



Airmaster Propellers Ltd

Variable Pitch Constant Speed Propellers for Light Aircraft

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AMENDMENT TO OPERATOR'S MANUAL FOR AP332 AND AP308 PROPELLERS - IMPROVED PROCEDURE FOR LUBRICATION OF BLADE ASSEMBLIES TO PROVIDE ENHANCED PROTECTION OF BLADE BEARINGS

Note: This amendment to the Operator's Manual for AP332 and AP308 propellers replaces the existing procedure for periodic inspection and lubrication. The existing procedure is found in Chapter 5 for AP308 Operator's Manual, revisions 0 to 12; Chapter 6 for AP308 Operator's Manual, revisions 13 to 15; and Chapter 11 for AP332 Operator's Manual.

Note: This amendment has been introduced by service bulletin APL-SB-12 'Improved Procedure for Lubrication of Blade Assemblies to Provide Enhanced Protection of Blade Bearings'.

Section 1.1.1. Periodic Inspection and Lubrication (At First 25 Hours, First 50 Hours, First 100 Hours and Subsequently at 100-Hour Intervals)

At the first 25 hours, first 50 hours, first 100 hours and subsequently at 100-hour intervals; conduct the following inspection and lubrication:

WARNING: Before working on propeller, ensure that the engine is safe by turning ignition system off.

- a. Remove the spinner and the spinner front support from the propeller assembly. Check the spinner for cracking. No cracking is acceptable.
- b. Inspect the propeller hub for cracking or corrosion. Heavy corrosion or any cracking is unacceptable. Light corrosion may be removed and the surface protected.
- c. Inspect lock-wiring and locking of all external fasteners on propeller assembly.
- d. Inspect sensor/brush assembly and slibrings on the spinner back-plate for wear. Ensure that slibring surface remains smooth, and that brushes are pressed by their springs onto the slibring surface correctly.
- e. 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.

Note: Do not remove blades from the ferrules. This assembly is manufactured in a blade set-up jig, and such action would require that the blade angle be set-up again.

- f. Ensure that the propeller hub and blade assemblies are dry. Inspect all internal areas for evidence of water that may have entered the hub or moisture that may have collected due to condensation. If water is present, blow or wipe off excess water and allow remaining moisture in the assemblies to evaporate in a warm and dry area.

Caution: The presence of moisture is very dependent on the environmental conditions experienced by the propeller. Moisture can create the conditions for corrosion, which may damage components such as the blade bearings. If moisture or any evidence of corrosion is detected, consideration should be given to repeating this periodic inspection and lubrication at more frequent intervals to ensure that the components are protected from moisture and well lubricated at all times.

- g. Inspect the blade ferrule for cracking or corrosion. No damage is acceptable. Pay particular attention to the fillet area between the flange at the inner end of the ferrule and the main cylindrical section of the ferrule, as this is the principal load bearing area. Inspect this area closely under good illumination.

Note: This area of the ferrule may be seen by sliding the blade assembly retention nut, the blade retention and thrust bearing, and the aluminium spacer towards the outboard end of the ferrule. After wiping away excess grease, the fillet area to be inspected will be exposed. A matt finish will be observed on the area, where the surface has received a shot peen treatment to enhance its fatigue properties.

