

## Reprints of Advisory Circulars



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

# Advisory Circular

Subject: **AIRWORTHINESS DIRECTIVES**

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Initiated by: **AFS-340**

Change:

1. **PURPOSE.** This advisory circular (AC) provides guidance and information to owners and operators of aircraft concerning their responsibility for complying with airworthiness directives (AD) and recording AD compliance in the appropriate maintenance records.
2. **CANCELLATION.** AC 39-7B, Airworthiness Directives, dated April 8, 1987, is canceled.
3. **PRINCIPAL CHANGES.** References to specific Federal Aviation Regulations have been updated and text reworded for clarification throughout this document.
4. **RELATED FEDERAL AVIATION REGULATIONS.** 14 Code of Federal Regulations (CFR) part 39; part 43, §§ 43.9 and 43.11; part 91, §§ 91.403, 91.417, and 91.419.
5. **BACKGROUND.** The authority for the role of the Federal Aviation Administration (FAA) regarding the promotion of safe flight for civil aircraft may be found generally at Title 49 of the United State Code (USC) § 44701 *et. seq.* (formerly, Title VI of the Federal Aviation Act of 1958 and related statutes). One of the ways the FAA has implemented its authority is through 14 CFR part 39, Airworthiness Directives. Pursuant to its authority, the FAA issues AD's when an unsafe condition is found to exist in a product (aircraft, aircraft engine, propeller, or appliance) of a particular type design. AD's are used by the FAA to notify aircraft owners and operators of unsafe conditions and to require their correction. AD's prescribe the conditions and limitations, including inspection, repair, or alteration under which the product may continue to be operated. AD's are authorized under part 39 and issued in accordance with the public rulemaking procedures of the Administrative Procedure Act, 5 USC 553, and FAA procedures in part 11.
6. **AD CATEGORIES.** AD's are published in the Federal Register as amendments to part 39. Depending on the urgency, AD's are issued as follows:
  - a. Normally a notice of proposed rulemaking (NPRM) for an AD is issued and published in the Federal Register when an unsafe condition is found to exist in a product. Interested persons are invited to comment on the NPRM by submitting such written data, views, contained in the notice may be changed or withdrawn in

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light of comments received. When the final rule, resulting from the NPRM, is adopted, it is published in the Federal Register, printed and distributed by first class mail to the registered owners and certain known operators of the product(s) affected.

**b. Emergency AD's.** AD's of an urgent nature may be adopted without prior notice (without an NPRM) under emergency procedures as immediately adopted rules. The AD's normally become effective in less than 30 days after publication in the Federal Register and are distributed by first class mail, telegram, or other electronic methods to the registered owners and certain known operators of the product affected. In addition, notification is also provided to special interest groups, other government agencies, and Civil Aviation Authorities of certain foreign countries.

**7. AD's WHICH APPLY TO PRODUCTS OTHER THAN AIRCRAFT.** AD's may be issued which apply to aircraft engines, propellers, or appliances installed on multiple makes or models of aircraft. When the product can be identified as being installed on a specific make or model aircraft, the AD is distributed by first class mail to the registered owners of those aircraft. However, there are times when such a determination cannot be made, and direct distribution to registered owners is impossible. For this reason, aircraft owners and operators are urged to subscribe to the Summary of Airworthiness Directives which contains all previously published AD's and a biweekly supplemental service. Advisory Circular 39-6, Announcement of Availability—Summary of Airworthiness Directives, provides ordering information and subscription prices on these publications. The most recent copy of AC 39-6 may be obtained, without cost, from the U.S. Department of Transportation, General Services Section, M-483.1, Washington, D.C. 20590. Information concerning the Summary of Airworthiness Directives may also be obtained by contacting the FAA, Manufacturing Standards Section (AFS-613), P.O. Box 26460, Oklahoma City, Oklahoma 73125-0460. Telephone (405) 954-4103, FAX (405) 954-4104.

**8. APPLICABILITY OF AD's.** Each AD contains an applicability statement specifying the product (aircraft, aircraft engine, propeller, or appliance) to which it applies. Some aircraft owners and operators mistakenly assume that AD's do not apply to aircraft with other than standard airworthiness certificates, i.e., special airworthiness certificates in the restricted, limited, or experimental category. Unless specifically stated, AD's apply to the make and model set forth in the applicability statement regardless of the classification or category of the airworthiness certificate issued for the aircraft. Type certificate and airworthiness certification information are used to identify the product affected. Limitations may be placed on applicability by specifying the serial number or number series to which the AD is applicable. When there is no reference to serial numbers, all serial numbers are affected. The following are examples of AD applicability statements:

**a.** “Applies to Smith (Formerly Robin Aero) RA-15-150 series airplanes, certificated in any category.” This statement, or one similarly worded, makes the AD applicable to all airplanes of the model listed, regardless of the type of airworthiness certificate issued to the aircraft.

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b. “Applies to Smith (Formerly Robin Aero) RA-15-150 Serial Numbers 15-1081 through 15-1098.” This statement, or one similarly worded, specifies certain aircraft by serial number within a specific model and series regardless of the type of airworthiness certificate issued to the aircraft.

c. “Applies to Smith (Formerly Robin Aero) RA-15-150 series aircraft certificated in all categories excluding experimental aircraft.” This statement, or one similarly worded, makes the AD applicable to all airplanes except those issued experimental airworthiness certificates.

d. “Applicability: Smith (Formerly Robin Aero) RA-15-150 series airplanes; Cessna Models 150, 170, 172, and 175 series airplanes; and Piper PA-28-140 airplanes; certificated in any category, that have been modified in accordance with STC SA807NM using ABLE INDUSTRIES, Inc., (Part No. 1234) muffler kits.” This statement, or one similarly worded, makes the AD applicable to all airplanes listed when altered by the supplemental type certificate listed, regardless of the type of airworthiness certificate issued to the aircraft.

e. Every AD applies to each product identified in the applicability statement, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of the AD. For products that have been modified, altered, or repaired so that performance of the requirements of the AD is affected, the owner/operator must use the authority provided in the alternative methods of compliance provision of the AD (see paragraph 12) to request approval from the FAA. This approval may address either no action, if the current configuration eliminates the unsafe condition; or, different actions necessary to address the unsafe condition described in the AD. In no case, does the presence of any alteration, modification, or repair remove any product from the applicability of this AD. Performance of the requirements of the AD is “affected” if an operator is unable to perform those requirements in the manner described in the AD. In short, either the requirements of the AD can be performed as specified in the AD and the specified results can be achieved, or they cannot.

**9. AD COMPLIANCE.** AD’s are regulations issued under part 39. Therefore, no person may operate a product to which an AD applies, except in accordance with the requirements of that AD. Owners and operators should understand that to “operate” not only means piloting the aircraft, but also causing or authorizing the product to be used for the purpose of air navigation, with or without the right of legal control as owner, lessee, or otherwise. Compliance with emergency AD’s can be a problem for operators of leased aircraft because the FAA has no legal requirement for notification of other than registered owners. Therefore, it is important that the registered owner(s) of leased aircraft make the AD information available to the operators leasing their aircraft as expeditiously as possible, otherwise the lessee may not be aware of the AD and safety may be jeopardized.

**AC 39-7C****11/16/95****10. COMPLIANCE TIME OR DATE.**

**a.** The belief that AD compliance is only required at the time of a required inspection, e.g., at a 100-hour or annual inspection is not correct. The required compliance time is specified in each AD, and no person may operate the affected product after expiration of that stated compliance time.

**b.** Compliance requirements specified in AD's are established for safety reasons and may be stated in various ways. Some AD's are of such a serious nature they require compliance before further flight, for example: "To prevent uncommanded engine shutdown with the inability to restart the engine, prior to further flight, inspect..." Other AD's express compliance time in terms of a specific number of hours in operation, for example: "Compliance is required within the next 50 hours time in service after the effective date of this AD." Compliance times may also be expressed in operational terms, such as: "Within the next 10 landings after the effective date of this AD..." For turbine engines, compliance times are often expressed in terms of cycles. A cycle normally consists of an engine start, takeoff operation, landing, and engine shutdown.

**c.** When a direct relationship between airworthiness and calendar time is identified, compliance time may be expressed as a calendar date. For example, if the compliance time is specified as "within 12 months after the effective date of this AD..." with an effective date of July 15, 1995, the deadline for compliance is July 15, 1996.

**d.** In some instances, the AD may authorize flight after the compliance date has passed, provided that a special flight permit is obtained. Special flight authorization may be granted only when the AD specifically permits such operation. Another aspect of compliance times to be emphasized is that not all AD's have a one-time compliance requirement. Repetitive inspections at specified intervals after initial compliance may be required in lieu of, or until a permanent solution for the unsafe condition is developed.

**11. ADJUSTMENTS IN COMPLIANCE REQUIREMENTS.** In some instances, a compliance time other than the compliance time specified in the AD may be advantageous to an aircraft owner or operator. In recognition of this need, and when an acceptable level of safety can be shown, flexibility may be provided by a statement in the AD allowing adjustment of the specified interval. When adjustment authority is provided in an AD, owners or operators desiring to make an adjustment are required to submit data substantiating their proposed adjustment to their local FAA Flight Standards District Office or other FAA office for consideration as specified in the AD. The FAA office or person authorized to approve adjustments in compliance requirements is normally identified in the AD.

**12. ALTERNATIVE METHODS OF COMPLIANCE.** Many AD's indicate the acceptability of one or more alternative methods of compliance. Any alternative method of compliance or adjustment of compliance time other than that listed in the AD must be substantiated and approved by the FAA before it may be used. Normally the office or person authorized to approve an alternative method of compliance is indicated in the AD.

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**13. RESPONSIBILITY FOR AD COMPLIANCE AND RECORDATION.** The owner or operator of an aircraft is primarily responsible for maintaining that aircraft in an airworthy condition, including compliance with AD's.

**a.** This responsibility may be met by ensuring that properly certificated and appropriately rated maintenance person(s) accomplish the requirements of the AD and properly record this action in the appropriate maintenance records. This action must be accomplished within the compliance time specified in the AD or the aircraft may not be operated.

**b.** Maintenance persons may also have direct responsibility for AD compliance, aside from the times when AD compliance is the specific work contracted for by the owner or operator. When a 100-hour, annual, progressive, or any other inspection required under parts 91, 121, 125, or 135 is accomplished, § 43.15 (a) requires the person performing the inspection to determine that all applicable airworthiness requirements are met, including compliance with AD's.

**c.** Maintenance persons should note even though an inspection of the complete aircraft is not made, if the inspection conducted is a progressive inspection, determination of AD compliance is required for those portions of the aircraft inspected.

**d.** For aircraft being inspected in accordance with a continuous inspection program (§ 91.409), the person performing the inspection must ensure that an AD is complied with only when the portion of the inspection program being handled by that person involves an area covered by a particular AD. The program may require a determination of AD compliance for the entire aircraft by a general statement, or compliance with AD's applicable only to portions of the aircraft being inspected, or it may not require compliance at all. This does not mean AD compliance is not required at the compliance time or date specified in the AD. It only means that the owner or operator has elected to handle AD compliance apart from the inspection program. The owner or operator remains fully responsible for AD compliance.

**e.** The person accomplishing the AD is required by § 43.9 to record AD compliance. The entry must include those items specified in § 43.9 (a) (1) through (a) (4). The owner or operator is required by § 91.405 to ensure that maintenance personnel make appropriate entries and, by § 91.417, to maintain those records. Owners and operators should note that there is a difference between the records required to be kept by the owner under § 91.417 and those § 43.9 requires maintenance personnel to make. In either case, the owner or operator is responsible for maintaining proper records.

**f.** Pilot Performed AD Checks. Certain AD's permit pilots to perform checks of some items under specific conditions. AD's allowing this action will include specific direction regarding recording requirements. However, if the AD does not include recording requirements for the pilot, § 43.9 requires persons complying with an AD to make an entry in the maintenance record of that product. § 91.417 (a) and

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(b) requires the owner or operator to keep and retain certain minimum records for a specific time. The person who accomplished the action, the person who returned the aircraft to service, and the status of AD compliance are the items of information required to be kept in those records.

**14. RECURRING/PERIODIC AD's.** Some AD's require repetitive or periodic inspection. In order to provide for flexibility in administering such AD's, an AD may provide for adjustment of the inspection interval to coincide with inspections required by part 91, or other regulations. The conditions and approval requirements under which adjustments may be allowed are stated in the AD. If the AD does not contain such provisions, adjustments are usually not permitted. However, amendment, modification, or adjustment of the terms of the AD may be requested by contacting the office that issued the AD or by following the petition procedures provided in part 11.

**15. DETERMINING REVISION DATES.** The revision date required by § 91.417 (a) (2) (v) is the effective date of the latest amendment to the AD and may be found in the last sentence of the body of each AD. For example: "This amendment becomes effective on July 10, 1995." Similarly, the revision date for an emergency AD distributed by telegram or priority mail is the date it was issued. For example: "Priority Letter AD 95-11-09, issued May 25, 1995, becomes effective upon receipt." Each emergency AD is normally followed by a final rule version that will reflect the final status and amendment number of the regulation including any changes in the effective date.

**16. SUMMARY.** The registered owner or operator of an aircraft is responsible for compliance with AD's applicable to the airframe, engine, propeller, appliances, and parts and components thereof for all aircraft it owns or operates. Maintenance personnel are responsible for determining that all applicable airworthiness requirements are met when they accomplish an inspection in accordance with part 43.



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# **FAA-G-8082-11A**

## **Inspection Authorization Knowledge Test Guide**



U.S. Department of Transportation  
**Federal Aviation Administration**

**FAA-G-8082-11A**





# **Inspection Authorization Knowledge Test Guide**

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U.S. Department of Transportation  
**Federal Aviation Administration**  
Flight Standards Service

**FAA-G-8082-11A**



## Preface

FAA-G-8082-11A, Inspection Authorization Knowledge Test Guide, provides information for preparing to take the Inspection Authorization Knowledge Test. Appendix 1 provides sample forms. Appendix 2 provides publication and technical data. Appendix 3 provides lists of reference materials and subject matter knowledge codes.

Changes to the subject matter knowledge codes will be published in AC 60-25, Reference Materials and Subject Matter Knowledge Codes for Airman Knowledge Testing.

The current Flight Standards Service subject matter knowledge codes for all airman certificates and ratings can be obtained from the Regulatory Support Division, AFS-600, home page on the Internet.

The Regulatory Support Division's Internet address is: <http://afs600.faa.gov>

FAA-G-8082-11A supersedes FAA-G-8082-11, dated 1999.

Comments regarding this guide should be sent in e-mail form to [AFS630Comments@faa.gov](mailto:AFS630Comments@faa.gov).



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# Inspection Authorization Knowledge Test Guide

## INTRODUCTION

The Federal Aviation Administration (FAA) initiated the issuance of the Inspection Authorization (IA) more than 35 years ago. This system of allowing qualified mechanics the privilege of performing certain inspections has served well in the maintenance of the U.S. Civil Fleet. The attainment of an IA and performance of the duties of that certificate greatly enhance the privileges and responsibilities of the aircraft mechanic. The IA permits the airframe and powerplant (A&P) mechanic to perform a greater variety of maintenance and alterations than any other single maintenance entity.

The determination of airworthiness during an inspection is a serious responsibility. For many general aviation aircraft, the annual inspection could be the only in-depth inspection it receives throughout the year. In view of the wide ranging authority conveyed with the authorization, the test examines a broader field of knowledge than required for the A&P certificate and reflects the emphasis that is placed on the holder of the certificate in perpetuating air safety.

This guide is not offered as an easy way to obtain the necessary information for passing the inspection authorization knowledge test. Rather, the intent of this guide is to define and narrow the field of study to the required knowledge areas included in the test.

## KNOWLEDGE TEST ELIGIBILITY REQUIREMENTS

Eligibility is established at the local FAA Flight Standards District Office (FSDO) prior to taking the Inspection Authorization Knowledge Test.

You are eligible for the Inspection Authorization Knowledge Test if you meet the requirements of Title 14 of the Code of Federal Regulations (14 CFR) Part 65, section 65.91(c).

“Sec. 65.91 Inspection Authorization...

(1) Hold a currently effective mechanic certificate with both an airframe rating and a powerplant rating, each of which is currently effective and has been in effect for a total of at least 3 years;

(2) Have been actively engaged, for at least the 2-year period before the date he applies, in maintaining aircraft certificated and maintained in accordance with this chapter;

(3) Have a fixed base of operations at which he may be located in person or by telephone during a normal working week, but it need not be the place where he will exercise his inspection authority;

(4) Have available to him the equipment, facilities, and inspection data necessary to properly inspect airframes, powerplants, propellers, or any related part or appliance; and

(5) Pass a written test on his ability to inspect according to safety standards for returning aircraft to service after major repairs and major alterations and annual and progressive inspection performed under Part 43 of this chapter...”

## KNOWLEDGE AREAS ON THE TEST

The Inspection Authorization Knowledge Test is comprehensive as it must test your knowledge in many subject areas. When applying for an IA you should review 14 CFR Part 65, section 65.91(c)(5) for the knowledge areas on the test.

## DESCRIPTION OF THE TEST

All test questions are the objective, multiple-choice type. The test contains 50 questions, numbered 1 through 50. Each question can be answered by the selection of a single response. Each test question is independent of other questions; therefore, a correct response to one does not depend upon, or influence the correct response to another.

