

AudioAdvisory SYSTEM

6600 & 6601

Instructions for Continued Airworthiness

P/N: 6601-ICA

Revision: 1.4

Date: 6/12/06



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INTRODUCTION: Modification of an aircraft by this Supplemental Type Certificate obligates the aircraft operator to include the maintenance information provided by this document in the operators Aircraft Maintenance Manual and the operators Aircraft Scheduled Maintenance Program. The items contained in this document are applicable to any aircraft with the installation of the P2 Aviation Technology, Inc. Audio Advisory System, model 6600 or model 6601. Any changes to this document will be made available via mail, email or downloaded via web site.

DESCRIPTION: The Audio Advisory System uses one of two models: the 6600 for non-pressurized aircraft and the 6601 for either pressurized or non-pressurized aircraft.

The 6600 computer has these main functions: (1) an airspeed-activated landing gear advisory, (2) an overspeed (V_{ne}) advisory and (3) an airspeed-activated Flight-Time (Hobbs) output. The 6601 computer has these same three functions as well as a stall warning repeater and a static port.

The AAS is powered anytime normal electrical power is available to the aircraft. It is connected directly to a hot buss and is not required to be turned either "on" or "off" by the pilot. The AAS constantly monitors airspeed and landing gear position. Communication with the pilot is done through the illuminated annunciator switch (located on the instrument panel) and through the aircraft audio system. The system receives airspeed information from the aircraft pitot-static system, the landing gear indicators and the aircraft stall warning system.

FEATURES:

(1) An audio and visual annunciation for the landing gear position. A given airspeed threshold for the landing gear warning is pre-determined by the user and is set into the AAS for the particular type of aircraft. The audio output is through the aircraft speaker and/or headset. The visual annunciation is through an illuminated, dash mounted amber AAS switch. The airspeed range of this function is from 60-135 kts (68-156 mph) and can be changed in 5 kt. increments by turning the pot on the side of the unit itself.

During approach or anytime when the aircraft speed drops below the set gear advisory airspeed threshold and one or more of the landing gear is not fully down and locked, the annunciator light will flash and an audio advisory is given. The continuous message "CHECK GEAR!...CHECK GEAR!...CHECK GEAR!..." will be heard at a cadence of about once every 2 seconds. The pilot may silence the audio message and cancel the flashing annunciator by pressing the AAS annunciator light.

Note: It is normal for this message to be heard if the gear is still extending as the aircraft decelerates below the airspeed threshold.

If the landing gear is fully extended upon reaching the airspeed threshold, the message "GEAR IS DOWN FOR LANDING" will be heard once and the annunciator will flash one time only. No cancellation is required by the pilot.

In the event of a go-around, the system will re-arm itself once the airspeed exceeds the threshold by 5 kts or greater. The number of re-arming cycles is endless.

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(2) An audio and visual annunciation for reaching an overspeed (V_{ne}) condition. The overspeed annunciation occurs approximately 1-4 kts/mph below V_{ne} . The overspeed threshold is hard-wired during installation for the specific make and model of aircraft. The overspeed range is from 165-235 kts, with 5 kt. increments. As the aircraft reaches the airspeed threshold, the continuous message "OVERSPEED!... OVERSPEED!...OVERSPEED!..." is heard and is accompanied by the flashing annunciator. Both the flashing annunciator and audio message cannot be silenced until the airspeed is reduced below the overspeed threshold value.

(3) Stall warning repeater (6601 only). The system uses the activation signal from the existing aircraft stall warning horn and repeats it. In addition to the annunciator flashing, an electronic tone can be heard over the speaker and/headset. Just like the standard stall warning horn, both the flashing annunciator and audio message cannot be silenced until the aircraft is flown out of the stall condition.

(4) An output for flight-time (Hobbs meter) activation. The output for the airspeed-activated Hobbs is grounded once the aircraft increases beyond 45 kts (50 mph) and remains closed until the aircraft lands or the airspeed decreases below 45 kts (50 mph).

