



Airmaster Propellers Ltd

Variable Pitch Constant Speed Propellers for Light Aircraft

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SERVICE BULLETIN

APL-SB-9

Date of Issue: 24 April 2002

Applicability: Propeller Models: All AP308.
Serial Numbers: All up to No 88.

Compliance: Initial: At Operator's Discretion.
Subsequent: Nil.

**SUBJECT: UPGRADE TO AC200 SMARTPITCH
CONTROLLER**

Reason

1. The newly developed AC200 SmartPitch Controller for Airmaster propellers is a significantly enhanced design compared with its predecessor, the AC100 which was supplied with AP308 propellers. Advantages over the AC100 controller include:

- a. Fully customisable pre-set speed settings, able to be reprogrammed by using a personal computer if required.
- b. Hold speed governing mode for in flight selection of any operating speed.
- c. Improved indication of propeller and controller status.
- d. Fits standard 2-1/4" instrument cutout.
- e. Less individual components in system, saving installation space.
- f. Enhanced reliability.
- g. More reliable and robust speed sensing system with magnet and magnetic sensor.
- h. Eliminates requirement for optical speed-encoder mounted on slipping assembly, providing aerodynamic advantages to eight-inch spinner installations.

2. The AC200 SmartPitch Controller is now available to upgrade AP308 propellers (including those that were supplied with a manual control system). This service bulletin covers the upgrade of the AP308 propeller from a AC100 controller to a AC200 controller.

Optional Compliance

3. The Operator must decide whether to action this service bulletin.

Note: This service bulletin is not compulsory. If the owner is currently satisfied with the performance of the automatic controller they may choose not to action this service bulletin.

Materials and Parts Required

4. The upgrade kit supplied by the manufacturer includes the following components:

- a. AC200 Control Unit (non-feathering) (and fasteners).
- b. Power Cable for AC200 Control Unit.
- c. Manual Pitch Control Switch and Cable (and fasteners).
- d. Sensor/Brush Assembly, Bracket and Cable (AP308 upgrade version).
- e. Sensor/Brush Assembly Attachment Hardware.
- f. Magnet, Speed Sense.
- g. Firewall Shield.
- h. AC200 Operator's Manual (Non-Feathering).

5. Additional material required:

- a. Two-part epoxy adhesive such as that manufactured by Araldite, Devcon or Loctite.

Action

Removal of Existing AC100 Control System

6. Remove AC100 control system from aircraft. This will include:

- a. Control Unit.
- b. Speed Regulator.
- c. Manual Pitch Control Switch.
- d. Sensor/Brush Assembly.
- e. All associated cables and wires.

Removal of Propeller from Engine

Note: This service bulletin may be able to be carried out with the propeller on the engine, however this will be more difficult.

7. Remove AP308 propeller from engine.

Note: This operation will be made easier by removing the spinner and blade assemblies from the hub first. Ensure that these are re-fitted in accordance with the instructions in the propeller owner's manual at completion of this service bulletin.

8. Support propeller with motor cover pointing down, so that the spinner back-plate is uppermost and horizontal.

Modification of Propeller

9. Drill a hole 5mm(0.2in) in diameter, 4mm(0.15in) deep at a radius of 93mm(3.66in) into the speed-encoder and slipring assembly as shown in the attached drawing. Drill into the side of the hole in a manner similar to that described in the drawing to provide a key for later bonding.

Note: The 29mm(1.14in) measurement on the drawing is made from the inner edge of the slip-ring assembly.

10. Fill hole with two-part epoxy adhesive.

11. Immediately place speed sense magnet in hole as indicated in the attached drawing. A non-magnetic tool such as a plastic rod may be used to push magnet into epoxy.

12. Ensure that speed sense magnet is covered with epoxy, and that hole is completely full of epoxy.

13. Allow epoxy to cure, and trim away any excess.

Optional Modification of Propeller

Note: The following two steps are optional. They may be employed to improve the visual appearance of the propeller, and the aerodynamic smoothness of eight-inch spinner installations.

14. Using a knife or a fingernail, carefully remove the markings that comprise the speed-encoder transfer from the bare aluminium speed-encoder ring. (These markings are the three concentric rings of alternating pieces of black self-adhesive plastic film.)

15. Remove excess material on outside edge of speed-encoder ring. This may be done by either of the following methods:

- a. Mounting propeller in a lathe and turning excess material off.
- b. Cutting or filing excess material off.

Note: When removing excess material take care not to damage any other component such as propeller hub, spinner back-plate or slipring.

Refitting of Propeller to Engine

16. Refit the propeller to the engine in accordance with the instructions in the Owner's Manual.

Installation of AC200 SmartPitch Controller

17. Install the AC200 SmartPitch Controller in accordance with the instructions in the AC200 Operator's Manual supplied in the installation kit. The controller consists of the following three units:

- a. AC200 Control Unit.
- b. Manual Control Switch.
- c. Sensor/Brush Assembly.

Functional Check

18. Conduct functional check of propeller system in accordance with the instructions in the AC200 Operator's Manual supplied in the installation kit.

Recording

19. Record completion of service bulletin APL-SB-9 'Upgrade to AC200 SmartPitch Controller' in propeller logbook.