The maximum time allowed for the test is 3 hours. The allotted time is based on previous experience and educational statistics. This amount of time is considered more than adequate if you have prepared properly.

The Inspection Authorization Knowledge Test has been considered by some as an open book test because of the use of reference material during the test. To view the test in this manner is a misconception. There has always been a core knowledge requirement for which no reference material was provided. Therefore, it should be noted that, during the tests, there are subject areas for which reference material is not included in the test supplement. These areas will draw on skills acquired as an airframe and powerplant mechanic and which are necessary to properly inspect work performed by others.

The IA test supplement provides appropriate segments of Title 14 of the Code of Federal Regulations, all necessary charts, graphs, and technical data necessary to solve problems contained in the test. Prior to taking the test, you should take a few minutes to look through the supplement to determine what is included.

You should carefully read the information and instructions given with the tests, as well as the statements in each test item.

When taking a test, you should keep the following points in mind:

1. Answer each question in accordance with the latest regulations and procedures.
2. Read each question carefully before looking at the possible answers. You should clearly understand the problem before attempting to solve it.
3. After formulating an answer, determine which of the alternatives most nearly corresponds with that answer. The answer chosen should completely resolve the problem.
4. From the answers given, it may appear that there is more than one possible answer; however, there is only one answer that is correct and complete. The other answers are either incomplete or are derived from popular misconceptions.
5. If a certain question is difficult for you, it is best to mark it for review and proceed to the other questions. After you answer the less difficult questions, return to those which you marked for review and answer them. The review marking procedure will be explained to you prior to starting the test. When you have finished taking the test, make sure an answer has been recorded for each question. However, the computer will alert you to all unanswered questions. This procedure will enable you to use the available time to the maximum advantage.
6. When solving a calculation problem, select the answer nearest your solution. The problem has been checked with various types of calculators; therefore, if you have solved it correctly, your answer will be closer to the correct answer than any of the other choices.

## PROCESS FOR TAKING A KNOWLEDGE TEST

The first step in taking the Inspection Authorization Knowledge Test is to contact your local FSDO to make an appointment to interview with an Aviation Safety Inspector (ASI) (airworthiness) to determine eligibility before registering for the knowledge test. At the interview, the inspector will ask you to complete an FAA Form 8610-1, Mechanic's Application for Inspection Authorization (refer to appendix 1, figure 1) and provide positive proof of identification. An acceptable identification document includes your current photograph, signature, and actual residential address, if different from the mailing address. This information may be presented in more than one form of identification.

Acceptable forms of identification include, but are not limited to, drivers' licenses, government identification cards, passports, alien residency cards, and military identification cards. Other forms of identification that meet the requirements of this paragraph are acceptable. Some applicants may not possess the identification documentation described. In any case, you should always check with your local FSDO if you are unsure of what kind of authorization to bring to the interview.

During the interview, you will be asked to demonstrate to the inspector's satisfaction that you meet the requirements for the authorization as specified in 14 CFR Part 65, section 65.91(c)(1) through (4).

The inspector will interview to the extent necessary to determine that you clearly understand the inspection authorization privileges, limitations, responsibilities, and the functions in the aviation community. Once your qualifications have been demonstrated, the inspector will sign the 8610-1 form you completed. You must present this form at the test site in order to take the test.

The next step is the actual registration process. This may be done in either of two ways, you may contact the computer testing designees (CTDs) through their national 1-800 number. LaserGrade's phone number is 1-800-211-2753. CATS phone number is 1-800-947-4228. A complete listing of test centers may



be found on the Internet at the web address: [afs600.faa.gov](http://afs600.faa.gov), and under the heading “Airman Testing Standards (AFS-630).” Once a site is selected you should ensure that the site provides this test, most do, but not all. You will then need to schedule a test date, and make financial arrangements for test payment. You may register for tests several weeks in advance, and you may cancel your appointment according to the CTD’s cancellation policy. If you do not follow the CTD’s cancellation policies, you could be subject to a cancellation fee.

You will not need to take any of your IA reference material to the test center; however, you will need proper identification.

Before you take the actual test, you will have the option to take a sample test. The actual test is time limited; however, you should have sufficient time to complete and review your test.

Upon completion of the test, you will receive your Airman Test Report, with the testing center’s embossed seal, which reflects your score.

The Airman Test Report lists the subject matter knowledge codes for questions answered incorrectly. The total number of subject matter knowledge codes shown on the Airman Test Report is not necessarily an indication of the total number of questions answered incorrectly. These codes refer to a list of subject matter knowledge areas, which can be found in appendix 3 of this guide. Study the subject matter knowledge code references to increase your knowledge of the subject.

The minimum passing score is 70; however, if the test is failed, there will be a 90-day waiting period before retesting is allowed. An attempt to retest prior to the waiting period is contrary to 14 CFR Part 65, and could result in revocation of any airman certificates that you hold.

Do not lose the Airman Test Report as you will need to present it at the FSDO if you obtain a passing score to receive your IA, or if the test is failed, it must be presented at the test proctor when you are ready to retest after the 90-day waiting period. Should you require a duplicate Airman Test Report due to loss or destruction of the original, send a signed request accompanied by a check or money order for \$1 payable to the FAA. Your request should be sent to the Federal Aviation Administration, Airmen Certification Branch, AFS-760, P.O. 25082, Oklahoma City, OK 73125.

After passing the test, present your Airman Test Report to an ASI (A/W) at the FSDO where you interviewed. It is best to return to the original interviewer if possible; however, any available ASI can complete the authorization process. At that time, the ASI will again review your application and discuss any questions you have. When the ASI is satisfied that all requirements are met, the certificate will be issued.

## USE OF TEST AIDS AND MATERIALS

Airman knowledge tests require applicants to analyze the relationship between variables needed to solve aviation problems, in addition to testing for accuracy of a mathematical calculation. The intent is that all applicants are tested on concepts rather than rote calculation ability. It is permissible to use certain calculating devices when taking airman knowledge tests, provided they are used within the following guidelines. The term “calculating devices” is interchangeable with such items as calculators, computers, or any similar devices designed for aviation-related activities.

When taking a knowledge test, you may use aids, reference materials, and test materials within the guidelines listed below, if actual test questions or answers are not revealed. All models of aviation-oriented calculators may be used, including small electronic calculators that perform only arithmetic functions (add, subtract, multiply, and divide). Simple programmable memories, which allow addition to, subtraction from, or retrieval of one number from the memory, are permissible. Also, simple functions such as square root and percent keys are permissible. The following guidelines apply.

1. You may use any reference materials provided with the test. In addition, you may use scales, straightedges, protractors, plotters, navigation computers and electronic or mechanical calculators that are directly related to the test.
2. Manufacturer’s permanently inscribed instructions on the front and back of such aids, e.g., formulas, conversions, regulations, and weight and balance formulas are permissible.
3. Testing centers may provide a calculator to you and/or deny you use of your personal calculator based on the following limitations.
  - a. Prior to, and upon completion of the test, while in the presence of the proctor, you must actuate the ON/OFF switch and perform any other function that ensures erasure of any data stored in memory circuits.

- b. The use of electronic calculators incorporating permanent or continuous type memory circuits without erasure capability is prohibited. The testing center may refuse the use of your calculator when unable to determine the calculator's erasure capability.
  - c. Printouts of data must be surrendered at the completion of the test if the calculator incorporates this design feature.
  - d. The use of magnetic cards, magnetic tapes, modules, computer chips, or any other device upon which pre-written programs or information related to the test can be stored and retrieved is prohibited.
  - e. You are not permitted to use any booklet or manual containing instructions related to use of test aids.
4. Dictionaries are not allowed in the testing area.
  5. The testing center makes the final determination relating to test materials and personal possessions you may take into the testing area.
  6. Guidelines for dyslexic applicant's use of test aids and materials. A dyslexic applicant may request approval from the local Flight Standards District Office (FSDO) to take an airman knowledge test using one of the three options listed in preferential order:
    - a. Option One. Use current testing facilities and procedures whenever possible.
    - b. Option Two. Applicants may use Franklin Speaking Wordmaster® to facilitate the testing process. The Wordmaster® is a self-contained electronic thesaurus that audibly pronounces typed in words and presents them on a display screen. It has a built-in headphone jack for private listening. The headphone feature will be used during testing to avoid disturbing others.
    - c. Option Three. Applicants who do not choose to use the first or second option may request a test proctor to assist in reading specific words or terms from the test questions and supplement material. In the interest of preventing compromise of the testing process, the test proctor should be someone who is nonaviation oriented. The test proctor will provide reading assistance only, with no explanation of words or terms. The Airman Testing Standards Branch, AFS-630, will assist in the selection of a test site and test proctor.

## **CHEATING OR OTHER UNAUTHORIZED CONDUCT**

Computer testing centers follow strict security procedures to avoid test compromise. These procedures are established by the FAA and are covered in FAA Order 8080.6, Conduct of Airman Knowledge Tests. The FAA has directed all testing centers to terminate a test at any time a test proctor suspects a cheating incident has occurred. An FAA investigation will then follow. If the investigation determines that cheating or other unauthorized conduct has occurred, any airman certificate that you hold may be revoked, and you may not be allowed to take a test for 1 year.

## **RETESTING PROCEDURES**

If you fail the Inspection Authorization Knowledge Test, you may not apply for retesting until 90 days after the date that you failed the test. Any attempt to retest prior to the 90-day waiting period is contrary to 14 CFR Part 65, and could result in revocation of any airman certificates that you hold.

After the 90-day waiting period simply present the failed Airman Test Report along with required ID at the test center to retest. There is no need to return to the FSDO until the test is passed.

## BASIC FUNCTIONS OF AN IA

### GENERAL

The basic functions of the holder of an Inspection Authorization (IA) are set forth in 14 CFR Part 65, section 65.95. With the exception of aircraft maintained in accordance with a Continuous Airworthiness Maintenance Program, an IA may inspect and approve for return to service any aircraft or related part or appliance after a major repair or major alteration. Also, the holder of an IA may perform an annual inspection and he or she may supervise or perform a progressive inspection.

### APPROVING MAJOR REPAIRS AND MAJOR ALTERATIONS

A primary responsibility of the holder of an IA is to determine airworthiness by inspecting repairs or alterations for conformity to approved data, and assuring that the aircraft is in a condition for safe operation. During inspection of major repairs or major alterations, the holder of an IA must also determine that they are compatible with previous repairs and alterations that have been made to the aircraft.

The holder of an IA must personally perform the inspection. The Code of Federal Regulations (CFRs) do not provide for delegation of this responsibility.

Approving major repairs and major alterations is a serious responsibility. The approval action should consist of a detailed investigation to establish, at least that:

1. All replacement parts installed conform to approved design and/or have traceability to the original equipment manufacturer (OEM) (14 CFR section 21.303).
2. As installed, the installation conforms to approved data that is applicable to the installation.
3. Workmanship meets the requirements of 14 CFR Part 43, section 43.13 (the aircraft or product is equal to its original or properly altered condition).
4. The data used is appropriate to the aircraft certification rule (e.g. CAR 3, 14 CFR Part 23).
5. Work is complete and compatible with other structures or systems.
6. The holder of an IA CANNOT approve the DATA for major repairs or major alterations. He/she may, however, inspect to see that alterations conform to data previously approved by the Administrator (14 CFR Part 65, section 65.95). This means the holder of an IA ensures that approved data is available and

is used as the basis for the approval. This availability determination should be made prior to beginning the repair or alteration. If data is unavailable, or if the holder of an IA is unsure of the acceptability of the available data, the local Aviation Safety Inspector (ASI) should be consulted. The ASI may, as the circumstances warrant, be able to:

- a. establish an acceptable basis for approval;
- b. approve the data; or
- c. recommend application for a supplemental type certificate.

Quite often major repairs are performed that are eventually covered by fabric, metal skin, or another structure. When this situation exists, the holder of an IA should have a clear understanding with the mechanic performing the repair that a precover inspection is necessary. The inspection should assure that the repair was made in accordance with acceptable methods, techniques, and practices prescribed by 14 CFR Part 43 and that the structure to be covered is free from defects, corrosion, or wood rot, and is protected from the elements. In addition, the holder of an IA should inspect other affected areas for hidden damage, if the aircraft has been involved in an accident or incident. An entry is required to be made in the maintenance record and FAA Form 337, Major Repair and Alteration, be completed. (Refer to appendix 1, figure 4, showing typical entries on the back of FAA Form 337.)

Minor deviation from approved data is permissible if the change is one that could be approved as a minor alteration when considered by itself. Be sure to list the deviations on FAA Form 337 and make an entry in the maintenance record when completing the aircraft records. When in doubt, contact the local ASI who may decide the change is not minor and would need specific approval or an amendment of the original approval.

Approved data to be used for major repairs and major alterations may be one or more of the following.

1. Type Certificate Data Sheets
2. Aircraft Specifications
3. Supplemental Type Certificates (STCs)
4. Airworthiness Directives (ADs)
5. Manufacturer's FAA Approved Data (DOA)
6. Designated Engineering Representative (DER)

7. Approved Data With FAA Form 8110-3, Statement of Compliance  
(Note: This type of data usually requires additional approval.)
8. Designated Alteration Station (DAS) Approved Data
9. Appliance Manufacturer's Manuals (Excluding Installation Instructions)
10. FAA-approved chapters of the Structural Repair Manuals.

AC 43.13-1A, Acceptable Methods, Techniques, and Practices—Aircraft Inspection and Repair is acceptable to the Administrator for the inspection and repair of nonpressurized areas of civil aircraft, only when there are no manufacturer repair or maintenance instructions. This data generally pertains to minor repairs. The repairs identified in this AC may also be used as a basis for major repairs. The repair data may also be used as approved data, and the AC chapter, page, and paragraph listed in block 8 of FAA Form 337 when:

1. the user has determined that it is appropriate to the product being repaired;
2. it is directly applicable to the repair being made; and
3. it is not contrary to manufacturer's data.

FAA FIELD APPROVAL (FAA FORM 337) issued for duplication of identical aircraft may be used as approved data only when the identical alteration is performed on an aircraft of identical make, model, and series by the original modifier. FAA Form 337s approved prior to Oct. 1, 1955 may be used as approved data.

Inspecting repairs or alterations consists of these basic operations.

1. Determine that the repair or alteration data has FAA approval.
2. Inspect the configuration of the repair or alteration for conformity to the approved data and the performance standards of 14 CFR Part 43. At the same time, the aircraft should still comply with applicable airworthiness requirements, and the repair or alteration be compatible with all other installations.
3. All operating limitations affected by an alteration should be appropriately revised. Sometimes limitations are in the form of flight manual supplements, instrument range markings, placards, or combinations of these. See the local ASI for limitations on changes which can be made.

4. Determine that aircraft record entries have been made and the weight and balance data and equipment list have been revised, when appropriate. There should be a statement on the FAA Form 337 to the effect that the weight and balance data and equipment list have been revised. When an alteration results in a change in the center-of-gravity (CG) position, the affected CG limit should be investigated under adverse loading conditions unless the new CG falls within an approved empty CG range. For instance, if the CG has shifted aft, the loading conditions should be computed to see that the aircraft does not exceed the aft CG limit. It is the pilot's responsibility to have the aircraft correctly loaded. However, when approving an alteration, it is the IA's responsibility to see that weight and balance data have been revised. The aircraft record entries may refer to the FAA Form 337 for details, such as: "Installed STOL kit in accordance with STC SA 940 CE drawing number 5084 dated April 24, 2002. See FAA Form 337, this date, for details."

5. Indicate approval in block 7 of FAA Form 337, and return both copies to the person who performed the work, for disposition in accordance with 14 CFR Part 43, appendix B.

## ANNUAL AND PROGRESSIVE INSPECTIONS

The procedures and scope for annual inspections are set forth in 14 CFR Part 43, appendix D, and should be followed in detail. The scope and detail for a progressive inspection is established by the owner or operator in accordance with 14 CFR Part 91, section 91.409(d). There are additional requirements for annual and progressive inspections listed in 14 CFR Part 43, section 43.15. The scope and detail of 100-hour and annual inspections are the same. Record entries are very important as they are the only evidence an aircraft owner has to show compliance with the inspection requirements of 14 CFR Part 91, section 91.409 (refer to appendix 1, figure 5).

The following reminders should help in determining that the aircraft complies with all airworthiness requirements (Refer to 14 CFR Part 43, section 43.15(a)).



## Configuration

The aircraft should conform to the aircraft specification or type certificate data sheet, any changes by supplemental type certificates and/or its properly altered condition. When the aircraft does not conform, use the procedures for “unairworthy” items listed in 14 CFR Part 43, section 43.11(a)(5).

1. Alterations to the product may have changed some of the operating limitations.
2. Unrecorded alterations or repairs may have been made in the past and warrant one of the following:
  - a. Contact owner for pertinent information.
  - b. If approved data is available, conduct inspection and personally approve for return to service by completing FAA Form 337.
  - c. Contact local ASI for assistance.
3. The aircraft specification or type certificate data sheet indicates when a flight manual is required. It also identifies limitations which must be displayed in the form of markings and placards.
4. Unlike the specifications, type certificate data sheets do not contain a list of equipment approved for a particular aircraft. The list of required and optional equipment can be found in the equipment list furnished by the manufacturer of the aircraft. Sometimes a later issue of the list is needed to cover recently approved items. Serial number eligibility should always be considered.

## Condition

The holder of an IA may use the checklist in 14 CFR Part 43 (appendix D), the manufacturer’s inspection sheets, or a checklist designed by the holder of an IA, that includes the scope and detail of the items listed in appendix D, to check the condition of the entire aircraft. This includes checks of the various systems listed in 14 CFR Part 43, section 43.15.

