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(2) Seats and safety belts—for poor condition and apparent defects.
(3) Windows and windshields—for deterioration and breakage.
(4) Instruments—for poor condition, mounting, marking, and (where practicable) improper operation.
(5) Flight and engine controls—for improper installation and improper operation.
(6) Batteries—for improper installation and improper charge.
(7) All systems—for improper installation, condition, apparent and obvious defects, and insecurity of attachment.
(d) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the engine and nacelle group as follows:
(1) Engine section—for visual evidence of excessive oil, fuel, or hydraulic leaks, and sources of such leaks.
(2) Studs and nuts—for improper torquing and obvious defects.
(3) Internal engine—for cylinder compression and for metal particles or foreign matter on screens and sump drain plugs. If there is weak cylinder compression, for improper internal condition and improper internal tolerances.
(4) Engine mount—for cracks, looseness of mounting, and looseness of engine to mount.
(5) Flexible vibration dampeners—for poor condition and deterioration.
(6) Engine controls—for defects, improper travel, and improper safetying.
(7) Lines, hoses, and clamps—for leaks, improper condition and looseness.
(8) Exhaust stacks—for cracks, defects, and improper attachment.
(9) Accessories—for apparent defects in security of mounting.
(10) All systems—for improper installation, poor general condition, defects, and insecure attachment.
(11) Cowling—for cracks, and defects.
(e) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the landing gear group:
(1) All units—for poor condition and insecurity of attachment.
(2) Shock absorbing devices—for improper oleo fluid level.
(3) Linkages, trusses, and members—for undue or excessive wear fatigue, and distortion.
(4) Retracting and locking mechanism—for improper operation.
(5) Hydraulic lines—for leakage.
(6) Electrical system—for chafing and improper operation of switches.
(7) Wheels—for cracks, defects, and condition of bearings.
(8) Tires—for wear and cuts.
(9) Brakes—for improper adjustment.
(10) Floats and skis—for insecure attachment and obvious or apparent defects.

(1) Engine section—for visual evidence of excessive oil, fuel, or hydraulic leaks, and sources of such leaks.
(2) Studs and nuts—for improper torquing and obvious defects.
(3) Internal engine—for cylinder compression and for metal particles or foreign matter on screens and sump drain plugs. If there is weak cylinder compression, for improper internal condition and improper internal tolerances.
(4) Engine mount—for cracks, looseness of mounting, and looseness of engine to mount.
(5) Flexible vibration dampeners—for poor condition and deterioration.
(6) Engine controls—for defects, improper travel, and improper safetying.
(7) Lines, hoses, and clamps—for leaks, improper condition and looseness.
(8) Exhaust stacks—for cracks, defects, and improper attachment.
(9) Accessories—for apparent defects in security of mounting.
(10) All systems—for improper installation, poor general condition, defects, and insecure attachment.
(11) Cowling—for cracks, and defects.

APPENDIX E TO PART 43—ALTIMETER SYSTEM TEST AND INSPECTION

Each person performing the altimeter system tests and inspections required by §91.111 shall comply with the following:

(a) Static pressure system:
(1) Ensure freedom from entrapped moisture and restrictions.
(2) Determine that leakage is within the tolerances established in §23.1325 or §25.1325, whichever is applicable.
(3) Determine that the static port heater, if installed, is operative.
(4) Ensure that no alterations or deformations of the airframe surface have been made that would affect the relationship between
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§ 43.9 Equipment and ATC Transponder System Integration Test.

The test must be conducted by an appropriately rated person under the conditions specified in paragraph (a). Measure the automatic pressure altitude at the output of the installed ATC transponder when interrogated on Mode C at a sufficient number of test points to ensure that the altitude reporting equipment, altimeters, and ATC transponders perform their intended functions as installed in the aircraft. The difference between the automatic reporting output and the altitude displayed at the altimeter shall not exceed 125 feet.

(d) Records: Comply with the provisions of §43.9 of this chapter as to content, form, and disposition of the records. The person performing the altimeter tests shall record on the altimeter the date and maximum altitude to which the altimeter has been tested and the persons approving the airplane for return to service shall enter that data in the airplane log or other permanent record.

(ii) Hysteresis. The hysteresis test shall begin not more than 15 minutes after the altimeter’s initial exposure to the pressure corresponding to the upper limit of the scale error test prescribed in subparagraph (i); and while the altimeter is at this pressure, the hysteresis test shall commence. Pressure shall be increased at a rate simulating a descent in altitude at the rate of 5,000 to 20,000 feet per minute until within 3,000 feet of the first test point (50 percent of maximum altitude). The test point shall then be approached at a rate of approximately 3,000 feet per minute. The altimeter shall be kept at this pressure for at least 5 minutes, but not more than 15 minutes, before the test reading is taken. After the reading has been taken, the pressure shall be increased further, in the same manner as before, until the pressure corresponding to the second test point (40 percent of maximum altitude) is reached. The altimeter shall be kept at this pressure for at least 1 minute, but not more than 10 minutes, before the test reading is taken. After the reading has been taken, the pressure shall be increased further, in the same manner as before, until atmospheric pressure is reached. The reading of the altimeter at either of the test points shall not differ by more than the tolerances specified in Table II from the reading of the altimeter for the corresponding altitude recorded during the scale error test prescribed in paragraph (b)(i).

