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http://expaircraft.com/index.html

What are the rules for Experimental aircraft on Transponder, Altimeter, Altitude Encoder and Static System checks?

Experimental aircraft must comply with ATC transponder, automatic altitude reporting and altimeter/static system installation and certifications per 14 CFR 91.215, 91.217 and 91.413. You must also comply with 91.205 and 91.411 if you fly IFR.

Is CFR Part 91 & 43 applicable to Experimental Aircraft?

Your aircraft Ops Spec requires that the aircraft be operated in accordance with Part 91 as applicable. Part 91 then directs you to Part 43 Appendix E & F for the testing requirements. So in this case, Part 43 **does** apply to experimental aircraft.

What inspections are required for VFR operations?

The aircraft transponder must be certified every 24 months in accordance with the requirements of CFR. 91.413. Transponder testing is accomplished in accordance with Part 43 Appendix F.

Note: For new certifications or if the encoder or altimeter has been replaced, a Data Correspondence Check must be accomplished to ensure the altitude data transmitted to ATC corresponds to within 125 feet of the altimeter normally used to maintain flight altitude per CFR 91.217.

What inspections are required for IFR operations?

In addition to the 24 month transponder certification above, the altimeter, altitude encoder and static system must be inspected and certified every 24 months in accordance with CFR 91.411. CFR. 43, Appendix E. details the test requirements.

Is there any difference between Certified, Light Sport, and Experimental in the regulatory requirements for altimeter and transponder checks?

No, not for the checks.

Is there any difference between Certified, Light Sport, and Experimental in the regulatory requirements for the records you add to the aircraft's records for completion of the 91.411 and 91.413?

No, same requirements and records apply.

Is there any difference in the records you provide for a Steam Gauge Altimeter and EFIS Air Data Computers?

No not really, I identify the altimetry source as “altimeter” or “Air Data”, but as far as the FAA is concerned they are one and the same.

Who can perform these inspections?

With few exceptions, only a FAA Certified Repair Station (CRS) with the appropriate ratings may perform the inspections required by CFR 91.411 and 91.413.

Can a builder with a repairman certificate for the aircraft he built perform his own altimeter, static or transponder certifications?

No. Although the CFR's do authorize the "manufacturer" of the aircraft to conduct the tests, the builder of an amateur-built aircraft **does not** meet the FAA's definition of a "manufacturer". In addition, specialized (expensive) test equipment, annually certified to NIST standards, is required to perform these tests and certifications, this would make it cost prohibitive for most individuals.

If I remove my transponder and re-install it do I have to repeat the 91.413 test? How about if I replace the transponder with a newer model or a repaired (yellow tagged) unit, do I have to repeat the 91.413 tests?

No legally, but as you read here, Yes from a practical standpoint.

From AC43-6B: Removal and Replacement. Removal and replacement of transponder units, subsequent to testing a system in accordance with § 91.413, will not invalidate the test results. A repaired or replacement transponder may be installed without repeating § 91.413 testing; however, a manufacturer’s minimum performance test will be performed before return to service. Any time the aircraft connections to a transponder have been removed and reconnected, each altitude reporting code line (in the case of the newer aircraft, the digital data bus) must be tested for integrity of connection. Integrity of connection for systems using a digital data bus to convey altitude information to a transponder may be verified by successful reporting of a single altitude. Integrity of connection for systems using Gillham code connections may be verified by performing an abbreviated correspondence test at the test points of Appendix 1, Table 1 using the installed automatic pressure altitude encoding device or through the use of an encoder substation test unit capable of simulation of the Appendix 1, Table 1 altitudes.

It's called a "Pitot-Static" system test, is there a "legal" requirement to check the "Pitot" system?

The term "Pitot-Static" check comes from the pressurized aircraft environment where the static system must be checked at a much higher altitude than a non pressurized aircraft. In order to accomplish this test both the Pitot and Static system must be brought up together to avoid damaging various instruments. Therefore, although there is no requirement in the CFR's to check the pitot system, the system must be leak free to accomplish the static system checks. Of course it's a good ideal to have a leak free Pitot system to eliminate airspeed errors.