1. Routine servicing is NOT a part of the annual inspection. The inspection itself is essentially a visual evaluation of the condition of the aircraft and its components and certain operational checks. The manufacturer may recommend certain services to be performed at various operating intervals. These can often be done conveniently during an annual inspection, and in fact should be done, but are not considered to be a part of the inspection itself.

2. It is very important that the holder of an IA be familiar with the manufacturer’s service manuals, bulletins, and letters for the product being inspected. Use these publications to avoid overlooking problem areas.
3. AC 43-16, Aviation Maintenance Alerts, is also an important source of service experience. The articles for the alerts are taken from selected service difficulties reported to the FAA on FAA Form 8010-4, Malfunction or Defect Reports. Monthly copies of the alerts are provided on the Internet at <http://av-info.faa.gov>. Select from “Aircraft Information” heading, then select the subheading “General Aviation Airworthiness Alerts.” Comments may be sent by letter, with name and address typed or legibly printed to the Federal Aviation Administration, Aviation Systems Data Branch, AFS-620, P.O. Box 25082, Oklahoma City, OK 73125.
4. When the holder of an IA approves an aircraft for return to service, he or she will be held responsible for the condition of the aircraft AS OF THE TIME OF APPROVAL.

## Minimum Equipment List

The minimum equipment list (MEL) is intended to permit operations with certain inoperative items of equipment for the minimum period of time necessary until repairs can be accomplished. It is important that repairs are accomplished at the earliest opportunity in order to return the aircraft to its design level of safety and reliability.

1. When inspecting aircraft operating with an MEL, the holder of an IA should review the document where inoperative items are recorded, (aircraft maintenance record, logbook, discrepancy record, etc.) to determine the state of airworthiness with regard to those recorded discrepancies. Inspections of aircraft with approved MELs will be in accordance with 14 CFR under which the MEL was issued.
2. Those MELs specifying repair intervals through the use of A, B, C, D codes require repairs of deferred items at or prior to the repair times established by the letter designated category. In such instances, some items previously deferred may not be eligible for continued deference at the inspection or may require additional maintenance. Where repair intervals are not specified by codes in the MEL, all MEL-authorized inoperative instruments and/or equipment should be repaired or inspected and deferred before approval for return to service.

3. Aircraft established on a progressive inspection program require that all MEL-authorized inoperative items be repaired or inspected and deferred at each inspection whether or not the item is encompassed in that particular segment.

### **Deferring Inoperative Instruments or Equipment**

1. When inspecting aircraft operating without an MEL, the rule “14 CFR Part 91, section 91.213(d),” allows certain aircraft not having an approved MEL to be flown with inoperative instruments and/or equipment. These aircraft may be presented for annual or progressive inspection with such items previously deferred or may have inoperative instruments and equipment deferred during an inspection. In either case, the holder of an IA is required by 14 CFR Part 43, section 43.13(b) to determine that:
  - a. the deferrals are eligible within the guidelines of that rule.
  - b. all conditions for deferral are met, including proper recordation in accordance with 14 CFR Part 43, sections 43.9 and 43.11; and
  - c. deferral of any item or combination of items will not affect the intended function of any other operable instruments and/or equipment, or in any manner constitute a hazard to the aircraft. When these requirements are met, such an aircraft is considered to be in a properly altered condition with regard to those deferred items.

### **Airworthiness Directives**

The holder of an IA is required by 14 CFR Part 43, section 43.13, to determine that all applicable airworthiness directives (ADs) for aircraft, powerplants, propellers, instruments, and appliances have been accomplished.

1. If the maintenance records indicate compliance with an AD, the holder of an IA should make a reasonable attempt to verify the compliance. It is not uncommon for a component to have compliance with an AD accomplished and properly recorded then later be replaced by another component on which the AD has not been accomplished. The holder of an IA is not expected to disassemble major components such as cylinders, crankcases, etc., if adequate records of compliance exist.

2. When the maintenance records DO NOT contain indications of AD compliance, the holder of an IA should:
  - a. make the AD an item on a discrepancy list provided to the owner, in accordance with 14 CFR Part 43, section 43.11(b);
  - b. with the owner’s concurrence, do whatever disassembly is required to determine the status of compliance; or
  - c. obtain concurrence of the owner to comply with the AD.
3. Often, an AD calls for an inspection at one time with a modification or inspection required at a later date. It is very important to identify, in the maintenance record entry, the portion of the AD complied with and the exact method of compliance.
4. 14 CFR section 91.417(a)(2)(v) requires each registered owner or operator to keep a record of the current status of applicable ADs. This status includes, for each, the method of compliance, AD number, and revision date. If the AD involves recurring action, the time and date should be recorded when the next action is required. As a vital part of the services performed, the holder of an IA may wish to provide the owner with information he/she is expected to keep. (Refer to appendix 1, figure 6.)
5. The owner should also be informed of any subsequent requirements of an AD or whether a reinspection is required at operating intervals other than at annual inspections. Often, the subsequent requirements are at 100-hour intervals and will need to be done whether or not the aircraft is required to have 100-hour inspections. Where a progressive inspection is involved, the approved program should state how and when the AD review will be accomplished. However, as a mechanic or IA, you should be aware of an AD that is pending or due, and is not in the area you are inspecting. It is good customer relations to inform the owner or pilot of the situation.

### **Malfunction or Defect Reports**

All malfunctions or defects that come to the attention of the holder of an IA should be reported on FAA Form 8010-4. (Refer to appendix 1, figure 7.) Copies of the self-addressed form are available at all Flight Standards District Offices (FSDOs), easy to fill out and require no postage. Prompt reporting will contribute much toward improving air safety by helping correct unsafe conditions.

## Paperwork Review

The owner or operator is responsible for maintaining the equipment list, CG and weight distribution computations, and loading schedules, if necessary.

1. The holder of an IA, as required by 14 CFR Part 43, section 43.13, determines that the required placards and documents set forth in the aircraft specification or type certificate data sheet are available and current. The aircraft should be reported as being in an unairworthy condition if these placards and documents are not available. Missing, incorrect, or improperly located placards are regarded as an unairworthy item, and the owner or operator should be informed that, under the requirements of 14 CFR Part 91, section 91.9, the aircraft may not be operated until they are available.
2. The holder of an IA should refer to the registration and airworthiness certificates for the owner's name and address; the aircraft make, model, registration, and serial numbers needed for recording purposes. Be sure not to use manufacturers' trade names as they do not always coincide with the actual model designation (Cessna Skylane is 182, Piper Seneca III is PA 34 220T, etc.). If registration and airworthiness certificates are not available, the aircraft does not need to be reported in unairworthy condition; however, the owner or operator should be informed that the documents required by 14 CFR Part 91, section 91.203(a)(i)(2)(b), should be in the aircraft and the airworthiness certificate displayed, **WHEN THE AIRCRAFT IS OPERATED**.
3. On aircraft for which no approved flight manual is required, the operating limitations prescribed during original certification, and as required by 14 CFR Part 91, section 91.9, must be carried in or be affixed to the aircraft. Range markings on the instruments, placards, and listings are required to be worded and located as specified in the type certificate data sheet. (Refer to appendix 1, figure 8.)

## Aircraft Markings

Required aircraft identification markings are discussed in 14 CFR Part 45. It is the owner's or operator's responsibility to have the nationality and registration markings properly displayed on the aircraft (14 CFR Part 91, section 91.9(c)). The holder of an IA can, and should, offer advisory service to owners and operators in regard to any deficiencies in markings; however, such deficiencies are not cause to report an aircraft in "unairworthy" condition.

## Aircraft with Discrepancies or Unairworthy Conditions

If the aircraft is not approved for return to service after a required inspection, use the procedures specified in 14 CFR Part 43, section 43.11. This will permit an owner to assume responsibility for having the discrepancies corrected prior to operating the aircraft.

1. The discrepancies can be cleared by a person who is authorized by 14 CFR Part 43 to do the work. Preventive maintenance items could be cleared by a pilot who owns or operates the aircraft, provided the aircraft is not used under 14 CFR parts 121, 129, or 135; except that approval may be granted to allow a pilot operating a rotorcraft in a remote area under 14 CFR Part 135 to perform preventive maintenance.
2. The owner may want the aircraft flown to another location to have repairs completed, in which case the owner should be advised that the issuance of FAA Form 8130-7, Special Flight Permit, is required. This form is commonly called a ferry permit and is detailed in 14 CFR Part 21, section 21.197. The certificate may be obtained in person or by fax at the local FSDO or from a Designated Airworthiness Representative.
3. If the aircraft is found to be in an unairworthy condition, an entry will be made in the maintenance records that the inspection was completed and a list of unairworthy items was provided to the owner. When all unairworthy items are corrected by a person authorized to perform maintenance and that person makes an entry in the maintenance record for the correction of those items, the aircraft is approved for return to service. (Refer to appendix 1, figures 9 and 10.)

## Incomplete Inspection

If an annual inspection is not completed, the holder of an IA should:

1. Indicate any discrepancies found in the aircraft records.
2. NOT indicate that an annual inspection was conducted.
3. Indicate the extent of the inspection and all work accomplished in the aircraft records.

## AIRCRAFT RECORDS

### MAINTENANCE RECORDS

The holder of an IA and other maintenance personnel or agencies are required to record maintenance, inspections, or alterations performed or approved in accordance with the requirements of 14 CFR Part 43, sections 43.9 and 43.11. The owner or operator is required by 14 CFR Part 91, section 91.417 to keep maintenance records. The holder of an IA is also required to indicate the total aircraft time in service when a required inspection is done.

### Significance of Maintenance Record Entries

Responsibility for maintenance work performed rests with the person whose signature and certificate number is entered on the appropriate maintenance record and/or forms. The responsibility for annual and progressive inspections and approval for return to service of major repairs or major alterations is assumed by the holder of an IA whose signature and certificate number appears on the appropriate maintenance records.

### COMPLETION OF FAA FORM 337, MAJOR REPAIR AND ALTERATION (AIRFRAME, POWERPLANT, PROPELLER, OR APPLIANCE)

FAA Form 337, Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance), serves two purposes. One is to provide owners and operators a record of major repairs and major alterations indicating details and approval. The other purpose is to provide the FAA with a copy for the aircraft records. An example of a typical completed FAA Form 337 is provided in appendix 1, figures 3 and 4.

1. The person who performed or supervised the major repair or major alteration prepares the original FAA Form 337 (two copies). The holder of an IA then further processes the forms when they are presented for approval.
2. Instructions for the completion of FAA Form 337 appear in AC 43.9-1E, Instructions for Completion of FAA Form 337, Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance).
3. Disposition of FAA Form 337.
  - a. The holder of an IA who has found a major alteration or a major repair to be in conformity with FAA-approved data should review the FAA Form 337 for completeness and accuracy, and complete item 7.
  - b. The person performing a major repair or major alteration shall in accordance with 14 CFR Part 43:
    - (1) Give a signed copy of FAA Form 337 to the aircraft owner.
    - (2) Make the proper entry in the maintenance records.
    - (3) Forward the duplicate copy to the local FAA FSDO within 48 hours after the form is signed.
  - c. The holder of an IA should ensure that the duplicate copy is an exact and legible reproduction of the original. The signatures should not be carbon copies but original signatures written in ink.
  - d. If the FAA Form 337 is completed for extended-range fuel tanks installed within the passenger compartment or a baggage compartment, the person who performs the work and the person authorized to approve the work by 14 CFR section 43.7 shall execute an FAA Form 337 in at least triplicate, as required by 14 CFR Part 43, appendix B. One (1) copy of the FAA Form 337 shall be placed on board the aircraft as specified in 14 CFR section 91.417 of the rules. The remaining forms shall be distributed as previously noted.
  - e. If FAA Form 337 has been completed for engines, propellers, spare parts or components, both copies of the form, with the approval portion completed, should be attached to the part or component until it is installed on an aircraft.
    - (1) The mechanic who makes the installation will, in accordance with 14 CFR Part 43, section 43.9(a)(4), complete both copies of FAA Form 337 by filling in blocks 1 and 2 and sign for the installation in the aircraft records, making reference to the FAA Form 337 in the record entry.
    - (2) Give a copy to the owner and forward a copy to the FAA FSDO for the area where the installing mechanic is operating.



## WEIGHT AND BALANCE

Weight and balance data are no longer required to be entered on FAA Form 337. However, it is imperative that weight and balance checks and computations be made very carefully. Since practically every aircraft manufacturer uses a different method of weight and balance control, it would be impossible to provide a universally adaptable method. The example provided in appendix 1, figure 11, of this guide is general in nature and can be modified or revised as needed to fit the aircraft involved. When revising weight and balance data, these general guidelines should be followed.

1. The weight and balance data should be kept together in the aircraft records.
2. When making revisions, use a permanent easily identified method, with full-size sheets of paper large enough to contain complete computations and minimize the possibility of becoming detached or lost.
3. Each page should be identified with the aircraft by make, model, serial number, and registration number.
4. The pages should be signed and dated by the person making the revision.
5. The nature of the weight change should be described.
6. The old weight and balance data should be marked “superseded” and dated.
7. A new page should show the date of the old figures it supersedes.
8. Appropriate fore and/or aft extreme loading conditions should be investigated and the computations shown.
9. Example loading computations may be helpful.
10. On large aircraft, be careful to distinguish between empty weight and operating weights that may include items, such as commissary supplies, spare parts, lavatory water, etc.
11. On small aircraft, it is often convenient to post a placard in the aircraft indicating the empty weight, useful load, and empty CG, along with example loadings or general instructions, to cover the most likely loading conditions. (Refer to 14 CFR section 91.9(b)(2).) AC 120-27, Aircraft Weight and Balance Control, and FAA-H-8083-1, Aircraft Weight and Balance Handbook contain useful information applicable to the functions performed by the holder of an IA on general aviation aircraft.

### Get It Straight

Be sure to come to a mutual agreement with the aircraft owner concerning exactly what work is to be performed. Misunderstandings usually result from a lack of clear communication. Attention to the following details will usually avoid the ill will a later disagreement may generate.

## SUGGESTIONS FOR DEVELOPING GOOD OWNER / IA RELATIONS

1. Itemize the work to be done so the owner will have a clear understanding of the work order.
2. Establish a firm understanding about the cost, or range of cost, anticipated for the job.
3. If an annual inspection is involved, indicate that certain maintenance is required to perform the inspection, such as:
  - a. Removing cowlings and fairing, opening inspection plates, etc.
  - b. Cleaning the aircraft and engine.
  - c. Disassembling wheels and other components to determine their condition.
4. Advise the owner that an annual inspection involves determination of compliance with aircraft specifications and airworthiness directives (ADs).
5. Agree whether routine servicing is to be included as part of the inspection or if it is to be performed separately. Such servicing is not a part of the inspection, but may be conveniently done while conducting the inspection. Such items might be:
  - a. Cleaning spark plugs.
  - b. Servicing landing gear shock struts.
  - c. Changing oil.
  - d. Making minor adjustments.
  - e. Servicing brakes.
  - f. Dressing nicked propeller blades.
  - g. Lubricating where necessary.
  - h. Stop-drilling small cracks and minor patching of cowlings and baffles.
6. The owner should be made aware that the annual or progressive inspection does not include correction of discrepancies or unairworthy items and that such maintenance will be additional to the inspection. Maintenance and repairs may be accomplished simultaneously with the inspection by a person authorized to perform maintenance if agreed on by the owner and holder of the IA. This method would result in an aircraft that is approved for return to service with the completion of the inspection. A written list of discrepancies and unairworthy items not repaired concurrently with the inspection must be made and given to the owner. Record uncorrected discrepancies and unairworthy items in the maintenance records. The owner must make arrangement for correction or deferral of items on the list of discrepancies and unairworthy items with a person authorized to perform maintenance prior to returning the aircraft to service. The holder of the IA ensures that any item permitted to be inoperative by a MEL or under 14 CFR Part 91, section 91.213(d)(2) are properly placarded and any maintenance for deferral has been carried out. Any deferred items are to be included on the list of discrepancies and unairworthy items. The owner should be informed that the aircraft should not be operated until the discrepancies and unairworthy items are corrected or are appropriately deferred.
7. Establish a reasonable time frame to accomplish the inspection.
8. Request the owner to supply the complete aircraft records (airframe, engines, and propellers) for study, review, and entries. Point out that this is necessary to properly conduct an annual inspection.
9. Complete the inspection as soon as practicable. Often, an aircraft will sit around the shops waiting for parts, even though the inspection has actually been completed. In this case, it is advisable to officially report the aircraft unairworthy. (Refer to 14 CFR Part 43, section 43.11(a)(5).) When the parts arrive, the repairs can be completed and the aircraft approved for return to service in the usual manner by the person who makes the repairs. The time lapse may represent several weeks, or even months, and things can deteriorate on the aircraft. Also, there is the chance that an AD involving some part of the aircraft may have been issued in the interim. In these cases, it might be unwise to complete the repairs originally intended and sign off the aircraft as "airworthy" without doing another complete inspection.
10. Complete the aircraft record entries as required by 14 CFR Part 43, sections 43.9 and 43.11 and provide sufficient information for the owner to comply with 14 CFR Part 91, section 91.417(a)(2)(i). Make adequate descriptions of repairs or alterations if accomplished along with the inspection.