(iii) After effect. Not more than 5 minutes after the completion of the hysteresis test prescribed in paragraph (b)(ii), the reading of the altimeter (corrected for any change in atmospheric pressure) shall not differ from the original atmospheric pressure reading by more than the tolerance specified in Table II.

(iv) Friction. The altimeter shall be subjected to a steady rate of decrease of pressure approximating 750 feet per minute. At each altitude listed in Table III, the change in reading of the pointers after vibration shall not exceed the corresponding tolerance listed in Table III.

(v) Case leak. The leakage of the altimeter case, when the pressure within it corresponds to an altitude of 18,000 feet, shall not change the altimeter reading by more than the tolerance shown in Table II during an interval of 1 minute.

(vi) Barometric scale error. At constant atmospheric pressure, the barometric pressure scale shall be set at each of the pressures (falling within its range of adjustment) that are listed in Table IV, and shall cause the pointer to indicate the equivalent altitude difference shown in Table IV with a tolerance of 25 feet.

(2) Altimeters which are the air data computer type with associated computing systems, or which incorporate air data correction internally, may be tested in a manner and to specifications developed by the manufacturer which are acceptable to the Administrator.

(c) Automatic Pressure Altitude Reporting Equipment and ATC Transponder System Integration Test. The test must be conducted by an appropriately rated person under the conditions specified in paragraph (a). Measure the automatic pressure altitude at the output of the installed ATC transponder when interrogated on Mode C at a sufficient number of test points to ensure that the altitude reporting equipment, altimeters, and ATC transponders perform their intended functions as installed in the aircraft. The difference between the automatic reporting output and the altitude displayed at the altimeter shall not exceed 125 feet.

Aircraft manufacturer's certificate of airworthiness. When an aircraft manufacturer's certificate of airworthiness is issued for an airplane which is required to be equipped with an altimeter in paragraphs (d) and (e) of this section, the certificate of airworthiness shall contain a statement that the airplane is being equipped to meet the requirements of these paragraphs.

§ 43.9 Records. Comply with the provisions of §43.9 of this chapter as to content, form, and disposition of the records. The person performing the altimeter tests shall record on the altimeter the date and maximum altitude to which the altimeter has been tested and the persons approving the airplane for return to service shall enter that data in the airplane log or other permanent record.
TABLE IV—PRESSURE-ALTITUDE DIFFERENCE—Continued

<table>
<thead>
<tr>
<th>Pressure (inches of Hg)</th>
<th>Altitude difference (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.99</td>
<td>+974</td>
</tr>
</tbody>
</table>

(Secs. 313, 314, and 601 through 610 of the Federal Aviation Act of 1958 (49 U.S.C. 1354, 1355, and 1421 through 1430) and sec. 6(c), Dept. of Transportation Act (49 U.S.C. 1655(c)))


APPENDIX F TO PART 43—ATC TRANSPONDER TESTS AND INSPECTIONS

The ATC transponder tests required by §91.413 of this chapter may be conducted using a bench check or portable test equipment and must meet the requirements prescribed in paragraphs (a) through (j) of this appendix. If portable test equipment with appropriate coupling to the aircraft antenna system is used, operate the test equipment for ATCRBS transponders at a nominal rate of 235 interrogations per second to avoid possible ATCRBS interference. Operate the test equipment at a nominal rate of 50 Mode S interrogations per second for Mode S. An additional 3 dB loss is allowed to compensate for antenna coupling errors during receiver sensitivity measurements conducted in accordance with paragraph (c)(1) when using portable test equipment.

(a) Radio Reply Frequency:

(1) For all classes of ATCRBS transponders, interrogate the transponder and verify that the reply frequency is 1090 ±3 Megahertz (MHz).

(2) For classes 1B, 2B, and 3B Mode S transponders, interrogate the transponder and verify that the reply frequency is 1090 ±3 MHz.

(3) For classes 1B, 2B, and 3B Mode S transponders that incorporate the optional 1090 ±1 MHz reply frequency, interrogate the transponder and verify that the reply frequency is correct.

(4) For classes 1A, 2A, 3A, and 4 Mode S transponders, interrogate the transponder and verify that the reply frequency is 1090 ±1 MHz.

(b) Suppression: When Classes 1B and 2B ATCRBS Transponders, or Classes 1B, 2B, and 3B Mode S transponders are interrogated Mode 3A at an interrogation rate between 230 and 1,000 interrogations per second; or when Classes 1A and 2A ATCRBS Transponders, or Classes 1B, 2A, 3A, and 4 Mode S