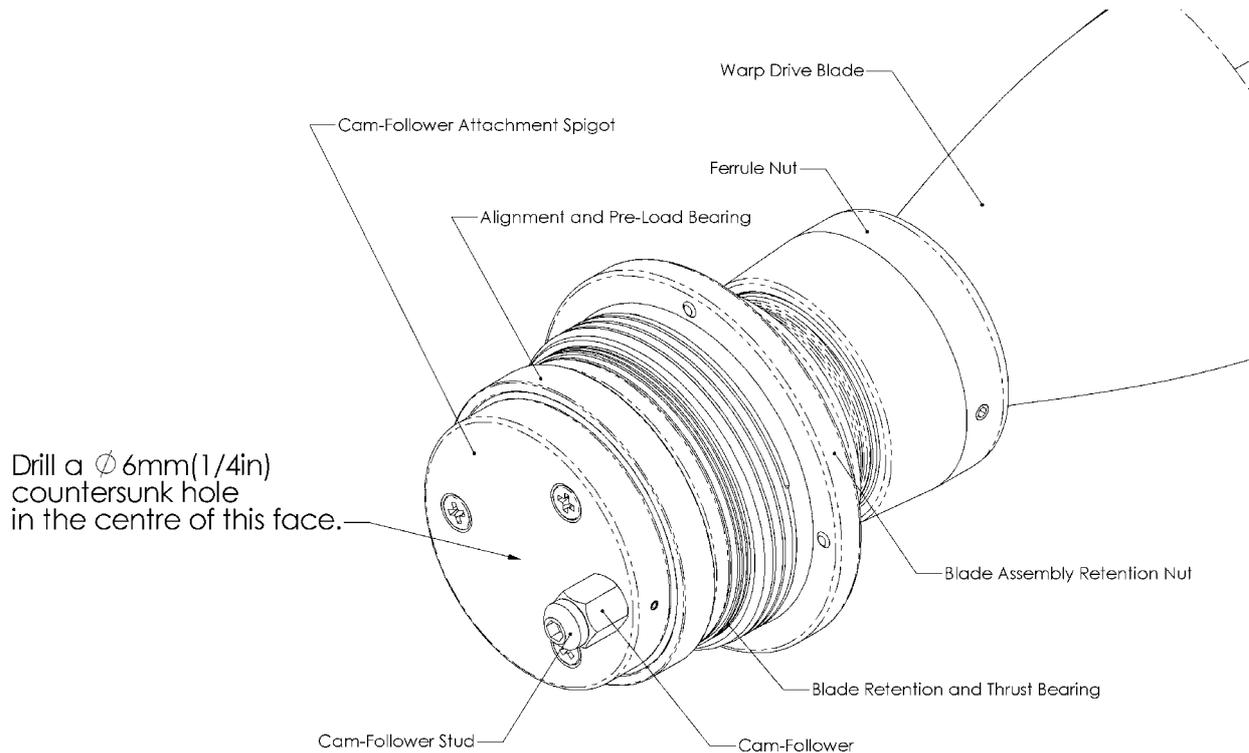


Figure 2 - Blade Assembly showing Required Location of Countersunk Hole

Note: Before injecting sealant, check that the small spring-pin that retains the cam-follower stud (cam-follower stud spring-pin) is in a hole that is drilled right through the spigot to the cavity within the blade assembly. Check this by poking a stiff piece of wire, such as a straightened paper clip, through the centre of the spring-pin, and seeing whether it is able to reach approximately to the centre of the blade assembly. On some examples of AP308 propellers this hole may have been drilled blind. Note whether this hole is drilled through or blind for later reference when injecting sealant.

