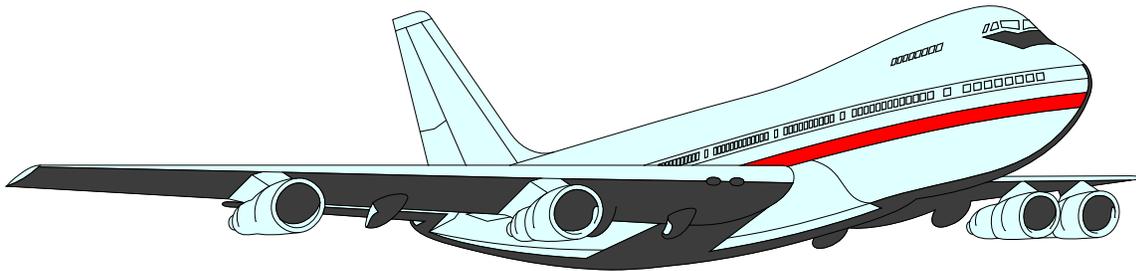


Flight Engineer Knowledge Test Guide



August 2018



Introduction

FAA-G-8082-9, dated August 2018, Flight Engineer Knowledge Test Guide, provides information for preparing you to take one or all of the following airman knowledge tests. This document supersedes all previously dated FAA-G-8082-9 versions.

<u>Test Name</u>	<u>Test Code</u>
Flight Engineer Turbojet/Basic	FEX
Flight Engineer Turboprop/Basic	FET
Flight Engineer Reciprocating Engine/Basic	FEN
Flight Engineer Turbojet (added rating)	FEJ
Flight Engineer Turboprop (added rating)	FEP
Flight Engineer Reciprocating Engine (added rating)	FER

At one time, the flight engineer functioned as an inflight maintenance person. Today, the flight engineer is a technical expert, who must be thoroughly familiar with the operation and function of various airplane components. The principal function of the flight engineer is to assist the pilots in the operation of the airplane. Specific duties vary with different airplanes and operators.

The questions and answers on the Flight Engineer Knowledge Tests pertain only to airplanes that require a flight engineer. Because the questions and answers cover a wide scope of airplanes, powerplants, and systems, some questions are general in nature. The information contained in the questions and answers should never take precedence over specific information furnished by a manufacturer in the operation of an airplane.

Federal Aviation Administration (FAA) airman knowledge tests are effective instruments for aviation safety and regulation compliance measurement. However, these tests can only sample the vast amount of knowledge every crewmember needs to operate safely in the National Airspace System (NAS).

Comments may be emailed to the [Airman Testing Branch mailbox](#).

Knowledge Test Applicant Identification and Eligibility Requirements

You should determine what knowledge test prerequisites are necessary before going to the testing center. An instructor or FAA Flight Standards District Office (FSDO) may advise you regarding the documentation required to be presented at the testing facility. Testing center personnel will not begin the test until your identification and eligibility is verified.

Prior to taking a Flight Engineer Airman Knowledge Test, you must be able to read, speak, and understand the English language and have documentation that verifies you are at least 19 years of age.

For identification and proof of age requirements, refer to the FAA Airman Knowledge Testing Authorization Requirements Matrix located at http://www.faa.gov/training_testing/testing/media/testing_matrix.pdf.

An applicant must present at least one of the following documents to show they meet the 14 CFR part 63, section 63.37 experience requirements for all basic knowledge tests listed above:

- FAA or International Civil Aviation Organization (ICAO) member nation unrestricted commercial pilot certificate or license with an instrument rating; or airline transport pilot certificate or license not limited to visual flight rules (VFR).

- Original FAA Form 8060-7, Airman's Authorization for Written/Knowledge Test.
 - **Note:** *The FAA Form 8060-7 is obtained by presenting documentation which shows the applicant meets the experience requirements of 14 CFR part 63, section 63.37 to an FAA Aviation Safety Inspector at a FSDO. However, you may take a knowledge test before acquiring the flight training required by 14 CFR part 63, section 63.37.*

An applicant must present at least one of the following documents to show they meet the experience requirements for all added rating tests listed above:

- Flight Engineer Certificate.
- Airman Knowledge Test Report (AKTR) for a flight engineer original class rating.