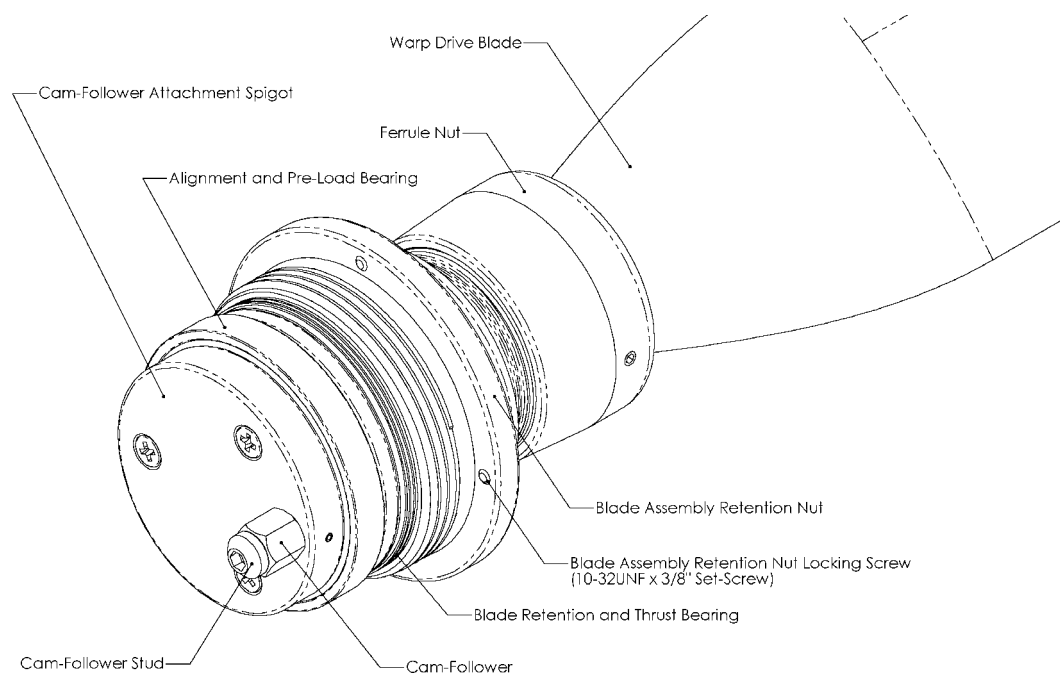


Figure 1. Blade Assembly

- h. Inspect the blade assembly retention nut for cracking or corrosion. No damage is acceptable
- i. Slide the blade retention nut outboard along the ferrule towards the ferrule nut. Separate the three elements of the blade retention and thrust bearing (the two thrust washers/races and the cage complete with needle rollers).
- j. Inspect the blade retention and thrust bearing for damage. Broken rollers, indentations on the races, corrosion (other than minor staining) or obvious rough running are unacceptable, and are cause for bearing replacement.
- k. Fill the spaces between the three elements of the blade retention and thrust bearing with grease before bringing the elements back together. Ensure that every part of the bearings is coated with grease. This ensures that the bearings are adequately lubricated and protected.
- l. Inspect the alignment and pre-load bearing for damage. Corrosion (other than minor staining) or obvious rough running are unacceptable, and are cause for bearing replacement.
- m. Coat the steel outer race of the alignment and pre-load bearing with grease.
- n. Liberally apply grease to the blade assembly. Use a spatula or similar flat tool to apply beads of grease around the circumference of blade assembly as indicated in the following diagram.

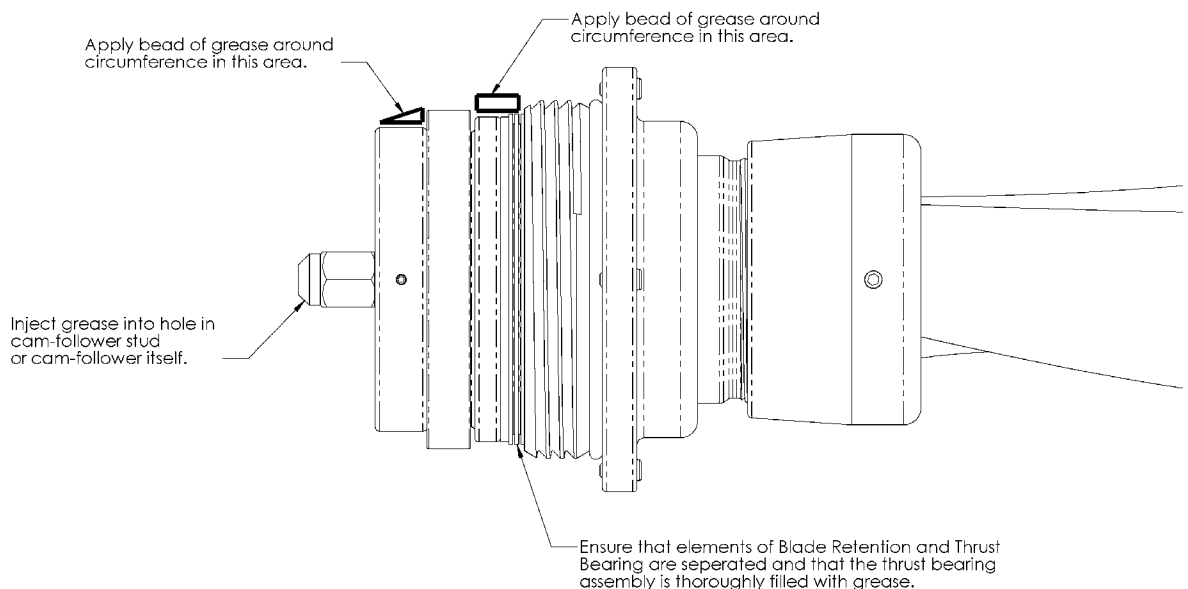


Figure 2 - Blade Assembly Showing Areas for Grease Application

- o. Lubricate the face of cam-follower attachment spigot with grease.
- p. Lubricate cam-follower assembly by injecting grease into hole drilled in end of cam-follower stud. Use a standard grease gun with a needle-point. Grease will exude from either end of cam-follower.