CONTROL: Interaction with the system is accomplished through the annunciator switch. To perform a functional self-test, press and hold the AAS annunciator for approximately 2-3 seconds. At that time, the system will provide the following aural test message: *"P2 AUDIO ADVISORY SYSTEM. GEAR IS DOWN FOR LANDING. CHECK GEAR!, OVERSPEED!, stall tone (6601 only), SYSTEM TEST COMPLETE"*. The annunciator should also flash during this test.

If the switch is held continuously for 6 seconds or more, the test cycle become continuous until the switch is depressed again to stop it. This feature is used to adjust the proper audio volume output.

DRAWINGS: Installation Drawings AAS-1, AAS-1C and AAS-1S and the specific wiring diagram for each specific make and model are provided with the Audio Advisory System Hardware Installation Manual. These are to be used as a reference and should be included with this document after installation.

SERVICING:

Annunciator lamp replacement. If a lamp must be replaced, gently remove the face of the annunciator switch by gently pulling it straight towards you. Then remove the lamp. The Alcoswitch annunciator uses a #328 lamp while the optional Eaton 582 annunciator uses four #7240 lamps.

Adjustments. There are two adjustments that can be done after the initial installation. (1) audio volume and (2) landing gear airspeed threshold. Both are located on the side of the system controller unit. You will need a small, flat-bladed screwdriver to make the adjustments. The aircraft owner or pilot should be consulted to determine the desired threshold and volume settings. These pots are somewhat delicate. **DO NOT PUSH IN HARD WHEN TURNING!**

- (1.) Volume: Locate the audio volume adjustment switch found on the side of the AAS computer labeled "VOLUME". If it needs adjusting, turn the adjustment screw until the level is comfortable, keeping in mind normal cabin noise while in flight. Clockwise turns to increase and counter-clockwise turns decrease the volume. The control requires 10 full turns to go

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from the loudest to the softest setting, and cannot be completely turned off. The minimum setting is 20% and the maximum setting is 100%.

Note: To facilitate setting the volume control to an acceptable level, a repeat function is programmed into the "push-to-test". Simply press and hold the annunciator for two complete cycles of the test message. At this time, the message will continue to repeat continuously and the annunciator will remain illuminated until the annunciator is pressed again to stop the cycle. Release the switch and make the necessary volume adjustments. To stop the cycle, press the annunciator one time.

(2.) Landing Gear Advisory Airspeed: First, remove power to the system. This must be done so that the system will recognize any setting changes. Locate the airspeed adjustment switch found on the side of the electronics box labeled AIRSPEED. It is normally set at the factory to 80 kts. (94 mph). To increase the airspeed threshold, turn the switch clockwise and conversely, to lower the airspeed threshold, turn the switch counter-clockwise. The lowest setting is 60 kts. (68 mph) and increases in 5 kt. increments at each detent.

MAINTENANCE INSTRUCTIONS: During annual or other routine inspections, conduct an inspection of system for security. In addition, this operational test must be accomplished and logged during each annual inspection:

1. Elevate aircraft on suitable aircraft jacks or by other means to simulate "flight" conditions.
2. Record preset airspeed threshold: (___ mph/ ___ kts). Record preset Vne setting: (___ mph/ ___ kts). System tolerance is plus or minus 3 kts/4 mph IAS
3. Perform preflight test (press annunciator light to test).
 - a. Observe aural annunciation of "P2 AUDIO ADVISORY SYSTEM. GEAR IS DOWN FOR LANDING, CHECK GEAR!, OVERSPEED!, stall tone (6601 only), SYSTEM TEST COMPLETE".
 - b. Observe amber AAS annunciator light flashing simultaneously.
4. Increase airspeed for simulated takeoff and, if installed, observe Hobbs operation at approximately 50 mph/45 kts.
5. Increase airspeed past threshold of ___ mph/ ___ kts.
6. Perform test for Gear Down configuration.
 - a. Configure gear for landing and slowly decrease airspeed.
 - b. At threshold ___ mph / ___ kts, observe correct visual and aural annunciation: ANNUNCIATOR LIGHT FLASHING and "GEAR IS DOWN FOR LANDING" will be seen and heard only one time.
 - c. Retract landing gear and accelerate to threshold +20 mph/kts.
7. Perform test for simulated Gear Abnormal configuration.

