Advanced Flight Systems, Inc.

Upgrading AOA Software or Calibration Chips

C h i p   i n s t r u c t i o n s . d o c
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Warning! Chips are sensitive to static that you cannot feel. Before and while handling the CPU, display, or chips ground your self by touching a grounded object. The chips are shipped in electrically static resistant containers. Avoid working with static sensitive chips when the relative humidity is low. The chips can be improperly inserted into sockets backwards. Please read and follow the following instructions.

There are two removable chips in the AOA CPU, the microprocessor and EEPROM. The microprocessor contains the software that runs the AOA and has 44 pins. The EEPROM contains the calibration data that is unique to your aircraft and pressure sensors and has 8 pins. Follow the instructions below to replace either or both. Pictured is the microprocessor being removed.
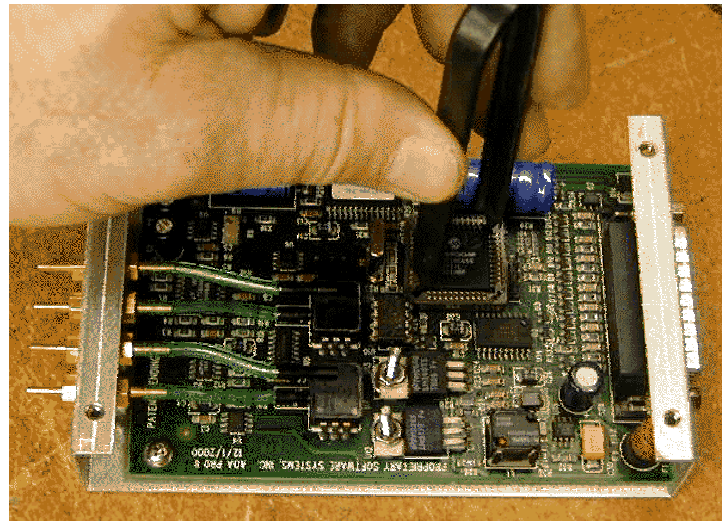
Removing the microprocessor. With the removal tool positioned, rock it for and aft till the chip releases from its socket.

1. Remove the AOA CPU from the aircraft. Remove the cover of the AOA CPU by unscrewing four machine screws. Locate the chip on the printed circuit board to be replaced. Note that one side of the chip to be replaced is marked with a dot. The replacement chip must be oriented in exactly the same direction.

2. Remove the old chip from its socket by using a chip removal tool. Do not pry against the printed circuit board, which could damage traces on the PCB! Rock the chip out of its socket.

3. Align the pins of the new chip over the socket so that the dot side or half circle on the chip is oriented just like the chip removed.

4. Insure that each pin is centered over the socket.

5. Insert a 3/16" spacer (hardboard, Plexiglas) between the printed circuit board and the tray just under the socket to prevent flexing of the printed circuit board in the next step. Flexing the printed circuit board will cause components to fail.

6. Discharge yourself frequently by touching a grounded device! Place your thumb over the center of the chip and using a rocking motion firmly push the chip into the socket. Remove the spacer.

7. If the microprocessor was replaced the CPU label should be corrected to reflect the correct software version number. Note the version number hand written on the chip. Change the serial number to reflect the proper version by simply adding a "V" and the version number. If your serial number was PROII0101V6 and the chip was marked with a "V7", it should now read PROII0101V6V7. No marking is required for EEPROM calibration chip changes.

8. Reinstall the AOA CPU's cover using the four machine screws. Reinstall the CPU back into the aircraft observing that the tubes are hooked onto the proper barbs. The green and blue tubes are hard to tell apart.

9. Power up the AOA and insure the instrument runs through the self test which should terminate with either an "AOA PASS" or "ERROR" messages. Replacing the CPU should not require a re-calibration of the AOA if it was already calibrated. Perform the verification checklist.

10. If the EEPROM was replaced with an EEPROM containing your aircraft's calibration data, a hangar calibration must be accomplished. This is because the sensors are unique for each AOA CPU and their zero pressure offsets must be stored on the new EEPROM. Use the **Installing an EEPROM** checklist to perform the hangar calibration. Careful to write only the hangar calibration data to the chip!

11. Test fly the aircraft insuring that the AOA results are reasonable using the **Verification Checklist** to insure the "angle angle push" and "landing gear" warnings activate at the proper AOA or IAS.

All checklists are available from our web site at www.angle-of-attack.com.

Ten stupid pilot tricks:
1. *Not reading this instruction sheet. Only sissies follow instructions.*
2. *Attempting to swap chips in low humidity with high probability of static discharge.*
3. *Grounding your self infrequently.*
4. *Installing chips backwards.*
5. *Flexing the PCB while inserting the chip.*
6. *Setting chips without having first centered the pins over the sockets.*
7. *Removing the CPU and than flying without first plugging the red (pitot) and clear (static) tubes.*
8. *Failure to get help from an expert when needed. "I'm the captain."*
9. *When the wife calls "dinner", you ignore her.*
10. *Getting AIDS (Airplane Induced Divorce Syndrome).*