Note: On some early production examples of the AP308 propeller there is a hole drilled into the side of the cam-follower, as opposed to drilled in the end of the cam-follower stud. In this case, inject grease into this hole in the cam-follower.

- q. Repeat the above procedure for the remaining two blades.
- r. Inspect the three blade assembly mounting bores in the propeller hub for damage such as cracking or corrosion to the threads or bearing surfaces. No damage is acceptable in this area.
- s. Inspect the pitch change mechanism within the propeller hub for loose components or obvious distortion.
- t. Lubricate the pitch change mechanism, including faces and slots in the plastic pitch change slide, with grease.
- u. Liberally apply grease to the three blade assembly mounting bores in the propeller hub. Use a spatula or similar flat tool to apply a bead of grease around the circumference of the blade assembly mounting bores. The bearing and thread relief grooves in the bores should be filled with grease to ensure that grease fills the area around the blade bearings as indicated in the following diagram.

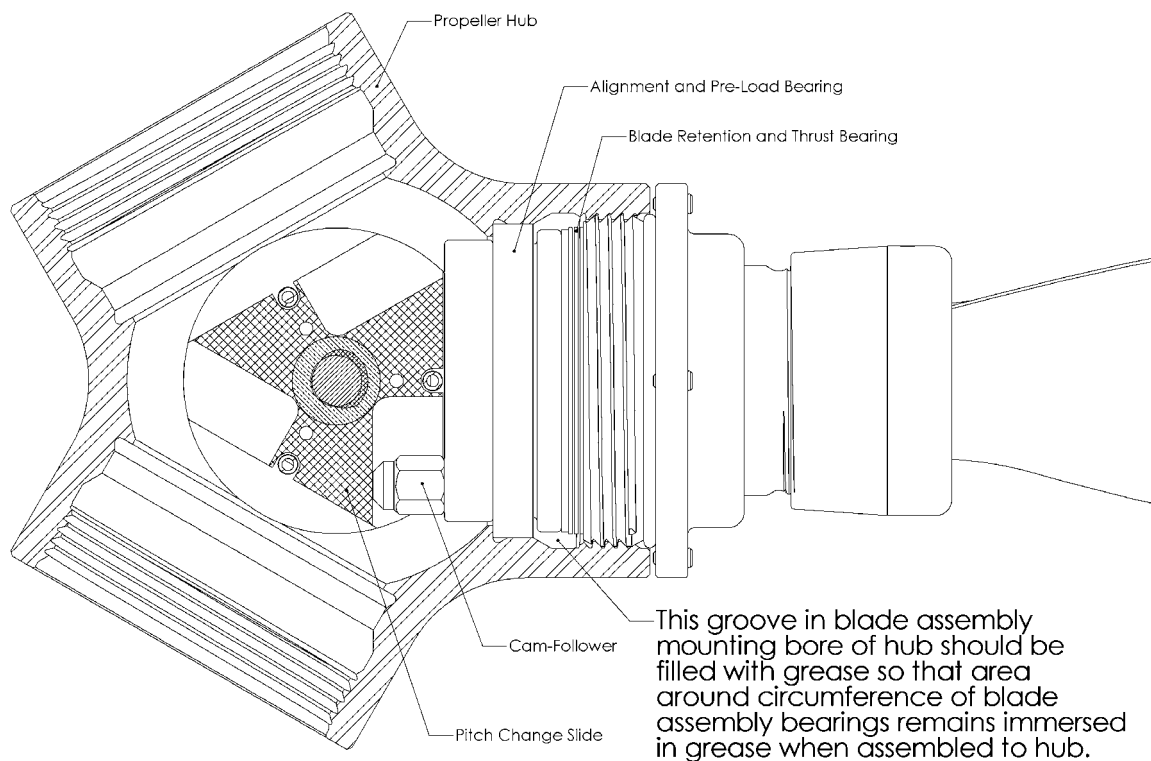


Figure 3 - Blade Assembly Mounted in Propeller Hub showing Areas for Grease Application

- v. Reassemble each blade assembly into its matching bore in 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; Chapter 5 for AP332 Operator's Manual).

- w. Refit the spinner and the spinner front support to the propeller assembly, making sure that it is refitted in the correct orientation.
- x. Conduct an engine off functional check of the propeller in accordance with the instructions in the operator's manual (Chapter 4 for AP308 Operator's Manual, revisions 0 to 12; Chapter 5 for AP308 Operator's Manual, revisions 13 to 15; Chapter 6 for AP332 Operator's Manual).