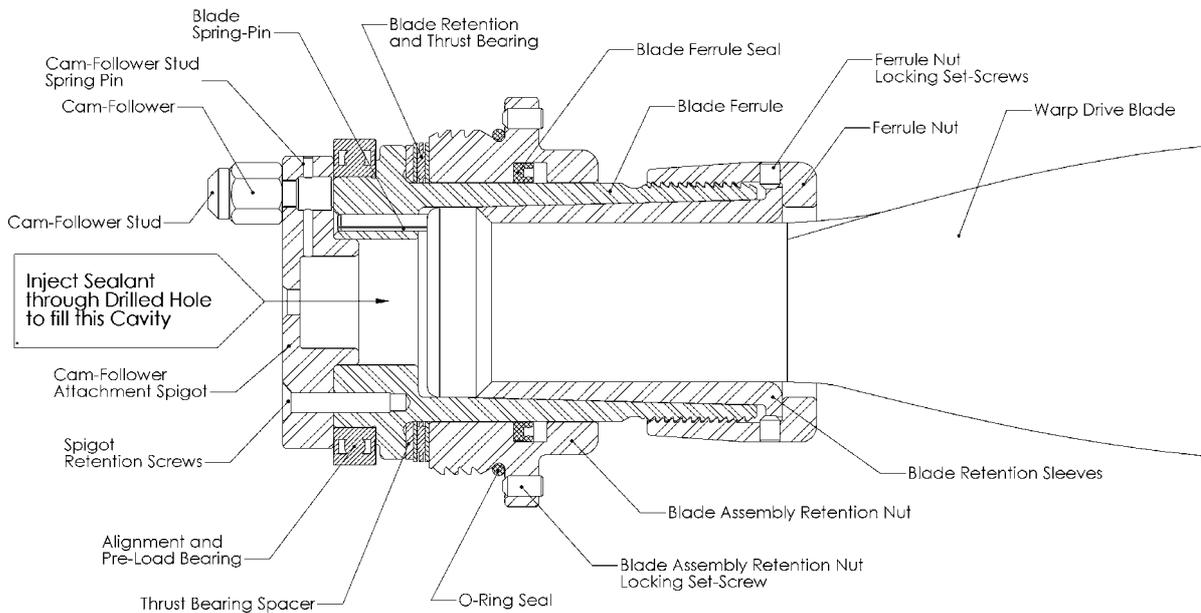
11. Support the blade assembly vertically, with the blade tip pointing down. It is recommended that a bench vice may be used for this, with the blade well protected from the jaws of the vice.

12. Push nozzle of sealant gun firmly into the hole drilled through the face of the spigot. Inject sealant into the cavity behind the spigot as indicated in the diagram below until one of the following is observed:

- a. Sealant extrudes through the centre of the cam-follower stud spring-pin.

Note: Sealant will not extrude through this spring pin if its hole is drilled blind.

- b. Greater resistance to the injection of sealant is felt.
- c. Sealant extrudes from one of the gaps between the blade retention sleeves within the ferrule.



**Figure 3 - Cross-Section of Blade Assembly
Showing Hole Drilled through Cam-Follower Attachment Spigot,
and Cavity to be filled with Sealant**

13. Approximately 25g (1 fl.oz.) of sealant will be required to fill the cavity. The sealant should completely fill the cavity, blocking the path of water through the cam-follower stud spring-pin, the blade spring-pin, and through the joint between the blade ferrule and the cam-follower attachment spigot. It is not necessary that sealant also extrude past the butt of the Warp Drive blade, into the area occupied by the blade retention sleeves.
14. Clean any excess and spillage of sealant from the face of the cam-follower attachment spigot.
15. Repeat the above procedure for the remaining two blades.
16. Allow the sealant to cure over at least two days before reassembling propeller.
17. Conduct Periodic Inspection and Lubrication in accordance with operator's manual (Chapter 5 for AP308 Operator's Manual, revisions 0 to 12; Chapter 6 for AP308 Operator's Manual, revisions 13 to 15). Ensure that each blade assembly is free from moisture and well lubricated. Ensure that the propeller hub is free from moisture and well lubricated.

Note: Refer to the improved Periodic Inspection and Lubrication procedure issued as an amendment to the operator's manual by service bulletin APL-SB-12

18. Reassemble each blade assembly into the propeller hub in accordance with the instructions in the operator's manual (Chapter 2 for AP308 Operator's Manual, revisions 0 to 12; Chapter 4 for AP308 Operator's Manual, revisions 13 to 15).

Recording

19. Record completion of service bulletin APL-SB-14 in propeller logbook.