11. Record compliance with all ADs actually accomplished. Provide sufficient information for the owner to comply with 14 CFR Part 91, section 91.417(a)(2)(v). A general statement, such as “All ADs complied with” is NOT an adequate entry and should be avoided. Many owners keep a separate record of AD compliance in the back of the logbook or in a section specifically provided for this record. This is a good place to identify the ADs of a recurring nature and show when the next compliance is required. (Refer to appendix 1, figures 12 and 13, for typical entries.)
12. When approving repairs and alterations, the holder of an IA should be available as work progresses on major jobs. In this way, affected areas and structures can be seen more readily than after completion of the entire job. In many cases, the workmanship can be inspected and improved easier during the process of the job rather than having to redo it later.
13. Remind the owners or operators that they are responsible for operational requirements, such as:
  - a. VOR equipment checked in accordance with 14 CFR Part 91, section 91.171.
  - b. Altimeter and altitude reporting equipment test and inspections in accordance with 14 CFR Part 91, section 91.411.
  - c. ATC transponder inspection in accordance with 14 CFR Part 91, section 91.413. These tests and inspections are not part of the annual inspection.
  - d. ELT inspection in accordance with 14 CFR Part 91, section 91.207.

## SAMPLE TEST QUESTIONS AND ANSWERS

1. **What ignition system is approved for a Lycoming engine model 0-540-A4A5?**

A—Bendix magneto model D6LN-3031.  
 B—Slick magnetos models 662 and 663.  
 C—Bendix magnetos models S6LN-20 and S6LN-21.

*Answer C—Subject Matter Knowledge Code: Y303. Type Certificate Data Sheet No. E-295, Note 8.*

2. **A lower horizontal stabilizer streamlined brace is to be repaired by welding. The brace size is 1¼ inch.**

**The repair should be accomplished using which of the following materials?**

A—A round insert tube of the same material, one gauge thicker than the original streamlined tube and a minimum length of 5.01 inch.  
 B—An outside sleeve of at least the same gauge with a minimum length of 9.128 inches.  
 C—An inside sleeve of the same streamlined tubing as original with a maximum insert length of 6.43 inches.

*Answer B—Subject Matter Knowledge Code: K49. AC 43.13-1B, Chapter 2, Paragraph 81; and figure 2.13.*

3. **Use Airworthiness Directive (AD) AD 80-10-02 to answer this question.**

**Known Information: Messerschmitt-Bolkow-Blohm Model BO-105 helicopter with tail rotor blade grips P/N 105-31722 installed.**

**While performing a progressive inspection on this helicopter, you note in the aircraft's records that the last compliance with AD 80-10-02 was at an aircraft time of 5402 hours. The records further indicate that the tail rotor blade grips were replaced at an aircraft time of 4902. What action is required at this inspection with a time of 5502?**

A—Compliance is required for paragraph (c)(1)(2).  
 B—Compliance is required for paragraph (e).  
 C—Compliance is required for paragraphs (b)(d) and (e).

*Answer C—Subject Matter Knowledge Code: A14. AD80-10-02.*

4. **Where can the major items to be inspected be found that must be included in a checklist used while performing an annual inspection on a fixed-wing aircraft?**

A—FAA Form 8130-10.  
 B—14 CFR part 43, Appendix D.  
 C—Advisory Circular 43.13-1B.

*Answer B—Subject Matter Knowledge Code: K49. 14 CFR part 43, section 43.15(c) states:*

*“Sec. 43.15 Additional performance rules for inspections...*

*(c) Annual and 100-hour inspections.*

*(1) Each person performing an annual or 100-hour inspection shall use a checklist while performing the inspection. The checklist may be of the person's own design, one provided by the manufacturer of the equipment being inspected or one obtained from another source. This checklist must include the scope and detail of the items contained in appendix D to this part and paragraph (b) of this section...”*

5. **Airworthiness Approval Tags (FAA Form 8130-3) may be used by which maintenance entity for approving products for return to service after maintenance or alteration?**

A—Inspection Authorizations.  
 B—14 CFR part 145, Certified Repair Stations.  
 C—Either A or B.

*Answer B—Subject Matter Knowledge Code K05. Order 8130.21C.*

*The work must be accomplished by a certificate holder under 14 CFR part 121 or 135, having a continuous airworthiness maintenance program or by a repair station certificated under part 145.*

- 6. When installing additional equipment in an aircraft, if not otherwise specified, the ultimate load factor used in the static load test is**

A—four times the weight of the equipment.  
 B—variable, depending on the direction of applied force.  
 C—the limit load factor multiplied by 1.5.

*Answer C—Subject Matter Knowledge Code: K50. AC 43.13-2A, Chapter 1, Paragraph 3.*

*Ultimate load factors are limit load factors multiplied by a 1.5 safety factor.*

- 7. Which Code of Federal Regulations (CFR's) provides for the fabrication of aircraft replacement and modification parts?**

A—14 CFR part 21.303.  
 B—14 CFR part 23, appendix B.  
 C—14 CFR part 45.21.

*Answer A—Subject Matter Knowledge Code A112. 14 CFR part 21, subpart K, section 21.303, defines who may produce modification and replacement parts for sale and those persons to which the part does not apply.*

- 8. A proposed airframe alteration will require a section of Mil-H-8788-10 hydraulic hose to flex through 60° of travel. The system will operate at 210° centigrade and 1200 psi. What is the minimum bend radius for this installation?**

A—3¼ inches.  
 B—5½ inches.  
 C—7¾ inches.

*Answer B—Subject Matter Knowledge Code: K49. Acceptable Methods, Techniques, and Practices—Aircraft Inspection and Repair, Chapter 10, Paragraph d; and figure 10.5.*

- 9. Where would you find the marking and placards required for Cessna Model 208, serial number 20800044?**

A—Type Certificate Data Sheet No. A37CE.  
 B—Airplane Flight Manual, Cessna P/N D1286-13PH.  
 C—Model 208 Series Maintenance Manual.

*Answer B—Subject Matter Knowledge Code: A157. 14 CFR part 23, Subpart G “Operating limitations and Information.”*

- 10. Which of the following aircraft, operating under 14 CFR part 91, could the holder of an inspection authorization approve for return-to-service after a major alteration has been made in accordance with technical data approved by the administrator?**

A—A commuter category, multiengine, turbopeller airplane.  
 B—A transport category, multiengine, turbojet airplane.  
 C—Either A or B.

*Answer C—Subject Matter Knowledge Code: A45. 14 CFR part 65, section 65.95(a).*

*“Sec. 65.95 Inspection authorization: privileges and limitations.*

*(a) The holder of an inspection authorization may—  
 (1) Inspect and approve for return to service any aircraft or related part or appliance (except any aircraft maintained in accordance with a continuous airworthiness program under Part 121 or 127 of this chapter) after a major repair or major alteration to it in accordance with Part 43 of this chapter, if the work was done in accordance with technical data approved by the Administrator; and*

*(2) Perform an annual or perform or supervise a progressive inspection according to §§43.13 and 43.15 of this chapter.”*

## SUGGESTIONS FOR STUDYING FOR THE IA TEST

The following should not be considered to be an all inclusive study outline. It is intended only to highlight some major areas. The test draws on the entire spectrum of aircraft technology, with emphasis on maintenance and inspection.

1. Be familiar with the parts of Title 14 Code of Federal Regulations (14 CFR) as listed in appendix 2.
2. Study 14 CFR parts 91 and 135 aircraft maintenance and inspection requirements.
3. Be familiar with aircraft type certificate data sheets and specifications. This should include the differences and history of these documents. Applicant should know how revisions are noted.
4. Study 14 CFR Part 43, appendixes A, B, and D for detailed information regarding major repairs, major alterations, and annual inspections.
5. Learn to use the graphs and tables in AC 43.13-1B, (or most current revision) Acceptable Methods, Techniques and Practices – Aircraft Inspection and Repair; and AC 43.13-2A, (or most current revision) Acceptable Methods, Techniques, and Practices – Aircraft Alterations.
6. Be familiar with airworthiness directives for small aircraft and rotorcraft. This should include knowledge of the rule, 14 CFR Part 39.
7. Be familiar with the completion of FAA Form 337 (Major Repair and Alteration – Airframe, Powerplant, Propeller, or Appliance). Guidance in this area is provided in AC 43.9-1E, Instructions for Completion of FAA Form 337, Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance).
8. Know the requirements for maintenance and inspection record entries for 14 CFR parts 43, and 91. Guidance in this area is provided in AC 43.9C, Maintenance Records; also AC 39-7C, Airworthiness Directives.
9. Be familiar with minimum equipment list for general aviation aircraft. Guidance in this area is provided in AC 91-67, Minimum Equipment Requirements for General Aviation Operations under FAR Part 91.
10. Be familiar with all aspects of weight and balance computations. Applicant must be able to:
  - a. calculate basic empty weight and center of gravity in both inches and percent of mean aerodynamic chord (MAC).
  - b. conduct adverse loading checks for extreme forward and rearward CG positions.

Applicants should practice making changes to an aircraft weight and balance report by simulating installing or removing equipment and then computing the forward, aft, and empty weight center of gravity (CG). Guidance in this area is provided in AC 65-9, Airframe and Powerplant Mechanics General Handbook and FAA-H-8083-1, Aircraft Weight and Balance Handbook. Also, many commercial publications are available on this subject.

**NOTE:** You should use the most current versions of the referenced documents.


# Appendix 1

## Sample Forms





No certificate may be issued unless a completed application form has been received (14 C.F.R. 65).

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION <b>MECHANIC'S APPLICATION FOR INSPECTION AUTHORIZATION</b>		Form Approved: OMB No. 04-R0110	
1. NAME (Last, first, middle) Doe, John J.		2. MECHANIC CERTIFICATE NO. A&P 123455678	
3. MAILING ADDRESS (Number, street, city, State/County; ZIP Code) (Place at which you desire to receive Airworthiness Directives, etc.)  1450 E. Cheltenham Ave. Cleveland County Oklahoma City, OK 73098	4a. FIXED BASE OF OPERATIONS  PLACE AT WHICH YOU MAY BE LOCATED IN PERSON DURING NORMAL WORKING WEEK Meridian Aviation Downtown Airpark 5060 S. Western Oklahoma City, OK 73452		4b. TELEPHONE NO.  PLACE AT WHICH YOU MAY BE LOCATED BY TELEPHONE DURING NORMAL WORKING WEEK  (405) 555-1842
5. HAVE YOU HELD A MECHANIC CERTIFICATE WITH BOTH AIRFRAME AND POWERPLANT RATINGS FOR THE 3 YEARS PRECEDING THE DATE OF THIS APPLICATION?			YES X NO
6. HAVE YOU BEEN ACTIVELY ENGAGED, FOR AT LEAST THE 2-YEAR PERIOD BEFORE THE DATE OF APPLICATION IN MAINTAINING AIRCRAFT CERTIFICATED AND MAINTAINED IN ACCORDANCE WITH THE FARs?			X
7. HAS YOUR MECHANIC CERTIFICATE AND/OR RATINGS BEEN REVOKED OR SUSPENDED DURING THE 3-YEAR PERIOD PRECEDING THIS APPLICATION?			X
8. HAS AN INSPECTION AUTHORIZATION BEEN DENIED YOU WITHIN 90 DAYS PREVIOUS TO THIS APPLICATION? IF ANSWER IS "YES", EXPLAIN IN REMARKS.			X
9. HAVE YOU MET THE MINIMUM REQUIREMENTS FOR RENEWAL OF INSPECTION AUTHORIZATION? (For Renewal Only)			
10. BASIS FOR RENEWAL (Number Performed)			
ALTERATIONS	REPAIRS	ANNUAL INSPECTIONS	PROGRESSIVE INSPECTIONS
			RECENT ISSUANCE-IN EFFECT LESS THAN 90 DAYS BEFORE EXPIRATION DATE
11. AIRCRAFT MAINTENANCE ACTIVITY DURING LAST 2 YEARS			
DATES	NAME AND ADDRESS OF REPAIR STATION, FACILITY, MANUFACTURER, OPERATOR, ETC.		DESCRIPTION OF ACTIVITY
FROM June 12, 20XX	Meridian Aviation Downtown Airpark 5060 S. Western Oklahoma City, OK 73452		Inspection, repair and overhaul of single-engine and multiengine aircraft.
TO PRESENT			
FROM			
TO			
FROM			
TO			
FROM			
TO			
12. REMARKS			
13. CERTIFICATION: I certify that the statements made above and in all attachments hereto are correct and true.			
DATE March 19, 20XX		SIGNATURE OF APPLICANT 	
14. RECORD OF ACTION (For FAA Use Only)			
<input type="checkbox"/> ISSUANCE <input type="checkbox"/> VOLUNTARY SURRENDER		INSPECTOR'S SIGNATURE	
<input type="checkbox"/> ENDORSEMENT <input type="checkbox"/> RENEWAL		OFFICE IDENTIFICATION	

FAA Form 8610-1 (2-78) SUPERSEDES PREVIOUS EDITION

**FIGURE 1.—FAA Form 8610-1, Mechanic's Application for Inspection Authorization.**

Appendix 1

UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION

INSPECTION AUTHORIZATION

This certifies that       Robert D. Burge

holder of Mechanic Certificate No. 123456789

has been authorized to exercise the privileges of Federal Aviation Regulation 65.95.

This authority expires March 31, 20XX unless sooner revoked by the Administrator of the Federal Aviation Administration or extended by endorsement on the reverse of this card.

DATE ISSUED	SIGNATURE, FLT. STDS. INSPECTOR
03-16-20XX	JOHN J. DOE <i>John Doe</i>

FAA FORM 8310-5 (8-80) SUPERSEDES PREVIOUS EDITION

SIGNATURE OF AUTHORIZED MECHANIC  
*Robert D. Burge*



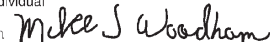
Front view showing initial date of authorization.

Authority to exercise the privileges of FAR 65.95 has been endorsed or renewed to expire on the date shown below.

EXPIRATION DATE	ENDORSED BY INSPECTOR	FAA OFFICE
03-30-20XX	<i>John Doe</i>	SW-FSDO-2

Back view showing new expiration.

FIGURE 2.—FAA Form 8310-5, Inspection Authorization, (front and back view).

 U.S. Department of Transportation Federal Aviation Administration		<b>MAJOR REPAIR AND ALTERATION</b> (Airframe, Powerplant, Propeller, or Appliance)		Form Approved OMB No. 2120-0020	
				<b>For FAA Use Only</b>	
				Office Identification	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each violation (Section 901 Federal Aviation Act of 1958).					
1. Aircraft	Make	Cessna	Model	182L	
	Serial No.	18259080	Nationality and Registration Mark	N42565	
2. Owner	Name (As shown on registration certificate)	B.J. & P., Inc.		Address (As shown on registration certificate)	
				1888 N.W. 92 St. Oklahoma City, OK 73405	
<b>3. For FAA Use Only</b> The data identified herein complies with the applicable airworthiness requirements and is approved for the above described aircraft, subject to conformity inspection by a person authorized by 14 CFR Part 43, Section 43.7.					
SW-FSDO-23		April 6, 20XX		John J. Doe	
District Office		Date		Signature of FAA Inspector	
<b>4. Unit Identification</b>					
Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	~~~~~ (As described in item 1 above) ~~~~~			X	
POWERPLANT					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				
<b>6. Conformity Statement</b>					
A. Agency's Name and Address		B. Kind of Agency		C. Certificate No.	
Katy M. Johnson 411 Riverview Dr. Norman, OK 72091		<input checked="" type="checkbox"/> U.S. Certificated Mechanic <input type="checkbox"/> Foreign Certificated Mechanic <input type="checkbox"/> Certificated Repair Station <input type="checkbox"/> Manufacturer		130598865	
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
Date		Signature of Authorized Individual			
March 23, 20XX		Katy M. Johnson 			
<b>7. Approval for Return To Service</b>					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA Fit. Standards Inspector	Manufacturer	Inspection Authorization		Other (Specify)
	FAA Designee	Repair Station	Person Approved by Transport Canada Airworthiness Group		
Date of Approval or Rejection		Certificate or Designation No.	Signature of Authorized Individual		
April 12, 20XX		233346566	Mike J. Woodham 		

FAA Form 337 (12-88)

**FIGURE 3.—FAA Form 337, Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance), (front view).**

**NOTE:** The FAA inspector's data approval for a major repair (block 3). Detailed instructions for the use of FAA Form 337 are in 14 CFR part 43, and AC 43.9-1E.

## Appendix 1

<b>NOTICE</b>
<p>Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.</p>
<p><b>8. Description of Work Accomplished</b>  <i>(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)</i></p> <p>N42565          April 12, 20XX          Aircraft Total Time 4,218 hours</p> <ol style="list-style-type: none"> <li>1. Removed right wing from aircraft and removed skin from outer 6 feet. Repaired buckled spar 49 inches from tip in accordance with attached photographs and figure 1 of drawing dated March 23, 1998.</li> </ol> <p style="margin-left: 40px;">DATE: March 26, 20XX, inspected splice in Item 1 and found it to be in accordance with data indicated. Splice is okay to cover. Inspected internal wing assembly for hidden damage and condition.</p> <p style="margin-left: 40px;"><i>Mike J. Woodham</i>          Mike J. Woodham, A&amp;P 233346566 IA</p> <ol style="list-style-type: none"> <li>2. Primed interior wing structure and replaced skin          P/N's 63-0085, 63-0086, and 63-00878 with same skin          2024-T3, .025 inches thick. Rivet size and spacing          all the same as original and using procedures in Chapter          2, Section 3, of AC 43.13-1A, dated 1972.</li> <li>3. Replaced stringers as required and installed 6 splices          as per attached drawing and photographs.</li> <li>4. Installed wing, rigged aileron, and operationally checked in          accordance with manufacturer's maintenance manual.</li> <li>5. No change in weight or balance.</li> </ol> <p style="text-align: center; margin-top: 20px;">-----          END</p> <p style="text-align: right; margin-top: 20px;"><input type="checkbox"/> Additional Sheets Are Attached</p>

**FIGURE 4.—FAA Form 337, Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance), (back view).**

**NOTE:** Please note the specific references which identify FAA approved or acceptable data. Also note entry regarding inspection of the repair by the holder of an IA prior to the cover being applied and an inspection of the wing assembly for hidden damage and condition.