Acceptable forms of retest authorization for all tests listed above:

- Original passing AKTR.
- Original expired AKTR.
- Original failed AKTR.
 - **Note 1:** *An applicant retesting **after failure, within 30 days** of failing the knowledge test, is required to submit the applicable AKTR indicating failure, along with an endorsement from an authorized instructor who gave the applicant the required additional training.*
 - **Note 2:** *An applicant retesting, **more than 30 days after failing the knowledge test**, is only required to submit the applicable AKTR indicating failure. (14 CFR part 63, section 63.41).*

For a summary of knowledge test eligibility requirements for all certification areas listed above, refer to the FAA Airman Knowledge Testing Authorization Requirements Matrix located at http://www.faa.gov/training_testing/testing/media/testing_matrix.pdf.

Knowledge Areas on the Tests

You must pass a knowledge test on the areas specified by 14 CFR part 63, section 63.35. The areas are arranged in the following order on the knowledge tests: applicable Code of Federal Regulations; theory of flight and aerodynamics; meteorology with respect to engine operations; operating procedures (Pre-flight, normal, and emergency); airplane equipment; airplane systems; limitations (airplane procedures and engine operations); and math computations (engine operations, fuel consumption, center of gravity, and airplane loading).

Test Descriptions

All test questions are the objective, multiple-choice type. 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 minimum passing score is 70 percent.**

The following tests are for original class ratings and each contains 80 questions. You are allowed three hours to complete each test.

- Flight Engineer Turbojet/Basic (FEX)
- Flight Engineer Turboprop/Basic (FET)
- Flight Engineer Reciprocating Engine/Basic (FEN)

If you desire to add a class rating to your flight engineer certificate, you must successfully complete a knowledge test appropriate to the desired class rating. The following tests are for

additional class ratings and each contains 50 questions. You are allowed two hours to complete each test.

- Flight Engineer Turbojet (added rating) (FEJ)
- Flight Engineer Turboprop (added rating) (FEP)
- Flight Engineer Reciprocating Engine (added rating) (FER)

Test Registration

To register for your FAA knowledge test, please contact PSI Services LLC at 1-800-211-2753. They can assist you with registering and scheduling your test.

Acceptable forms of authorization and retesting procedures are available in the latest version of the Applicant Identification, Information, Verification, & Authorization Requirements Matrix located at http://www.faa.gov/training_testing/testing/media/testing_matrix.pdf.

Test Taking Tips

Prior to launching the actual test, the AKT ODA Holder's testing software will provide you with an opportunity to practice navigating through the test. This practice (or tutorial) session may include a "sample" question(s). These sample questions have no relation to the content of the test, but are meant to familiarize you with the look and feel of the system screens, including selecting an answer, marking a question for later review, time remaining for the test, and other features of the testing software.

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

- Carefully read the instructions given with the test.
- Answer each question in accordance with the latest regulations and guidance publications.
- Read each question carefully before looking at the answer options. You should clearly understand the problem before attempting to solve it.
- After formulating an answer, determine which answer option corresponds with your answer. The answer you choose should completely resolve the problem.
- From the answer options 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, erroneous, or derived from popular misconceptions.
- If a certain question is difficult for you, it is best to mark it for review and proceed to the next question. After you answer the less difficult questions, return to those you marked for review and answer them. The review marking procedure will be explained to you prior to starting the test. Although the computer should alert you to unanswered questions, make sure every question has an answer recorded. This procedure will enable you to use the available time to maximum advantage.
- When solving a calculation problem, select the answer that most nearly matches your solution. The problem has been checked by various individuals and with different 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.

Use of Test Aids and Materials

You may use aids, reference materials, and test materials within the guidelines listed below, as long as, 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, log sheets, 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, signals, weather data, frequencies, weight-and-balance formulas) are permissible.
3. Testing centers may provide a calculator to you and/or deny 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 Unit Member (formerly referred to as 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 Unit Member 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 Unit Member makes the final determination relating to test materials and personal possessions you may take into the testing area.

Testing Procedures for Applicants Requesting Special Accommodations

If you are an applicant with a learning or reading disability, you may request approval from the Airman Testing Branch, through the local FSDO or IFO, to take an airman knowledge test using one of the three options listed below, in preferential order:

- Option 1.** Use current testing facilities and procedures whenever possible.
- Option 2.** You may use a self-contained, electronic device, which pronounces and displays typed-in words (e.g., the Franklin Speaking Wordmaster®) to facilitate the testing process. (**Note:** The device should consist of an electronic thesaurus that audibly pronounces typed-in words and presents them on a display screen. The device should also have a built-in headphone jack for private listening in order to avoid disturbing others during testing.)
- Option 3.** If you do not choose to use the first or second option, you may request Unit Member assistance in reading specific words or terms from the test questions and/or supplement book. In the interest of preventing compromise of the testing process, the Unit Member must be an individual with no aviation background or expertise. The Unit Member must provide reading assistance only, with no explanation of words or terms. When this option is requested, the FSDO or IFO inspector must contact the Airman Testing Branch for assistance in selecting the test site and assisting Unit Member.

