

## PROPELLER BETA INDICATING SYSTEM - MAINTENANCE PRACTICES

### 1. General

**NOTE:** The propeller Beta indication system is applicable to all Brazilian and British certified airplanes.

- A. For airplanes with the Garmin G1000 system the beta indicating system has a BETA (red) CAS message that shows on the primary flight display (PFD) CAS message window. For airplanes that do not have the G1000 system there is an annunciator light found on the annunciator panel above the instrument panel. There is a beta switch installed on left side of engine above propeller overspeed governor. You can get access to the switch by removing the engine cowling.

### 2. Beta Switch Removal/Installation

- A. Remove the Beta Switch. (Refer to Figure 201).
- (1) Make sure that electrical power is set to OFF.
  - (2) Remove the upper engine cowling. Refer to Chapter 71, Engine Cowling and Nose Cap - Maintenance Practices.
  - (3) Identify and disconnect the electrical wiring from switch.
  - (4) Remove screws, washers, and nuts that attach the switch to the bracket.
    - (a) Remove the switch from the engine.
- B. Install the Beta Switch. (Refer to Figure 201).
- (1) Put the switch in its correct position on the bracket plate.
    - (a) Install the screws, washers, and nuts that attach the switch to the bracket.
  - (2) Identify and connect the electrical wiring to the switch.
  - (3) Do the switch adjustment. Refer to Adjustment/Test.
  - (4) Install the upper engine cowling. Refer to Engine Cowling and Nose Cap - Maintenance Practices.

### 3. Adjustment/Test

- A. Adjust the Beta Switch. (Refer to Figure 201).
- (1) Apply electrical power to airplane.
  - (2) Place power lever in idle position.
  - (3) For Airplanes 20800500 and On and Airplanes 208B2000 and On, use an air data tester to input more than 50 knots airspeed to each of the LH and RH air data system. Refer to Chapter 34, Pitot/Static System - Adjustment/Test.

**NOTE:** The G1000 must have a 50 knot average when both LH and RH pitot tubes are used to simulate the airspeed before the BETA CAS message shows. If only one (LH or RH) air data system is used to simulate the airspeed, then the input airspeed must be more than 100 knots at the specific pitot tube.

- (4) Loosen the screw holding switch mounting plate.
- (5) Disengage the switch from the cam and make sure that the CAS message shows on the PFD or the annunciator BETA light is on.
- (6) Operate the switch by pushing the roller lever on switch.
  - (a) Make sure that the CAS message goes out on the PFD or the annunciator BETA light is out.
- (7) Make sure that the propeller is in the feathered position.
  - (a) Tighten the jam nut.
- (8) Loosen the jam nut and adjust the cam on plunger so the distance between the forward edge of cam and the aft edge of block is 0.350 inch with plunger spring-loaded against propeller reversing lever.
- (9) When the adjustment is complete, tighten the jam nut.
- (10) Adjust the switch mounting plate fore and aft so that the centerline of switch roller is 0.125-inch forward of sloped portion of cam.
- (11) Adjust the switch mounting plate toward cam 0.040 to 0.060 inch further after switch is actuated on cam.
  - (a) Tighten the mounting plate screws.
- (12) Remove the air data test set from the airplane.
- (13) Remove electrical power from the airplane.

## B. Adjust the Beta Switch (Engine). (Refer to Figure 201).

- (1) Apply electrical power to the airplane.
- (2) Start the engine. Refer to the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.
- (3) Place the propeller control lever at MAX RPM position.

**CAUTION:** Make sure that the air data test equipment is safetied and is away from the propeller, exhaust and flight control surfaces. If you do not safety the equipment, damage to the airplane components and the test equipment can occur because of the air blast from the propeller.

- (4) For Airplanes 20800500 and On and Airplanes 208B2000 and On, use an air data tester to input more than 50 knots airspeed to each of the LH and RH air data system. Refer to Chapter 34, Pitot/Static System - Adjustment/Test.

**NOTE:** The G1000 must have a 50 knot average when both LH and RH pitot tubes are used to simulate the airspeed before the BETA CAS message shows. If only one (LH or RH) air data system is used to simulate the airspeed, then the input airspeed must be more than 100 knots at the specific pitot tube.

- (5) Place the power lever at IDLE position (at detent gate).
  - (a) Make sure that the CAS message is out on the PFD or the annunciator BETA light is out.
- (6) Slowly move the power lever toward REVERSE until that the CAS message shows on the PFD or the annunciator BETA light is on.
  - (a) Make sure that this point is within one lever width of idle gate.
- (7) Advance the power lever to the IDLE position and make sure that the CAS message is out on the PFD or the annunciator BETA light is out.
- (8) If adjustment is necessary, do the steps that follow:
  - (a) Make sure that power lever idle position is properly rigged (rear linkage). Refer to Chapter 76, Engine Control Rigging - Adjustment/Test.
  - (b) Adjust the microswitch mounting plate again. Refer to Adjustment/Test . To keep the position of the plate toward the cam but shift fore and aft position do the steps that follow:
  - (c) If the CAS message or the BETA light goes off too early (that is, power lever at idle), move plate forward 0.05 inch.
  - (d) If the CAS message or the BETA light comes on too late (that is, more than one lower width aft of the idle gate), move the plate aft 0.05 inch.

**NOTE:** The fore and aft adjustments above should be sufficient if position of mounting plate toward cam is correct. If this position is incorrect, no adjustment may be necessary.

- (9) Remove the air data tester from the airplane.
- (10) Stop the engine. Refer to the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual.
- (11) Remove electrical power from the airplane.

Figure 201 : Sheet 1 : Propeller Beta Indicating System Installation