March 22, 2002

Total Aircraft Time 1502.0 Hours

Tach Time 972.4 Hours

I certify that this aircraft has been inspected in accordance with an annual inspection as per Air Tractor AT502 owner's manual and was determined to be in an airworthy condition.

Joseph P. Kline  
A&P 123456789 IA

**FIGURE 5.—Example of a maintenance record entry.**

**NOTE:** This is an example of a record entry for an **annual inspection** determining the aircraft to be in “airworthy” condition. The date, aircraft total time, and tach or recorder reading are included. The tach or recorder readings should not be confused with the total time and should only be shown in **addition** to the total time entry. The mechanic's certificate number is suffixed by the letters “IA” indicating that the mechanic is the holder of an inspection authorization. Maintenance done in conjunction with the inspection should be entered as a separate entry.

## Appendix 1

## AD NOTES COMPLIANCE RECORD

Page 2 of 3 Date \_\_\_\_\_

Reg # N1234 A/C Make/Model CESSNA C-182-L S/N 18266080  
A/C Cert. Date 4-21-68 Eng. Model CONT. 0470R Prop. Model M<sup>C</sup>CAULEY 2A34-66N  
S/N 1022 S/N 6297

[illegible]

**FIGURE 6.—Airworthiness Directive compliance record (suggested format).**

## Appendix 1

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION				OPER. Control No.				OMB No. 2120-0003	
MALFUNCTION OR DEFECT REPORT				ATA Code		8120		DISTRICT OFFICE	
				1. A/C Reg. No.		695J			
Enter pertinent data		MANUFACTURER		MODEL/SERIES		SERIAL NUMBER		OPERATOR DESIGNATOR	
2. AIRCRAFT		Cessna		421B		421B79485		OTHER	
3. POWERPLANT		Continental		GTS10520L		C216977		COMMUTER	
4. PROPELLER		McCauley		3AF34C92		42279		FAA	
5. SPECIFIC PART (of component) CAUSING TROUBLE									
Part Name		MFG. Model or Part No.		Serial No.		Part/Defect Location		MFG.	
Wastegate shaft		Garrett PN4166952		NA		Left engine wastegate		AIR TAXI	
6. APPLIANCE/COMPONENT (Assembly that includes part)									
Comp/App'l Name		Manufacturer		Model or Part No.		Serial Number		MECH.	
Wastegate		Garrett		480164-10		1121		X	
Part TT		Part TSO		Part Condition		7 Date Sub.		OPER.	
1222 hrs		NA		warped		1-22-98		REP. STA.	
8. Comments (Describe the malfunction or defect and the circumstances under which it occurred. State probable cause and recommendations to prevent recurrence.)								SUBMITTED BY:	
Pilot reported loss in aircraft's critical altitude. Inspection revealed the left engine's wastegate shaft warped and binding. The shaft's freedom of travel was also found to be partially restricted due to carbon buildup in the bearings. This is possibly a contributing factor in the warping. Recommend lubricating wastegate valve with approved lubricant such as Mouse Milk or WD-40 when shaft is cool.								Mike Merritt	
								TELEPHONE NUMBER	
Optional Information:									
Check a box below, if this report is related to an aircraft									
<input type="checkbox"/> Accident; Date _____								<input type="checkbox"/> Incident; Date _____	

FAA Form 8010-4 (10-92) SUPERSEDES PREVIOUS EDITIONS

**FIGURE 7.—FAA Form 8010-4, Malfunction or Defect Report, (revised 10-92).**

**NOTE:** This is a typical FAA Form 8010-4 (revised 10-92). The holder of an IA is urged to use this form for all malfunctions or defects that cannot be attributed to poor maintenance procedures. Provide the information requested on the form. Note that item 8 requests information concerning how the defect can be corrected.

## Appendix 1

Operating Limitations:	Zeph-Air 63-1A N40023
RPM	Do not exceed 2300
Oil temperature	212° max.
Airspeed limits do not exceed:	
Level flight or climb	95 MPH
Glide or dive	129 MPH
Gross weight	1,200 lbs
Empty CG	14.4" aft of datum
Useful load	453 lb
Kinds of operation	VFR-Day
	40 lb solo front
	20 lb solo rear

**FIGURE 8.—Example of an operating limitations placard.**

**NOTE:** Example operating limitations placard for a typical light aircraft certified under 14 CFR part 23.

March 30, 2002

Total Aircraft Time 1853.00 Hours

Tach Reading 975.80

I certify that this aircraft has been inspected in accordance with an annual inspection and a list of discrepancies and unairworthy items dated March 30, 2002, have been provided for the aircraft owner.

Joseph P. Kline  
A&P 123456789 IA

**FIGURE 9.—Example of a record entry for an annual inspection in which the aircraft was found to be unairworthy.**



Academy Aviation  
Hangar 4  
North Philadelphia Airport  
Philadelphia, PA 19114

Mr. Morris McCall  
1450 W. Cheltenham Ave.  
Philadelphia, PA 19125

Dear Mr. McCall:

This is to certify that on March 30, 2002, I completed an annual inspection on your aircraft, Condor 191B, S/N 3945, N1234, and found the following unairworthy items:

1. Compression in No. 3 cylinder read 30 over 80, which is below the manufacturer's recommended limits.
2. The muffler has a broken baffle plate which is blocking the engine exhaust outlet.
3. There is a 6-inch crack on bottom of left wing just aft of main landing gear attach point.

Jospeh P. Kline  
A&P 123456789 IA

**FIGURE 10.—Example of a discrepancy list to be provided to an aircraft owner when reporting an aircraft with unairworthy items after completing an annual inspection.**

## Appendix 1

**Weight & Balance****Cessna 182L****N42565****S/N18259080****Date: 04/22/20XX****Supersedes Computations of FAA Form  
337, dated 10/02/90.**Removed the following equipment:

1. Turn Coordinator P/N C661003-0201
2. Directional Gyro P/N 0706000

Weight	Arm	Moment
2.5 lbs	15	37.5
<u>3.12 lbs</u>	13.5	<u>42.12</u>
5.62		79.62

TOTAL

1709.60	35.26	60282.2
<u>-5.62</u>		<u>-79.62</u>
1703.98	35.3	60202.58

Aircraft after removal:

Installed the following equipment:

1. S-Tec 40 Autopilot system, includes  
Turn Coordinator and Directional Gyro.

Weight	Arm	Moment
13 lbs	32.7	425.13

1703.98		60202.20
<u>+13.00</u>		<u>+425.13</u>

**\*REVISED LICENSED EMPTY WEIGHT  
NEW USEFUL LOAD 1083.02**

**1716.98      35.31      60627.71**

Forward Check (Limit +38.4)Rearward Check (Limit +47.4)

	Wt.	Arm	Moment
A/C Empty	1716.98	35.31	60627.21
Fwd. Seats	170.00	36.00	6120.00
Aft. Seats			
Fuel (min.)	115.00	48.00	5520.00
Oil	22.00	-15.00	-330.00
Baggage			
	<u>2023.98</u>	<u>35.5</u>	<u>71937.71</u>

	Wt.	Arm	Moment
A/C Empty	1716.98	35.31	60627.21
Fwd. Seats	170.00	36.00	6120.00
Aft. Seats	340.00	71.00	24140.00
Fuel (max.)	360.00	48.00	17280.00
Oil	22.00	-15.00	-330.00
Baggage	<u>120.00</u>	<u>97.0</u>	<u>11640.00</u>
	2728.98	43.78	119477.71



Joseph P. Kline  
A & P 123456789

**FIGURE 11.—Example of a weight and balance revision for a typical light, single-engine aircraft.**

**NOTE:** Computations are shown. Form is signed, dated, and identifies the computations or figures it supersedes. It is recommended that manufacturer's weight and balance data forms be used for specific aircraft.

March 30, 2002

Aircraft Total Time 1520 Hours

Complied with AD 90-06-03R1, effective date March 27, 20XX. Modified the airplane by compliance with paragraph (b) of AD. Installed Cessna Service Kit SK 172-10A. No recurring action required.

Bill Quinlan  
A&P 143298671

**FIGURE 12.—Example of a one-time Airworthiness Directive compliance entry.**

April 1, 2002

Engine Total Time 720 Hours

Complied with AD 82-27-03, Roto-Masters Turbo Chargers by inspection as required by paragraph (b) through (g) of the AD. Turbine housing found satisfactory, next inspection due at 920 hours.

Joe Knight  
A&P 279862423

**FIGURE 13.—Example of a recurrent Airworthiness Directive compliance entry.**



# Appendix 2

## Publications and Technical Data



## PUBLICATIONS AND TECHNICAL DATA

The following publications and technical data provide information for aircraft inspection.

### 1. Title 14 of the Code of Federal Regulations (CFR).

The Code of Federal Regulations is a codification of the general and permanent rules published in the Federal Register by the Executive departments and agencies of the Federal Government. The Code is divided into 50 titles, which represent broad areas subject to Federal regulation. Each title is divided into chapters, which usually bear the name of the issuing agency. Title 14—Aeronautics and Space is composed of four chapters. Chapter I of this title is the Federal Aviation Administration, Department of Transportation (DOT). This chapter contains parts 1–199.

The following CFR parts are of particular interest to the holder of an inspection authorization.

#### CFR Part

Number	Title
1	Definitions and Abbreviations
11	General Rulemaking Procedures
21	Certification Procedures for Products and Parts
23	Airworthiness Standards: Normal, Utility, Acrobatic, and Commuter Category Airplanes
25	Airworthiness Standards: Transport Category Airplanes
27	Airworthiness Standards: Normal Category Rotorcraft
29	Airworthiness Standards: Transport Category Rotorcraft
31	Airworthiness Standards: Manned Free Balloons
33	Airworthiness Standards: Aircraft Engines
35	Airworthiness Standards: Propellers
39	Airworthiness Directives
43	Maintenance, Preventive Maintenance, Rebuilding, and Alteration
45	Identification and Registration Marking
47	Aircraft Registration
65	Certification: Airmen Other Than Flight Crewmembers

91	General Operating and Flight Rules
119	Certification: Air Carriers and Commercial Operators
125	Certification and Operations: Airplanes Having a Seating Capacity of 20 or More Passengers or a Maximum Payload Capacity of 6,000 Pounds or More
135	Operating Requirements: Commuter and On-Demand Operations and Rules Governing Persons on Board Such Aircraft
183	Representatives of the Administrator

The Code of Federal Regulations may be obtained in either official paper or official electronic copies.

Paper copies are available from the following.

U.S. Government Printing Office (GPO)  
Mail Stop: SDE  
732 N. Capitol Street, NW  
Washington, DC 20401  
Toll Free: 888-293-6498

Electronic copies of the Code of Federal Regulations may be found on the Internet at the following addresses.

- [www.airweb.faa.gov/rgl](http://www.airweb.faa.gov/rgl)  
(Regulatory and Guidance Library) —  
The official FAA Copy
- [www.faa.gov](http://www.faa.gov)  
(Federal Aviation Administration)
- [www.access.gpo.gov](http://www.access.gpo.gov)  
(Government Printing Office)
- [www.gpo.gov/nara/cfr/index.html](http://www.gpo.gov/nara/cfr/index.html)  
(National Archives and Records Administration)

### 2. Type Certificate Data Sheets and Specifications.

Type Certificate Data Sheets and Specifications (TCDS) set forth essential factors and other conditions, which are necessary for U.S. airworthiness certification. Aircraft, engines, and propellers which conform to a U.S. type certificate (TC) are eligible for U.S. airworthiness certification when found to be in a condition for safe operation and ownership requisites are fulfilled.



## Appendix 2

**TCDS background information.**

There are two kinds of certification documents contained in the TCDS file:

- (1) Type Certificate Data Sheets
- (2) Specifications

“**Type Certificate Data Sheets**” were originated and first published in January 1958. CFR subpart 21.41 indicates they are part of the type certificate. As such, a type certificate data sheet is evidence the product has been type certificated. Generally, type certificate data sheets are compiled from details supplied by the type certificate holder; however, FAA may request and incorporate additional details when conditions warrant.

“**Specifications**” were originated during implementation of the Air Commerce Act of 1926. Specifications are FAA recordkeeping document issued for both type certificated and non-type certificated products which have been found eligible for U.S. airworthiness certification. Although they are no longer issued, specifications remain in effect and will be further amended. Specifications covering type certificated products may be converted to type certificate data sheets at the option of the type certificate holder. However, to do so requires the type certificate holder to provide an equipment list. A specification is not part of a type certificate.

The official FAA copy in electronic version is available on the Internet at the FAA web site titled “Regulatory and Guidance Library” at [www.airweb.faa.gov/rgl](http://www.airweb.faa.gov/rgl). This is a free service.

### 3. Summary of Airworthiness Directives for Small Aircraft And Rotorcraft (ADs).

An airworthiness directive (AD) contains information regarding an unsafe condition that exists in an aircraft, aircraft engine, propeller, or appliance when that condition is likely to exist or develop in other products of the same type design. No person may operate a product to which an AD applies, except in accordance with the requirements of the AD. All ADs are summarized and issued by the FAA. New and revised ADs are published bi-weekly and mailed to registered owners of effected equipment and subscription holders. Airworthiness directives are issued in two weight categories:

1. Small aircraft with a maximum certificated takeoff weight aircraft of 12,500 pounds or less, and all rotorcraft regardless of weight.
2. Large aircraft over 12,500 pounds maximum certificated takeoff weight.

Each of these categories is presented in three books. Included in these books are the airframe ADs and the ADs applicable to the engines, propellers, and appliances of the category.

These books may be purchased from:

U.S. Government Printing Office (GPO)  
Mail Stop: SDE  
732 N. Capitol Street, NW  
Washington, DC 20401  
Toll Free: 888-293-6498

The official FAA copy in electronic version is available on the Internet at the FAA web site titled “Regulatory and Guidance Library” (RGL) at:

[www.airweb.faa.gov/rgl](http://www.airweb.faa.gov/rgl).

The ADs are totally searchable and easily located. The individual airworthiness directives and the AD biweeklies on the RGL website are considered official FAA copy and may be used in lieu of purchasing paper copies. This is a free service. Questions concerning the RGL may be directed to the Delegation & Airworthiness Programs Branch (AIR-140) at (405) 954-4103.

### 4. Advisory Circulars.

The Federal Aviation Administration issues advisory circulars to inform the aviation public in a systematic way of nonregulatory material. Unless incorporated into a regulation by reference, the contents of an advisory circular are not binding on the public. Advisory circulars are issued in a numbered-subject system corresponding to the numerical part of the subject regulation (AC 39-7 would therefore deal with a subject related to CFR Part 39 or Airworthiness Directives).

## Appendix 2

An advisory circular is issued to provide guidance and information in a designated subject area or to show a method acceptable to the Administrator for complying with a related Federal Aviation Regulation. Electronic versions are available on the Internet at the FAA website.

- AC 39-7C, Airworthiness Directives. (FREE)
- AC 43-4A, Corrosion Control for Aircraft. (FOR SALE)
- AC 43-11, Reciprocating Engine Overhaul Terminology and Standards. (FREE)
- AC 43.13-1B, Acceptable Methods, Techniques and Practices—Aircraft Inspection and Repair. (FOR SALE)
- AC 43.13-2A, Acceptable Methods, Techniques, and Practices—Aircraft Alterations. (FOR SALE)
- AC 43-9C, Maintenance Records. (FREE)
- AC 43.9-1E, Instructions for Completion of FAA Form 337 Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance). (FREE)
- AC 91-67, Minimum Equipment Requirements for General Aviation Operations Under FAR Part 91. (FREE)

ADDITIONAL INFORMATION of particular interest to the holder of an inspection authorization.

- FAA-H-8083-1, Aircraft Weight and Balance Handbook (FOR SALE)

## 5. How to Order Publications.

Refer to AC 00-2.13, Advisory Circular Checklist, for ordering instructions for both free and sale advisory circulars (ACs). AC 00-2.13 also gives stock numbers and prices for ACs sold by the Superintendent of Documents. The checklist is available on the Internet at:

[http://www.faa.gov/aba/html\\_policies/ac00\\_2.html](http://www.faa.gov/aba/html_policies/ac00_2.html)

## 6. Additional Sources of Inspection Data.

Several commercial publishers offer subscription services that include the Airworthiness Directives, Advisory Circulars, and Type Certificate Data Sheets along with other inspection data. They may be found in aviation trade paper and magazines.