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- a. Slow to 10 mph (kts) above threshold of ___ mph (___ kts) and extend the landing gear.
 - b. Pull pump motor circuit breaker while gear is in transit.
 - c. As airspeed slows below threshold, observe correct visual and aural annunciation: annunciator light flashing and "CHECK GEAR!...CHECK GEAR!...CHECK GEAR!...".
 - d. Reset pump motor CB and allow gear to fully extend. As gear locks down, observe ANNUNCIATOR light flashing and message changed to "GEAR IS DOWN FOR LANDING".
 - e. Increase airspeed beyond threshold by 5 kts or greater and observe that the annunciator light extinguished and that the aural warning silences by itself.
8. Perform Stall Warning Test (6601 only).
- a. Activate aircraft stall warning horn by suitable means.
 - b. Observe hearing (1) aircraft stall warning horn and (2) AAS stall warning tone as well as the annunciator light flashing.
 - c. Both warnings and annunciation should cease when the stall warning input is no longer applied.
9. Perform Overspeed Test.
- a. Increase airspeed to Vne speed of ___ mph (___ kts).
 - b. Observe the annunciator light flashing and the "OVERSPEED!...OVERSPEED!...OVERSPEED!..." audio advisory beginning approximately 0 to 4 mph/kts below Vne.
 - c. Verify that the advisories cannot be silenced by pressing the annunciator.
 - d. Slowing below Vne threshold of, the message should stop and the annunciator should not be illuminated.
10. Decrease airspeed towards zero and, if installed, observe Hobbs operation ceases at approx. 50 mph/45 kts.
11. End of test.

TROUBLE-SHOOTING INSTRUCTIONS:

Problem #1. The unit will not self-test. **Solution:** Check the AAS circuit breaker. If this is satisfactory, check the connector Pin 9 for appropriate power (12 or 28 VDC.) If there is power to the connector, either the annunciator switch connection is bad, the switch has failed or the unit is dead and must be returned to the factory for repair.

Problem #2. During the self-test and normal operation, the audio is heard but the annunciator does not flash. **Solution:** Replace the annunciator lamp(s).

Problem #3. During the self-test and normal operation, the annunciator flashes, but the audio is not heard. **Solution:** Verify connections from the AAS computer to the speaker and/or headset. Check the audio output of the unit (Pin 23). If there are good connections and no output from the AAS, the unit must be returned to the factory for repair.

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Problem #4: Our shop does not have access to a set of aircraft jacks. How can we perform the operational check? **Solution:** The aircraft does not necessarily have to be on jacks to do an operational check. During the pitot-static check, simply increase the airspeed to (1) verify the overspeed annunciation and then lowering it to check (2) the "Gear is Down for Landing" annunciation. By removing one of the contact wires on one of the downlock switches (to simulate that one is not down and locked), you can verify the "Check Gear!" function.

Problem #5: I have turned the pot to adjust the landing gear advisory airspeed but the actual activation airspeed does not change. What is wrong? **Solution:** In order to change the landing gear advisory airspeed, you must (1) first remove the power to the unit, (2) make the change by turning the pot and then (3) return power to the system. Unless power is removed when making these changes, it will not recognize them.

REMOVAL AND REPLACEMENT INFORMATION: Consult the aircraft logs and/or weight and balance information for the exact location of the AAS computer. No special tools are required.

To Remove:

- (1.) Remove electrical power to the unit.
- (2.) Disconnect the pitot and static (6601 only) connections.
- (3.) Disconnect the 26-pin connector from the computer.
- (4.) Loosen the knurled knob on the mounting tray and remove the unit.

To Reinstall:

- (1.) Remove electrical power from the aircraft.
- (2.) Slide the unit into the mounting tray and tighten the knurled knob.
- (3.) Connect the 26-pin connector to the computer.
- (4.) Reconnect the pitot and static (6601 only) connections.
- (5.) Perform pitot-static leak check.
- (6.) Perform AAS self test.

SPECIAL INSPECTION REQUIREMENTS: None applicable.

AIRWORTHINESS LIMITATIONS: No additional airworthiness limitations.

The Airworthiness Limitations section is FAA approved and specifies maintenance required under Secs. 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.