APPENDIX P: Performing Pitot/Static Checks

Background
Dynon Avionics SV-ADAHRS-200/201 use airspeed in the calculation of attitude (or GPS ground speed when airspeed is unavailable). The internal rate sensors are monitored and calibrated in flight using feedback from the accelerometers and from airspeed to achieve a highly accurate attitude solution.

When a pitot or static test is performed the sensors in the SV-ADAHRS-200/201 are being exposed to dynamics that are impossible to achieve in a real aircraft flight environment, namely, large airspeed changes without the accompanying accelerations and rotations. This false condition will cause a well-calibrated unit to incorrectly adjust its calibration. Furthermore, when a unit is in a test situation a change in applied pitot or static pressure will cause the attitude to pitch up or down. This is expected.

The AF-5000 EFIS contains a special mode that allows you to perform required altimeter and/or airspeed checks without affecting the calibration of the attitude-sensing components.

Pitot/Static Test Instructions
This test must be used when performing pitot/static, transponder, or other tests that manipulate either the pitot or static pressures.

***Before conducting any pitot/static testing, follow these guidelines:***

1. The aircraft itself should be temperature stable. For example, if the aircraft is moved from outside in the sun to a hangar for testing, tests should not be started until the airplane has stabilized at the hangar temperature.

2. Turn AF-5000 on and let it warm up until the altitude reading is stabilized. This period should be at least 5 minutes, but may take longer depending on environmental conditions. Connect your Pitot/Static Test Set to the aircrafts Pitot and Static ports. You will need to cover the two Dynon Pitot Tube drain holes on the bottom of the Pitot Tube.

3. To enter the Altitude Test mode select: SET > CAL > 12. Altitude Menu on the EFIS. Both the active and standby ADAHRS (if equipped) are shown to allow a single test to calibrated multiple ADAHRS. The altitude values shown in this mode are the same as you would encounter while in-flight with a Baro setting of 29.92 . They are not adjusted or otherwise altered from their normal readings and behaviors.

4. Set Airspeed to stable constant airspeed on your Pitot/Static Test Unit, we usually use 65 knots.

5. Set Altitude Climb rate to a value of +/- 2000 fpm on your Pitot/Static Test Unit.

6. Perform a standard leak check on the Pitot/Static system before testing the required altitudes.

7. Set each required Altitude on your Pitot/Static Test unit and verify the altitude is within acceptable limits on each ADAHRS.

ALTITUDE ADJUST: There is a single point altitude adjustment for each ADAHRS that can be used to adjust the barometric altimeter from the AHRS if it is not in tolerance. This adjustment affects both the displayed altitude and the altitude sent to other devices.

Verifying Altitude
You can check the altitude from the Altitude Calibration Menu: SET > CAL > 12. Altitude Menu

The Configure Altitude Menu will display the non baro adjusted (29.92) altitude from each Adahrs in the aircraft.
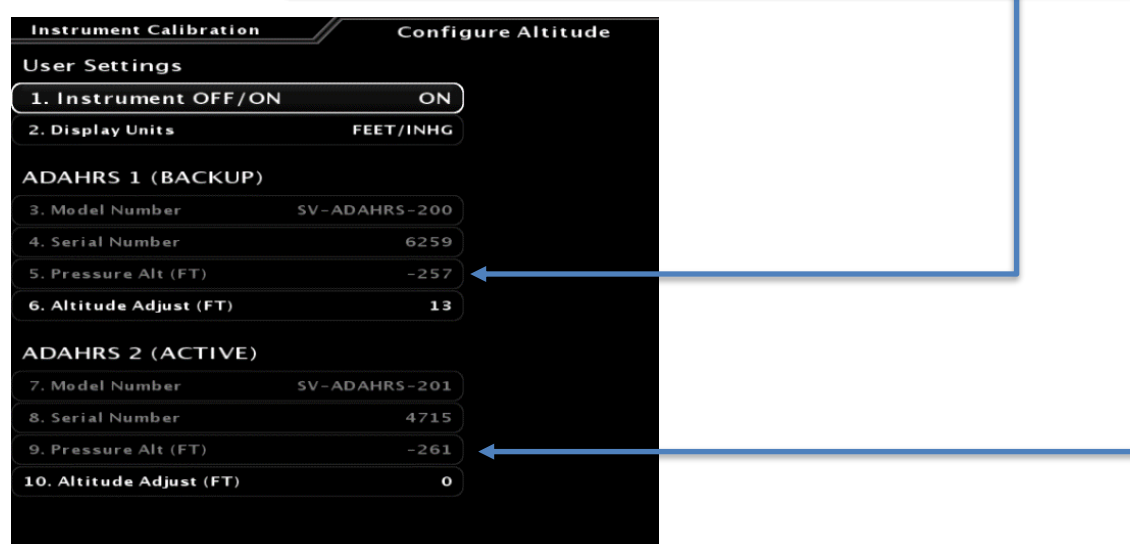
Manual ALT / GND mode switching
Transponder checks require manual switching to ALT and GND mode. A Dynon Avionics SV-XPNDR-261/262 is normally configured to automatically switch between GND and ALT mode based on airspeed and other parameters. You can change the ALT/GND Switch to NONE so that you can turn on the Transponder ALT mode while on the ground.
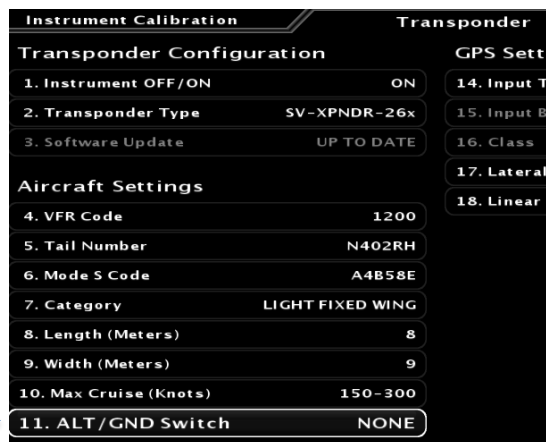
Note: Before changing AUTO ALT/GND, record which squat switch configuration is set; you will need this information to restore AUTO ALT/GND to this setting after transponder testing is complete.

Pitot/Static Test Chart

Altitude - feet	Pressure	Tolerance ±(feet)	ADAHRS 200	ADAHRS 201	Backup EFIS
−1,000	31.018	20			
0	29.921	20			
500	29.385	20			
1,000	28.856	20			
1,500	28.335	25			
2,000	27.821	30			
3,000	26.817	30			
4,000	25.842	35			
6,000	23.978	40			
8,000	22.225	60			
10,000	20.577	80			
12,000	19.029	90			
14,000	17.577	100			
16,000	16.216	110			
18,000	14.942	120			
20,000	13.75	130			
22,000	12.636	140			
25,000	11.104	155			

Airspeed (kts)		Tolerance ±(feet)	ADAHRS 200	ADAHRS 201	Backup EFIS
20					
25					
40					
50					
75					
100					
125					
150					
175					