# **Appendix 3**

## **List of Reference Materials and Subject Matter Knowledge Codes**



## LIST OF REFERENCE MATERIALS AND SUBJECT MATTER KNOWLEDGE CODES

The publications listed in the following pages are documents that are used as references in preparing the inspection authorization knowledge tests. The official FAA copy in electronic format is available on the FAA web site titled “Regulatory and Guidance Library (RGL).” ([www.airweb.faa.gov/rgl](http://www.airweb.faa.gov/rgl)) All of these publications can be purchased through U.S. Government Bookstores, commercial aviation supply houses, or industry organizations. The latest revision of the listed references should be requested. Additional study material is also available through these sources that may be helpful in preparing for knowledge tests.

The subject matter knowledge codes establish the specific reference for the knowledge standard. When reviewing results of your knowledge test, you should compare the subject matter knowledge code(s) on your Airman Test Report to the ones found below.

### Title 14 of the Code of Federal Regulations (14 CFR)

#### **14 CFR Part 1—Definitions and Abbreviations**

- A01 General Definitions
- A02 Abbreviations and Symbols

#### **14 CFR Part 21—Certification Procedures for Products and Parts**

- A100 General
- A102 Type Certificates
- A104 Supplemental Type Certificates
- A108 Airworthiness Certificates
- A110 Approval of Materials, Parts, Processes, and Appliances
- A112 Export Airworthiness Approvals
- A117 Technical Standard Order Authorizations

#### **14 CFR Part 23—Airworthiness Standards: Normal, Utility, Acrobatic and Commuter Category Airplanes**

- A150 General
- A151 Flight
- A152 Structure
- A153 Design and Construction
- A154 Powerplant
- A155 Equipment
- A157 Operating Limitations and Information
- A159 Appendix G: Instructions for Continued Airworthiness

#### **14 CFR Part 27—Airworthiness Standards: Normal Category Rotorcraft**

- A250 General
- A253 Flight
- A255 Strength Requirements
- A257 Design and Construction
- A259 Powerplant
- A261 Equipment
- A263 Operating Limitations and Information
- A265 Appendix A: Instructions for Continued Airworthiness

#### **14 CFR Part 39—Airworthiness Directives**

- A13 Airworthiness Directives

#### **14 CFR Part 43—Maintenance, Preventive Maintenance, Rebuilding, and Alteration**

- A15 Maintenance, Preventive Maintenance, Rebuilding, and Alteration
- A16 Appendices

#### **14 CFR Part 45—Identification and Registration Marking**

- A400 General
- A401 Identification of Aircraft and Related Products
- A402 Nationality and Registration Marks

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**14 CFR Part 65—Certification: Airmen Other Than Flight Crewmembers**

- A40 General
- A45 Mechanics
- A46 Repairmen

**14 CFR Part 91—General Operating and Flight Rules**

- B07 General
- B11 Equipment, Instrument, and Certificate Requirements
- B12 Special Flight Operations
- B13 Maintenance, Preventive Maintenance, and Alterations

**14 CFR Part 125—Certification and Operations: Airplanes Having a Seating Capacity of 20 or More Passengers or a Maximum Payload Capacity of 6,000 Pounds or More; and Rules Governing Persons on Board Such Aircraft**

- D30 General
- D36 Maintenance

**14 CFR Part 135—Operating Requirements: Commuter and on Demand Operations and Rules Governing Persons on Board Such Aircraft**

- E03 Aircraft and Equipment
- E09 Airplane Performance Operating Limitations
- E10 Maintenance, Preventive Maintenance, and Alterations
- E12 Special Federal Aviation Regulations SFAR No. 36

**14 CFR Part 183—Representatives of the Administrator**

- E150 General
- E151 Certification of Representatives
- E152 Kinds of Designations: Privileges

**FAA-H-8083-1—Aircraft Weight and Balance Handbook**

- H108 Equipment for Weighing
- H109 Preparation for Weighing
- H110 Determining the Center of Gravity
- H111 Empty-Weight Center of Gravity Formulas
- H112 Determining the Loaded Weight and CG
- H113 Multiengine Airplane Weight and Balance Computations
- H114 Determining the Loaded CG
- H115 Equipment List
- H116 Weight and Balance Revision Record
- H117 Weight Changes Caused by a Repair or Alteration
- H118 Empty-Weight CG Range
- H119 Adverse-Loaded CG Checks
- H120 Ballast
- H121 Weighing Requirements
- H122 Locating and Monitoring Weight and CG Location
- H123 Determining the Correct Stabilizer Trim Setting
- H124 Determining CG Changes Caused by Modifying the Cargo
- H125 Determining Cargo Pallet Loads with Regard to Floor Loading Limits
- H126 Determining the Maximum Amount of Payload That Can Be carried
- H127 Determining the Landing Weight
- H128 Determining the Minutes of Fuel Dump Time
- H129 Weight and Balance of Commuter Category Airplanes
- H130 Determining the Loaded CG of a Helicopter
- H131 Using an Electronic Calculator to Solve Weight and Balance Problems
- H132 Using an E6-B Flight Computer to Solve Weight and Balance Problems
- H133 Using a Dedicated Electronic Computer to Solve Weight and Balance Problems
- H134 Typical Weight and Balance Problems
- H135 Glossary



## Appendix 3

**Additional Advisory Circulars**

- K03 AC 00-34, Aircraft Ground Handling and Servicing
- K12 AC 20-32, Carbon Monoxide (CO) Contamination in Aircraft — Detection and Prevention
- K13 AC 20-43, Aircraft Fuel Control
- K20 AC 20-103, Aircraft Engine Crankshaft Failure
- K45 AC 39-7, Airworthiness Directives
- K46 AC 43-9, Maintenance Records
- K47 AC 43.9-1, Instructions for Completion of FAA Form 337
- K48 AC 43-11, Reciprocating Engine Overhaul Terminology and Standards
- K49 AC 43.13-1, Acceptable Methods, Techniques, and Practices — Aircraft Inspection and Repair
- K50 AC 43.13-2, Acceptable Methods, Techniques, and Practices — Aircraft Alterations
- L25 FAA-G-8082-11, Inspection Authorization Knowledge Test Guide
- L70 AC 91-67, Minimum Equipment Requirements for General Aviation Operations Under FAR Part 91
- M02 AC 120-27, Aircraft Weight and Balance Control
- M52 AC 00-2, Advisory Circular Checklist

**Type Certificate Data Sheets and Specifications**

- Y300 Type Certificate Data Sheets and Specifications Alphabetical Index and Users Guide
- Y301 Type Certificate Data Sheet No. 2A13 Piper
- Y302 Type Certificate Data Sheet No. 3A19 Cessna
- Y303 Type Certificate Data Sheet No. E-295 Textron Lycoming
- Y304 Type Certificate Data Sheet No. A7CE Cessna
- Y305 Type Certificate Data Sheet No. 3A13 Cessna
- Y306 Type Certificate Data Sheet No. A7S0 Piper
- Y307 Type Certificate Data Sheet No. A11EA Tiger Aircraft LLC
- Y308 Type Certificate Data Sheet No. E-273 Teledyne Continental
- Y309 Aircraft Specification No. 1A6 Piper
- Y310 Type Certificate Data Sheet No. P57GL McCauley
- Y311 Type Certificate Data Sheet No. P-920 Hartzell
- Y312 Type Certificate Data Sheet No. 2A4 Twin Commander
- Y313 Type Certificate Data Sheet No. E-284 Textron Lycoming

NOTE: AC 00-2, Advisory Circular Checklist, transmits the status of all FAA advisory circulars (ACs), as well as FAA internal publications and miscellaneous flight information, such as Aeronautical Information Manual, Airport/Facility Directory, knowledge test guides, practical test standards, and other material directly related to a certificate or rating. The checklist is available on the Internet at:

<http://www.airweb.faa.gov/rgl>





U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

# Advisory Circular

AC 91-67

Subject: **MINIMUM EQUIPMENT REQUIREMENTS  
FOR GENERAL AVIATION OPERATIONS  
UNDER FAR PART 91**

Date: **6/28/91**

Initiated by: **AFS-820**

AC No: **91-67**

Change:

**1. PURPOSE.** This advisory circular (AC) describes acceptable methods for the operation of aircraft under Federal Aviation Regulations (FAR) Part 91 with certain inoperative instruments and equipment which are not essential for safe flight.

*a. These acceptable methods of operation are:*

(1) Operation of aircraft with a Minimum Equipment List (MEL), as authorized by FAR §91.213(a).

(2) Operation of aircraft without an MEL under FAR §91.213(d).

*b. This AC also explains the reprocess* for obtaining Federal Aviation Administration (FAA) approval of an MEL.

**2. RELATED FAR SECTIONS.** The following FAR provide additional information on operations with or without a FAR Part 91 MEL:

**a. FAR § 43.9:** Content, form, and disposition of maintenance, preventive maintenance, rebuilding, alterations, and alteration records (except inspections performed in accordance with FAR Parts 91, 123, and 125 and FAR §§135.411(a)(1) and 135.419).

**b. FAR §43.11:** Content, form, and disposition of the records for inspections conducted under FAR Parts 91 and 125 and FAR §§135.411(a)(1) and 135.419.

**c. FAR §91.205:** Powered civil aircraft with standard category U.S. airworthiness certificates: Instrument and equipment requirements.

**d. FAR §91.405:** Maintenance required.

**3. FORMS AND REPORTS.** The FAA Flight Standards District Office (FSDO) contacted by an MEL applicant provides the applicant a Master Minimum Equipment List (MMEL) for the applicant's particular aircraft.

**4. RELATED READING MATERIAL.** Users of this AC will find detailed background and in-depth information in the Federal Register Vol. 53, No. 239, December 13, 1988. The public may obtain copies of this issue of the Federal Register from the FAA, Office of Public Affairs, Public Inquiry Center, APA-230, 800 Independence Ave. SW, Washington, DC 20591.

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**5. BACKGROUND.** Except as provided in FAR §91.213, all instruments and equipment installed on an aircraft must be operative in order for the operator to operate it. However, the FAA recognized that safe flight can be conducted under the MEL concept and under specific conditions with inoperative instruments and equipment.

*a. Regulatory History.* Until the most recent change to FAR §91.213, the MEL concept applied only to air carrier and commercial operations and general aviation operators of multiengine aircraft for which FAA had developed an MMEL. Operators of aircraft for which FAA had not developed an MMEL had to comply with FAR §91.405. This section required that all aircraft discrepancies occurring between required inspections had to be repaired in accordance with FAR Part 43 before the aircraft could be operated. This meant that all the aircraft's instruments and equipment, regardless of whether they were essential or not to the flight operation conducted, had to be operative. This requirement often placed a burden on operators.

*b. Amendments to FAR Part 91.* Over the past decade, the FAA initiated several rule making projects to alleviate the regulatory burden of FAR §91.405. Before the issuance of a final rule change, FAA encouraged public and industry participation, accepted and reviewed public comments, and conducted public hearings which were attended by other Government agencies and the industry.

(1) The FAA briefly suspended FAR §91.213 and allowed issuance of MEL's by exemption. During this period, the FAA gained valuable information on the usefulness and safety aspects of using MEL's in general aviation.

(2) Further, general aviation operators have a history of safe operations using FAR §91.205 as the sole reference for determining the instrument and equipment requirements for a particular flight.

(3) However, operators indicated the need for relief from FAR §91.405, and the FAA agreed that the FAR should reflect current operational practices. Consequently, the FAA amended FAR Parts 43 and 91 in December 1988.

*c. New Regulatory Requirements.* The amendment to FAR Parts 43 and 91 provides a regulatory basis for the operation of aircraft with inoperative instruments and equipment. Operators conduct these operations within a framework of a controlled program of maintenance inspections, repairs, and parts replacement. However, operators must exercise good judgment and have, at each required inspection, any inoperative instrument or equipment repaired or inspected or the maintenance deferred, as appropriate.

## **6. DEFINITIONS.**

*a. Aircraft Evaluation Group (AEG).* The AEG is the FAA office responsible for the development and publication of an approved MMEL for those aircraft within its area of responsibility.

*b. Aircraft Flight Manual (AFM).* The AFM is the source document for operational limitations and performance for an aircraft. The term AFM can apply to either an airplane flight manual or a rotorcraft flight manual. FAA requires an AFM for type certification. The responsible FAA Aircraft Certification Office (ACO) approves an AFM.

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**c. Aircraft Maintenance Manual (AMM).** The AMM is the source document for maintenance procedures for an aircraft. The term AMM can apply to either an airplane maintenance manual or a rotorcraft maintenance manual. FAA requires the AMM for type certification.

**d. Airworthiness Directive (AD).** An AD is a mandatory airworthiness requirement for a particular make and model aircraft or installed equipment. An AD is supplementary to the aircraft original airworthiness approval.

**e. Air Transportation Association (ATA) Numbering System.** The standard ATA numbering system refers to systems on different aircraft in a standardized manner. MMEL's use the ATA numbering system.

**f. Calendar Days** include all days, with no exclusion for weekends and holidays.

**g. Deactivation** means to make a piece of equipment or an instrument unusable to the pilot/crew by preventing its operations.

**h. Deferred Maintenance** is the postponement of the repair or replacement of an item of equipment or an instrument.

**i. Equipment List** is an inventory of equipment installed by the manufacturer or operator on a particular aircraft.

**j. Flight Operations Evaluation Board (FOEB).** The FOEB is composed of FAA personnel who are operations, avionics, airworthiness, and aircraft certification specialists. The FOEB develops an MMEL for a particular aircraft type under the direction of the AEG.

**k. Inoperative** means that a system and/or component has malfunctioned to the extent that it does not accomplish its intended purpose and/or is not consistently functioning normally within its approved operating limits or tolerances.

**l. Kinds of Operations List (KOL).** The KOL specifies the kinds of operations (e.g., visual flight rules (VFR), instrument flight rules (IFR), day, or night) in which the aircraft can be operated. The KOL also indicates the installed equipment that may affect any operating limitation. Although the certification rules require this information, there is no standard format; consequently, the manufacturer may furnish it in various ways.

**m. Letter of Authorization (LOA).** The FSDO issues an LOA to the operator when the FSDO authorizes the operator to operate under the provisions of an MEL. Together, the LOA, the procedures document (paragraph v. following, and the MMEL constitute a Supplemental Type Certificate (STC). The operator must carry the STC in the aircraft during its operation.

**n. Maintenance is the inspection, overhaul, repair, preservation, or replacement of parts.** This definition excludes preventive maintenance (see paragraph u. following). After a mechanic performs maintenance, other than preventive maintenance, a properly certificated maintenance person must approve the aircraft for return to service.

**o. MMEL.** An MMEL contains a list of items of equipment and instruments that may be inoperative on a specific type of aircraft (e.g., BE-200, Beechcraft model 200). It is also the basis for the development of an individual operator's MEL.

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**p. MEL.** The MEL is the specific inoperative equipment document for a particular make and model aircraft by serial and registration numbers; e.g., BE-200, N12345. A FAR Part 91 MEL consists of the MMEL for a particular type aircraft, the MMEL's preamble, the procedures document, and a LOA. The FAA considers the MEL as an STC. As such, the MEL permits operation of the aircraft under specified conditions with certain equipment inoperative.

**q. Next Required Inspection** is the one required under either an FAA-approved inspection program, a 100-hour inspection, or an annual inspection, as appropriate.

**r. Operations (O) and Maintenance (M) procedures** in the MMEL refer to the specific maintenance procedures the operator uses to disable or render items of equipment inoperative and to specific operating conditions and limitations, as appropriate.

(1) An O symbol in column 4 of the MMEL indicates that a specific operations procedure must be accomplished before or during operation with the listed item of equipment inoperative. Normally, the flightcrew accomplishes these procedures; however, other personnel, such as maintenance personnel, may be qualified and authorized to perform the procedure.

(2) An M symbol in column 4 of the MMEL indicates that a specific maintenance procedure must be accomplished before beginning operation with the listed item of equipment inoperative. Normally, maintenance personnel accomplish these procedures; however, other personnel, such as the flightcrew, may be qualified and authorized to perform certain functions. Qualified maintenance personnel must perform procedures requiring specialized knowledge, skills, or the use of tools or test equipment.

**s. Operator refers to an individual or company (corporation, entity, etc.).** As used in this AC, operator applies to those who are applicants for, or holders of, authority to conduct operations under the provisions of a FAR Part 91 MEL.

**t. Placard is a decal or label with letters at least 1/8-inch high.** The operator or mechanic must place the placard on or near inoperative equipment or instruments so that it is visible to the pilot or flightcrew and alerts them to the inoperative equipment.

**u. Preventive Maintenance.** The term preventive maintenance refers to simple or minor preservation operations and/or the replacement of small standard parts not involving complex assembly. FAR Part 43, Appendix A(c), contains a list of preventive maintenance items. Qualified mechanics or certificated pilots may accomplish preventive maintenance and approve the aircraft for return to service.

**v. Procedures Document as referred to in this AC** pertains to a separate document containing the O and M procedures developed by the operator and any other operating information applicable to operation with an MEL, such as the "as required by the FAR" items that list the FAR by part and section or stipulate the operating conditions.

**w. Proposed Master Minimum Equipment List (PMMEL).** The PMMEL is the working document used as the basis for development of the MMEL. Normally, the manufacturer proposes it during the certification process. However, an operator of a unique type aircraft, for which an MMEL does not exist, may submit a PMMEL for FAA approval.

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**x. *Return to Service.*** Return to service has two applications. An appropriately certificated person approves an aircraft for return to service after an inspection or after maintenance. A certificated pilot, in fact, returns the aircraft to service after the pilot conducts an appropriate preflight and accepts the aircraft for an intended flight.

**y. *Small Aircraft*** means aircraft with a maximum certificated takeoff weight of 12,500 pounds or less.

**z. *STC.*** An STC is a major change in type design not great enough to require a new application for a type certificate under FAR §21.19. An example would be installation of a powerplant different from what was included the original type certificate.

**aa. *Type Certificate Data Sheets (TCDS)*** and Specifications are documents issued by the FAA which describes the aircraft's airworthiness requirements relating to a specific type, make, and model of aircraft. These documents are available at a FSDO.

David R. Harrington  
Acting Director, Flight Standards Service

**7. COMMENTS INVITED.** Comments regarding this publication should be directed to:

Federal Aviation Administration  
Field Programs Division, AFS-500  
Advisory Circular Staff  
P.O. Box 20034, Gateway Building  
Dulles International Airport  
Washington, DC 20041-2034

Every comment will not necessarily generate a direct acknowledgment to the commenter. Comments received will be considered in the development of upcoming revisions to AC's or other related technical material.



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**CHAPTER 1. GENERAL**

**1. APPLICABILITY.** This AC provides guidance for the operation of the following aircraft under FAR Part 91:

*a. Aircraft for which no MMEL has been developed by the FOEB:*

- (1) Rotorcraft.
- (2) Nonturbine-powered airplanes.
- (3) Gliders.
- (4) Lighter-than-air aircraft.

*b. Aircraft for which an MMEL has been developed but for which the FSDO has not authorized operation with an MEL.*

- (1) Small rotorcraft.
- (2) Nonturbine-powered small single and multiengine airplanes.

*c. All other aircraft* which have an MEL or for which an operator seeks MEL authorization under FAR § 91.213.

*d. An operator may operate* an aircraft for which FAA has issued an original Experimental airworthiness certificate in accordance with FAR § 91.213 only when authorized in that certificate's operating limitations.

*e. This AC does not apply to* operators holding certificates issued under FAR Parts 121, 125, 129, and 135.

*f. Holders of letters of full deviation authority* from FAR Part 125 and operating under FAR Part 91, Subpart F, may apply for authorization to operate with a FAR Part 91 MEL.

**2. MEL VS. FAR § 91.213(d).** Although FAA amended FAR Part 91 to provide relief to operators under the MEL concept, some operators may find it less burdensome or less complicated to operate under the provisions of FAR § 91.213(d). The applicant should discuss the requirements of each method with FSDO inspectors to decide which method of compliance better suits the particular operation. Appendix 3 contains a list of commonly asked questions which may assist in the decision.

*a. An MEL is a precise listing of instruments, equipment, and procedures* that allows an aircraft to be operated under specific conditions with inoperative equipment. The MMEL, as part of the MEL, by nature does not cover equipment installed or modified under other STC's. Any STC or other major modification may make the MMEL invalid for a particular modified aircraft.

*b. The FAR require* that all equipment installed on an aircraft in compliance with the airworthiness standards and operating rules be operative. The FAA-approved MMEL includes those items of equipment and other items which the FAA finds may be inoperative and yet maintain an acceptable level of safety. Obviously, the MMEL does not contain required items such as wings, flaps, rudders, etc. When a FAR Part 91 operator uses an MMEL as an MEL, all instruments and equipment not covered in the MMEL must be operative at all times regardless of the operation conducted, unless:

- (1) They are newly installed and are not instruments or equipment specifically required by the airworthiness rule under which the aircraft is type certificated, required by AD, or required for specific operations under FAR § 91.213(b)(1)-(3), such as Traffic Alert and Collision Avoidance System (TCAS), an extra piece of navigational equipment, a windshear detection device, a ground proximity warning system, a radar altimeter, passenger convenience items, etc.;

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(2) The operator has developed procedures for disabling or rendering them inoperative; and

(3) The operator has contacted the FSDO having oversight within 10 calendar days following an installation and requested that the equipment be added to the MMEL.

(i) The operator must furnish the following information:

(A) A copy of the STC or FAA Form 337, Major Repair and Alteration, that approved each equipment installation and the associated limitations listed in the AFM supplement or on the 337. The FOEB needs this information to account for installation differences as well as for maintaining MMEL relief that is consistent with the limitations.

(B) A system description that details sufficiently the interface of the equipment with the crew; i.e., location, controls, operations, how it is used, etc.

(C) A statement that describes the transfer of function when the equipment is inoperative; i.e., not required for the flight, as per crew procedures, because of alternate systems, etc.

(ii) If the FAA determines that the equipment has been previously considered by the FOEB for inclusion in the MMEL and denied, or if the FOEB convenes and denies inclusion, the FAA will not grant relief. The equipment must be operational before aircraft can take off.

(iii) If the FOEB determines that the equipment should be added to the MMEL, the operator will receive the updated MMEL and must prepare O and M procedures for that piece of equipment.

*c. If FAA has not authorized operating with an MEL* for an operator's specific aircraft, the operator may apply for an MEL (Chapter 3, paragraph 20). However, the operator can always elect to operate without an MEL under the provisions of FAR § 91.213(d).

(1) FAR § 91.213(d) requires only those instruments listed in FAR § 91.213(d)(2) to be operative.

(2) The operator can operate the aircraft with those instruments and equipment not listed in FAR § 91.213(d)(2) inoperative.

**3. RELATIONSHIP BETWEEN THE PMMEL, THE MMEL, AND THE MEL.** When an aircraft is first manufactured, the FOEB determines the minimum operative instruments and equipment required for safe flight in that aircraft type in each authorized operating environment. During the type certification process, the manufacturer submits a PMMEL to the FOEB. Based on its determinations, the FOEB reviews the PMMEL and develops an MMEL from it. Once the FOEB approves the MMEL, a copy is available to each FSDO via an automated system that allows the FSDO to download the MMEL onto a diskette or hard copy. The FSDO provides MMEL's to applicant's to use along with the procedures document, preamble, and LOA, as an MEL.

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*a. As technology changes and new equipment* becomes available, the FOEB will reconvene to develop new MMEL's or to revise and update existing ones.

*b. When an FOEB makes a change to an MMEL*, all operators using that MMEL as their MEL will receive a postcard advising them of the revised MMEL. The FSDO provides operators copies of the revised MMEL. The operator then makes the necessary changes to the procedures document through the normal revision process (Chapter 3, paragraph 22).

#### **4. SINGLE- AND MULTIENGINE MEL'S.**

The FAA has developed MMEL's for most of the FAA type certificated aircraft in general service today. All multiengine airplanes have an MMEL that is specific to the type design; e.g., Beech Baron, BE-58. The FAA has developed a generic, single-engine MMEL to provide to operators of single-engine aircraft.

#### **5. AIRCRAFT FOR WHICH NO MMEL HAS BEEN DEVELOPED.**

*a. If an FOEB has not developed* an MMEL for a certain type of rotorcraft, nonturbine-powered airplane, glider, or lighter-than-air aircraft, that aircraft may be operated with inoperative equipment under the provisions of FAR § 91.213(d).

*b. In those cases where an operator* has an older or rare design aircraft that has no MMEL, the operator may submit a PMMEL to the appropriate FOEB for evaluation. Once the AEG approves the MMEL, the operator could use it as the MEL along with the other required documents.

**6. MEL RESTRICTIONS.** Operators of small rotorcraft, nonturbine-powered small single- and multiengine airplanes, and other aircraft for which a MMEL has been developed, may elect to operate with a MEL or under the provisions of FAR § 91.213(d). However, the latter option does not apply if the aircraft has an MEL approved under FAR Parts 121, 125, 129, or 135. For example, an owner has leased an aircraft to an air carrier operator, and the air carrier operator has applied for and received an approved MEL for FAR Part 135 operations. Compliance with such an MEL is mandatory, even during FAR Part 91 operations. If the operator wants to operate under FAR § 91.213(d), the operator would have to surrender the MEL authorization.

**7. REMOVAL OR DEACTIVATION.** When an operator elects to operate without an MEL, any inoperative instrument or equipment must either be removed (FAR § 91.213(d)(3)(i)) or deactivated (FAR § 91.213(d)(3)(ii)), then placarded.

*a. Removal of any item of equipment* that affects the airworthiness of an aircraft requires following an approved procedure. A properly certificated maintenance person must record the removal in accordance with FAR § 43.9. A person authorized by FAR § 43.7 must make the appropriate adjustments to the aircraft's weight and balance information and the equipment list, fill out and submit FAA Form 337, and approve the aircraft for return to service.

*b. The operator must evaluate any proposed deactivation* to assure there is no adverse effect that could render another system less than fully capable of its intended function.

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(1) A certificated pilot can accomplish deactivation involving routine pilot tasks, such as turning off a system. However, for a pilot to deactivate an item or system, that task must come under the definition of preventive maintenance in FAR Part 43, Subpart A.

(2) If the deactivation procedures do not fall under preventive maintenance, a properly certificated maintenance person must accomplish the deactivation. The maintenance person must record the deactivation in accordance with FAR § 43.9 (figure 1 – Sample Maintenance Record Entries.).

*c. Placarding can be as simple as writing the word “inoperative” on a piece of masking tape and attaching it to the inoperative equipment or to its cockpit control. Placarding is essential since it reminds the pilot that the equipment is inoperative. It also ensures that future flightcrews and maintenance personnel are aware of the discrepancy.*

**8. INOPERATIVE EQUIPMENT AND REQUIRED INSPECTIONS.** An operator may defer maintenance on inoperative equipment that has been deactivated or removed and placarded inoperative.

*a. When the aircraft is due for inspection in accordance with the FAR, the operator should have all inoperative items repaired or replaced.*

*b. If an owner does not want specific inoperative equipment repaired, then the maintenance person must check each item to see if it conforms to the requirements of FAR § 91.213(d). The operator and maintenance personnel should also assess how permanent removal of the item could affect safe operation of the aircraft.*

(1) The repair interval categories (A, B, C, D, etc.) in the MMEL do not apply to FAR Part 91 MEL's.

(2) The maintenance person must furnish the owner/operator with a signed and dated list of all discrepancies not repaired.

(3) The maintenance person must ensure that each item of inoperative equipment that is to remain inoperative is placarded appropriately.

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Placard (Minimum 1/8-inch high letters)

Landing Light Inoperative:

**PREVENTIVE MAINTENANCE ENTRY:**

(DATE) Total time \_\_\_\_\_ hours, Landing light bulb removed in accordance with (manufacturer) maintenance manual, Chapter \_\_\_\_\_, page \_\_\_\_\_. Landing light switch placarded inoperative.

\_\_\_\_\_  
Pilot's Signature\_\_\_\_\_  
Certificate Number

Placard (Minimum 1/8-inch high letters)

Aircraft Heater Inoperative:

**MAINTENANCE ENTRY (FAR §43.9):**

(DATE) Total time \_\_\_\_\_ hours. Aircraft heater and control switch deactivated by capping heater fuel lines in accordance with (manufacturer) maintenance manual, Chapter \_\_\_\_\_, page \_\_\_\_\_. Heater control switch placarded inoperative.

\_\_\_\_\_  
Mechanic's Signature\_\_\_\_\_  
Certificate Number**Figure 1. Sample Maintenance Record Entries****9.-12. RESERVED**



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## CHAPTER 2. CONDUCTING OPERATIONS WITHOUT AN MEL

**13. APPLYING FAR § 91.213(d).** This chapter provides guidance for operators who elect to conduct flight operations under the provisions of FAR § 91.213(d). Operating under FAR § 91.213(d) requires no application to or approval from FAA. An operator, after operating under FAR § 91.213(d), may elect at any time to apply for authorization to operate under an MEL (Chapter 3).

**14. THE DECISION SEQUENCE.** Figure 2 is a flow chart depicting the typical sequence of events a pilot or operator, operating under FAR § 91.213(d), should follow when the pilot or operator discovers inoperative equipment. For example, during a preflight inspection for a VFR-day, cross-country flight, the pilot discovers at the number 2 automatic direction finder (ADF) head is inoperative.

*a. The pilot checks the aircraft's equipment list or KOL* to see if the number 2 ADF is a required item (FAR § 91.213(d)(2)(ii)). If the number 2 ADF is required in the equipment list or KOL, the aircraft is not airworthy. The operator must have the number 2 ADF replaced or repaired before operating the aircraft. In this example, the number 2 ADF is not a required item on the equipment list.

*b. Next, the pilot checks the airworthiness regulation* under which the aircraft was certificated to determine if the number 2 ADF is part of the VFR-day type certificate (FAR § 91.213(d)(2)(i)). (These requirements are summarized in a TCDS, copies of which are available at FSDO's or from qualified maintenance personnel.) If the number 2 ADF is required as part of the VFR-day type certification, the aircraft is not airworthy. The operator must have the number 2 ADF replaced or repaired before operating the aircraft. In this example, the number 2 ADF is not required by type certificate.

*c. Next, the pilot checks to see if an AD requires the number 2 ADF.* The pilot can accomplish this by checking the aircraft's maintenance log to see if the number 2 ADF was installed as a result of an AD. However, it may be necessary for the pilot to consult a qualified maintenance person to determine AD compliance. If an AD requires the number 2 ADF to be operative, the aircraft is not airworthy. The operator must have the number 2 ADF replaced or repaired before operating the aircraft. In this example, there is no AD require the number 2 ADF to be operative.

*d. Next, the pilot checks to see the number 2 ADF is required by FAR §§ 91.215, 91.205, or 91.207.* The pilot can accomplish this by checking those sections of the FAR or by consulting with a maintenance technician or FSDO personnel. If any of those sections of the FAR require a number 2 ADF, then the aircraft would not be airworthy with the number 2 ADF inoperative. The operator must have the number 2 ADF replaced or repaired before operating the aircraft. In this example, those sections of the FAR do not require the number 2 ADF to be operative.

*e. At this point the inoperative number 2 ADF* must either be removed from the aircraft (FAR § 91.213(d)(3)(i)) or deactivated (FAR § 91.213(d)(3)(ii)). The person removing or deactivating the number 2 ADF must placard it inoperative in the appropriate location. (A pilot should consult maintenance personnel before deactivating or having maintenance personnel remove any item of equipment.)

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During the preflight inspection, the pilot recognizes inoperative instruments or equipment.		
Is the equipment required by the aircraft's equipment list or the kinds of § 91.213 (d) (2) (ii) .)		If YES, the aircraft is unairworthy and maintenance is required.
If NO, is the equipment required by the VFR-day type certificate requirements prescribed in the airworthiness certification regulations? (FAR § 91.213 (d) (2) (ii) .) See appendix 1 of this AC.		If YES, the aircraft is unairworthy and maintenance is required.
If NO, is the equipment required by AD? (FAR § 91.213 (d) (2) (iv) .)		If YES, the aircraft is unairworthy and maintenance is required.
If NO, is the equipment required by FAR §§ 91.205, 91.207, etc.? (FAR § 91.213 (d) (2) (iii) .)		If YES, the aircraft is unairworthy and maintenance is required.
If NO, the inoperative equipment must be removed from the aircraft (FAR § 91.213 (d) (3) (i)) or deactivated (FAR § 91.213 (d) (3) (ii)) and placarded as inoperative.		
<p>At this point the pilot shall make a final determination to confirm that the inoperative instrument/equipment does not constitute a hazard under the anticipate operational conditions before release for departure.</p>		

Figure 2. Pilot Decision Sequence When Operating Without An MEL.

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*f. Finally, the pilot should decide whether the inoperative number 2 ADF creates a hazard for the anticipated conditions of the flight, e.g., VFR-day.*

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### CHAPTER 3. OPERATING AIRCRAFT WITH AN MEL

**19. APPLICABILITY.** This chapter provides guidance for operators who want to conduct flight operations under the provisions of an MEL.

**20. APPLYING FOR MEL APPROVAL.** FAA has only one procedure for the issuance of FAR Part 91 MEL's, and it is the procedure the FSDO will follow for FAR Part 91 MEL authorizations. The operator who wishes to conduct operations with an MEL must contact the FSDO which has jurisdiction over the geographic area where the aircraft is based and make an appointment.

*a. FAR Part 91 operators who received MEL authorization* under the approval system in place before July 5, 1990, have letters of authorization that will expire. Those operators may continue to operate as usual; however, at least 30 days before the letter is due to expire, the operator should contact the issuing FSDO so that the FSDO can issue a new LOA.

*b. For FAR Part 91 operators seeking MEL authorization* under the current approval system, the FSDO will assign a Flight Standards inspector to advise the applicant about FAR requirements pertinent to using an MEL. During the initial appointment, the applicant will likely be dealing with a team of inspectors from the operations, airworthiness, and avionics units.

*c. The inspector will provide the applicant* with a copy of the appropriate MMEL, a copy of this AC, and a copy of the preamble to the MMEL. If the operator has installed items of equipment that are not on the MMEL, the operator must request that the MMEL be amended to include those items of equipment. This request is made to the FSDO.

*d. The operator and the team of inspectors* discuss the requirements for the procedures document. When FSDO personnel believes that the operator understands the requirements for operating with an MEL, the FSDO issues the operator the LOA (appendix 4).

(1) The LOA contains the legal name of the operator and the address of the operator's principal base of operations.

(2) Both the FAA inspector and the operator (or the operator's bona fide representative) sign the LOA.

*e. If, after meeting with FSDO personnel and discussing MEL operational considerations,* an inspector believes that the applicant does not have a good understanding of the requirements, the FSDO will not issue the LOA. If the LOA is still desired, the applicant should obtain the necessary understanding of the requirements from appropriate sources. After obtaining and understanding the requirements, the applicant can again request the LOA from the FSDO. The applicant could also elect to operate under FAR § 91.213(d).

*f. Once the FSDO issues the LOA,* the applicant is then responsible for developing a document that contains O and M procedures for disabling or rendering inoperative items of equipment in accordance with FAR Parts 43, 91, or 145 (if a repair station accomplishes the activity), as appropriate. No further FAA approval is necessary, and the operator can begin flight operations. The MMEL, preamble, LOA, and the procedures document are now considered an MEL.

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(1) The operator should develop the O and M procedures using guidance contained in the manufacturer's aircraft flight and/or maintenance manuals, the manufacturer's recommendations, engineering specifications, and other appropriate sources. The operator may consult FSDO airworthiness inspectors for advice or clarification, but the operator is responsible for preparing the document.

(2) The operator must consider the following when preparing the procedures documents.

(i) The operator's procedures document may be more restrictive than the MMEL either by the applicant's choice or because of AD's or operating rules. The operator's procedures document may not be less restrictive than the MMEL.

(ii) The title page of the procedures document must contain the following statement:

This MEL is applicable to FAR Part 91 operations only and may not be used for operations conducted under FAR Parts 121, 125, 129, or 135.

(iii) The operator must use the ATA numbering system for equipment and instruments, as is used in all MMEL's (appendix 1). The operator must use the ATA numbering system in sequence when describing O and M procedures, including the numbers for equipment installed in all aircraft. When equipment is not installed in a specific aircraft, the applicant need not develop O and M procedures for those items of equipment.

(iv) Operators must ensure that the procedures document lists the items of equipment that are actually installed on the specific aircraft. This provides guidance to a pilot as to which items of equipment may be inoperative for a particular operation.

(v) Equipment specifically required by the airworthiness rule under which the aircraft is type certificated, equipment required by AD, and equipment required for specific operations under FAR § 91.213(b)(1), (2) and (3) must be operative. It is important to note that all items related to the airworthiness of the aircraft that are not included on the MMEL must be operative.

(vi) The Parts A, B, C, and D codes, listed in column 1 of the MMEL, apply only to operations conducted under FAR Parts 121, 125, 129, and 135.

(vii) Where the MMEL states "as required by FAR," the procedures document should list the particular FAR by part and section, or describe the actual FAR requirement applicable to the operator's particular operation. For example, where the FAR requires a clock for IFR flight, the operator's procedures document should say, "May be inoperative for VFR."

(viii) The procedures document must specify suitable limitations in the form of placards, maintenance procedures, crew operating procedures, and offer restrictions to ensure an acceptable level of safety.

(ix) The procedures document must specify those conditions under which an item may be inoperative. The remarks must also identify required maintenance or operational tasks. The symbol "O" or "M", placed in column 4 of the MMEL (appendix 1), indicates that an O and M procedure is applicable to that item. Indicating O and M procedures in the procedures document provides flightcrews and ground support personnel with a single procedural reference document.

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(x) If the O and M procedures are already stated in the AFM, the maintenance manual, or other available FAA-approved source, the operator needs to show only the reference, e.g., O: AFM, pp. 3-8 through 3-10, para. 347. If the operator uses this reference format in the procedures document, the referenced source must be readily available to the ground support personnel, and a copy of the references source must be carried in the aircraft and be readily available to the flightcrew.

(xi) If the O and M procedures are not in the AFM, the maintenance manual, or other available FAA-approved source, or if the operator wishes to use a different procedure, then the operator must list the procedure in the procedures document.

(xii) The procedures document may not conflict with the AFM limitations, emergency procedures, AD's, or the AMM.

(3) An operator may begin operations before completion of the procedures document. If the operator has not yet developed a procedure for an item, that item must be operative. When an instrument or item of equipment becomes inoperative, the operator must follow the procedure indicated in the procedures document or the operator could be in noncompliance with the FAR.

**21. MEL AUTHORIZATION.** The MEL applies only to a particular aircraft make, model, serial number, and registration number. Also, it applies only to the operator who received the authorization.

*a. When more than one operator has operational control of a specific aircraft,* all operators must meet with inspectors from the issuing FSDO to discuss MEL operational considerations, as described in paragraph 20. The FSDO may find it appropriate to list all operators on the LOA. Each operator must sign the "Statement of Operator" on the LOA.

*b. The FSDO may issue operators who use several aircraft* of the same type a single LOA that lists each aircraft by serial and registration numbers. The FSDO will issue separate letters for different types of aircraft.

(1) When operators add or delete aircraft of the same type from their fleet, they must notify the FSDO having oversight within 10 calendar days following the change. The FSDO will reissue the LOA containing the new information. Again, both the operator and the inspector must sign the new LOA.

(2) The operator must surrender the previous letter upon reissuance of a new one. The FSDO should place the old letter in the operator's file.

*c. At any time after operating with a FAR Part 91 MEL,* an operator may elect to operate under FAR § 91.213(d). The operator must surrender the LOA to the issuing FSDO and must conform to all provision of FAR § 91.213(d) during operations.

**22. REVISIONS.** The operator may have to revise the procedures document under several conditions. The AEG may authorize an FOEB to revise the MMEL, the operator may add equipment, or the FOEB may develop a type specific MMEL for a single-engine aircraft.

*a. When the FOEB revises an MMEL,* the FAA automated, national MMEL data base notifies operators who have MEL authorizations by mail. The operator is then responsible for obtaining a copy of the revised MMEL from the FSDO that issued the authorization. Within 30 calendar days of notification, the operator must replace the superseded revision of the MMEL with the current revision and add or delete procedures to the procedures document, as applicable.



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**b. Within 10 calendar days of installing new equipment** not on the MMEL, the operator may request that the MMEL be amended.

(1) If the items of newly installed equipment are not instruments or equipment specifically required by the airworthiness rule under which the aircraft is type certificated, an AD, or for specific operations under FAR § 91.213(b)(1), (2) or (3); and exceed what is listed on the MMEL; and the FSDO has determined that the equipment has not previously been denied for inclusion in an MMEL, the operator may petition the FOEB for inclusion of the newly installed equipment in the MMEL. All petitions, with appropriate supporting information, will be forwarded by the FSDO to the appropriate FOEB. Then the operator may add the equipment temporarily to the MMEL and develop appropriate O and M procedures for the equipment. The operator may then operate with the equipment inoperative pending a decision by the FOEB on the operator's request for an MMEL revision to include the equipment.

(2) If the FOEB has previously denied the inclusion of the equipment, or if the equipment is safety related, or if the equipment was previously installed or is "factory original," the operator may still petition the FOEB through the FSDO for inclusion of the equipment in the MMEL. However, the operator may not gain relief for the equipment by adding the equipment to the MMEL temporally and adding procedures to the procedures document pending the FOEB's decisions. The equipment must be operative before operating the aircraft.

**c. Although FAA has developed a generic MMEL** for operators of single-engine aircraft, an FOEB may decide that a complex, turbine-powered single-engine aircraft requires a type-specific MMEL. For example, an FOEB has developed a type-specific MMEL for the Cessna 208, Caravan.

(1) When an FOEB develops a specific MMEL for a single-engine aircraft, the FAA will notify all holders of MEL's for that aircraft under the generic MMEL that the specific MEL is available.

(2) Within 30 calendar days of notification, the operator must obtain the MMEL from the FSDO and begin the process for a new LOA. Only by issuing a new LOA will the FSDO be assured that the operator has and is using the type-specific MMEL.

(3) Once the FSDO issues the new LOA, the operator must develop, within an additional 30 calendar days, a new procedures document that conforms to the requirements of the type-specific MMEL. The operator will find that most of the procedures that were acceptable under the generic MMEL will transfer to the new procedures document. If equipment becomes inoperative while the operator is developing the new procedures document, the operator may still use the previous procedures, as appropriate.

**23. CONDUCTING OPERATIONS WITH AN MEL.** In addition to carrying the documents that comprise the MEL onboard the aircraft, the operator must have onboard any technical manuals needed to accomplish O and M procedures. Figure 3 illustrates the sequence of events involved in applying the MEL to inoperative equipment.

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**a. Inoperative Items Before Flight.** During a preflight inspection for a VFR-day flight, the pilot discovers a navigation light is inoperative.

(1) The pilot checks the aircraft's MEL to determine under what, if any, flight conditions the aircraft could be operated without operator navigation lights. The MEL indicates that the aircraft may be operated during daylight hours without operable navigation lights.

(2) The pilot checks the procedures document and deactivates the navigation lights by pulling the correct circuit breaker and having it collared by an appropriately certificated person.

(3) The pilot places a placard which indicates that the lights are inoperative near the navigation light control.

(4) The pilot examines the conditions of the proposed flight and determines that the flight can be conducted safely without navigation lights.

**b. In-Flight Failures.** An MEL applies only to the takeoff of an aircraft with inoperative instruments or equipment. The pilot's operating handbook or the AFM indicate procedures to follow for instrument or equipment failure in flight. The pilot in command (PIC) should handle the in-flight failure in accordance with those procedures. As soon as possible after landing safely, the PIC must enter a notation of the Inoperative equipment in the aircraft's maintenance records, logbooks, or discrepancy record. Before the next takeoff, the pilot must apply the MEL to inoperative equipment as per the procedures in paragraph a. above. An MEL allows the PIC to defer maintenance on many items under the following conditions:

(1) The aircraft is in a condition for safe flight, and

(2) For the inoperative item, the pilot has followed the specific conditions, limitations, and procedures in the procedures document.

**c. Deactivation or Removal and Placarding.** See: Chapter 1, paragraph 7.

**d. Correcting MEL Inoperative Items.** The MEL permits operations with inoperative items of equipment for the minimum period of time necessary until the equipment is repaired. It is important that operators have repairs done at the earliest opportunity in order to return the aircraft to its design level of safety and reliability. In all cases, inoperative equipment must be repaired or the maintenance deferred at the aircraft's next required inspection (FAR § 91.405(c)).

(1) Operators shall establish procedures to correct those inoperative items authorized within specified time requirements.

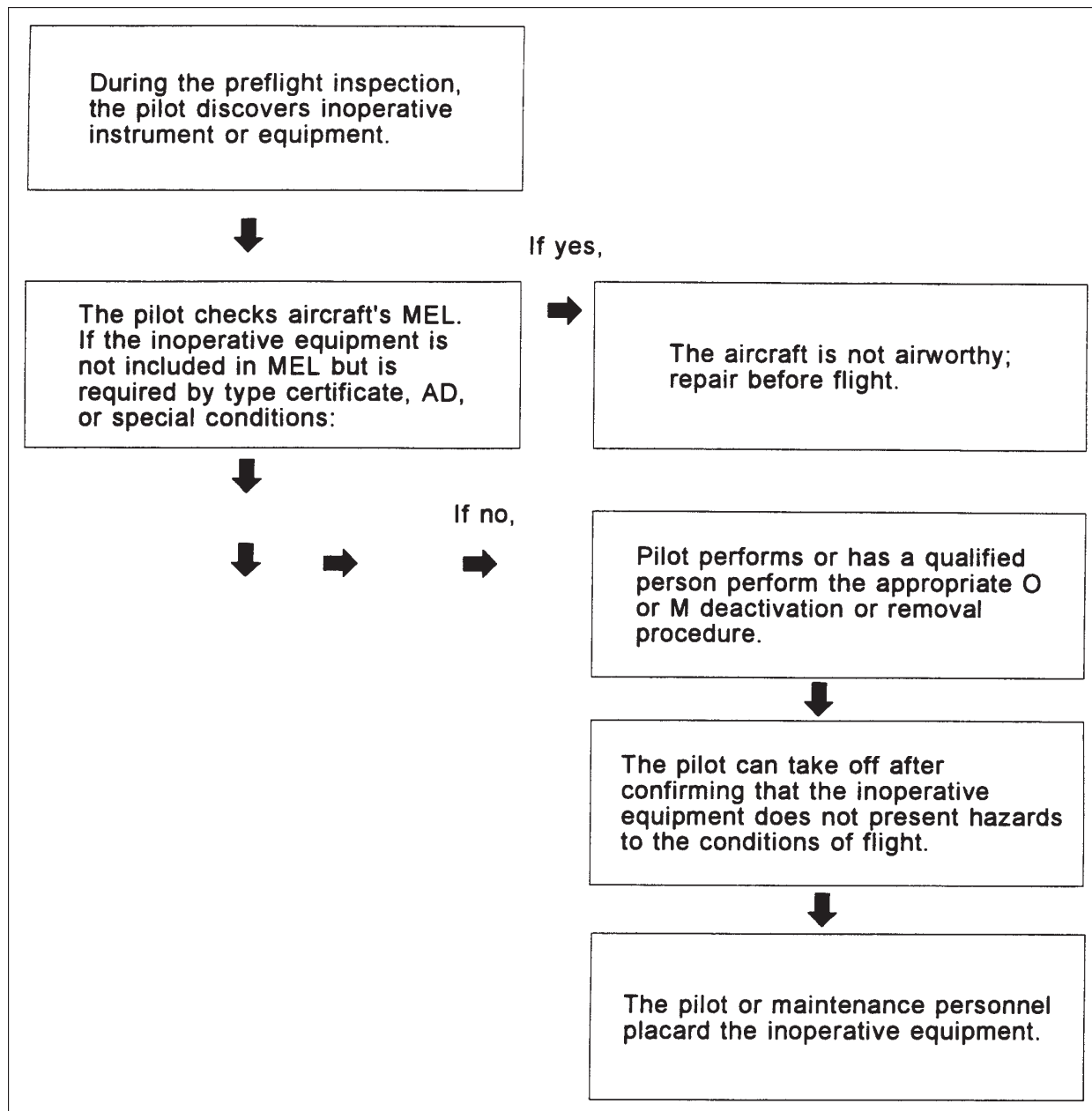
(2) Owners of aircraft operated under FAR Part 91 may opt to use one of several types of airworthiness inspection systems, depending upon the operator's use of the aircraft. Therefore, the tie between required inspections or inspection segments will vary.

(3) Items of inoperative equipment, authorized by the MEL to be inoperative, must be inspected or repaired by qualified maintenance personnel, or maintenance deferred, at the next 100 hour, annual, progressive, or unscheduled inspection. However, if FAR § 91.213 requires that an item be repaired, the item cannot be deferred.

**e. Recordkeeping Requirements.** A record of inoperative equipment must remain in the aircraft so pilots will be aware of all discrepancies.

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**Figure 3. Pilot Decision Sequence When Operating With An MEL**

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(1) Since some operators do not carry aircraft logbooks in the aircraft, a discrepancy record or log (figure 4) is a good alternative. When an operator uses this type of discrepancy log in lieu of the aircraft's maintenance records, the operator must retain the log as a part of the aircraft's records as per FAR § 91.417(b).

(2) If the operator elects to use the aircraft maintenance record to log inoperative items, that portion of the record must be carried onboard the aircraft during all operations.

(3) Corrective actions and maintenance procedures shall be accomplished and recorded in accordance with FAR §§ 43.9, 91.405, and 91.417.

(4) Failure to record an inoperative item may result in an operation of the aircraft contrary to the FAR because subsequent pilots would not be able to determine the airworthiness of the aircraft.

***f. Aircraft Used in Multiple Operations.***  
FAR § 91.213(c) allows a person who has an approved MEL under FAR Parts 125, 129, or 135 to use that MEL for FAR Part 91 operations. The FAR Parts 121, 125, 129, or 135 MEL must specify requirements for authorized FAR Part 91 operators to comply with the more restrictive provisions established in the approved MEL. It is important that operators be capable of conducting operations in accordance with the MEL. This includes, but is not limited to, accomplishing required maintenance in accordance with the certificate holder's requirements.

(1) The use of a leased aircraft creates a situation where several persons may be operating the same aircraft under different regulations. For example, a Cessna 340 could be operated by an approved school under FAR Part 91, by an air carrier under FAR Parts 135, and by a rental pilot under FAR Part 91. FAA will not approve multiple MEL's, which would create pilot confusion, with discrepancy lists and sets of procedures for the same aircraft. In the example, the aircraft would operate under the FAR Part 135 MEL, including the A, B, C, and D codes, with approval from the FSDO for other users to conduct operations under other regulations.

(2) FAA will grant operators approval for multiple users of an MEL under FAR Parts 121, 125, 129, or 135 MEL, subject to the following conditions:

(i) The operator is responsible for training all persons in the MEL's use, including the logging and clearing of discrepancies and the use of the A, B, C, and D codes.

(ii) Operators shall maintain a complete, current list of all persons trained and authorized to use the MEL.

(iii) The operator is responsible for determining the aircraft's maintenance status on its return from a FAR Part 91 operation. The operator must accomplish this before the aircraft is put back into FAR Parts 121, 125, 129, or 135 service.

(iv) FAA Principal Operations Inspectors shall verify that operators have established procedures that ensure an acceptable level of safety before authorizing persons to use the MEL under FAR Part 91.

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COMPANY or OPERATOR'S NAME: \_\_\_\_\_

N \_\_\_\_\_

LOG SHEET NUMBER: \_\_\_\_\_

DATE: \_\_\_\_\_

LOCATION: \_\_\_\_\_

DISCREPANCY: \_\_\_\_\_

CORRECTIVE ACTION: \_\_\_\_\_

\_\_\_\_\_  
Signature\_\_\_\_\_  
Certificate Number\_\_\_\_\_  
Date**Figure 4. Sample Equipment Discrepancy Record**