Prior to approval of any option, the FSDO or IFO Aviation Safety Inspector must advise you of the regulatory certification requirement of being able to read, write, speak, and understand the English language.

Cheating or Other Unauthorized Conduct

Computer testing centers must follow strict security procedures to avoid test compromise. These procedures are established by the FAA and are covered in FAA Order 8080.6 (as amended), Conduct of Airman Knowledge Tests. The FAA has directed testing centers to terminate a test at any time a test Unit Member suspects a cheating incident has occurred. An FAA investigation will then be conducted. If the investigation determines that cheating or unauthorized conduct has occurred, any airman certificate or rating you hold may be revoked, and you will be prohibited for 1 year from applying for or taking any test for a certificate or rating under 14 CFR part 61.

Learning Statements

Learning statements, as used in airman knowledge testing, refer to a measurable level of knowledge a student should be able to demonstrate following a defined element of training. The most current Learning Statement Reference Guide for Airman Knowledge Testing is available at http://www.faa.gov/training_testing/testing/media/LearningStatementReferenceGuide.pdf.

We provide learning statements to help instructors and students become more familiar with the areas of knowledge applicable to the airman training, learning, studying, and testing processes.

Beyond serving as a useful reference in preparing for your airman knowledge test, the Learning Statement Reference Guide will assist you and your instructor in interpreting any learning statement codes that may appear on your Airman Knowledge Test Report. You will receive a test report immediately upon completion of the test. This report will list learning statement codes for any questions you may have answered incorrectly. You and your instructor should match the codes on the test report to the information in the Learning Statement Reference Guide in order to obtain the corresponding areas of knowledge deficiency.

Your instructor may be required to provide instruction on each of the areas of deficiency, and to provide a logbook or training record endorsement certifying you have demonstrated satisfactory knowledge in each area. Also, you must present the *original* Airman Knowledge Test Report to the examiner conducting your practical test. During the practical test, the examiner will refer to the learning codes and statements to evaluate your knowledge in the noted areas of deficiency.

Requesting a Hand-Score

If you wish to have your test hand-scored, you must submit a request, in the form of a signed letter, to the Airman Testing Branch. The request must be accompanied by a copy of your Airman Knowledge Test Report and a legible photocopy of a government issued identification with your photograph and signature. Mail or fax this information to: (Email requests are not accepted due to security issues.)

Federal Aviation Administration
Airman Testing Branch
P.O. Box 25082
Oklahoma City, OK 73125

Or fax to: 405-954-0550

Note: Comments regarding test questions, test procedures, or supplemental material content may be emailed to the [Airman Testing Branch mailbox](#).

Airman Knowledge Test Reports

Upon completion of the knowledge test, you will receive your Airman Knowledge Test Report, which reflects your score. The test report will be stamped with the testing center's raised/embossed seal.

The Airman Knowledge Test Report must be presented to the examiner prior to taking the practical test. During the oral portion of the practical test, the examiner is required to evaluate the noted areas of deficiency.

Should you require a duplicate Airman Knowledge Test Report due to loss or destruction of the original, send a signed request accompanied by a check or money order for \$12.00, payable to the FAA. Send the request to:

Federal Aviation Administration
Airmen Certification Branch
P.O. Box 25082
Oklahoma City, OK 73125

Airman Knowledge Test Reports are valid for the 24-calendar month period following the month you complete the practical test. **If the Airman Knowledge Test Report expires before completion of the practical test, you must retake the knowledge test.**

Training and Testing Publications and General Information

Most of the current Flight Standards Service airman training and testing publications can be obtained in electronic format from the FAA Website, www.faa.gov. The training and testing publications and general information can be found on the opening page of that website under the Training and Testing tab. If a publication is not available in electronic format, there are instructions for obtaining paper copies. Information found on the website includes the following:

- Advisory Circulars
- Airworthiness Directives
- Code of Federal Regulations
- Computer Testing Supplements
- Knowledge Test Centers
- Knowledge Test Statistics
- Learning Statement Reference Guide
- Practical Test Standards
- Training Handbooks
- Type Certificate Data Sheets

Advisory Circulars

Advisory circulars (ACs) provide guidance and information on various subjects related to airman certification.

Airworthiness Directives

Airworthiness Directives (ADs) are notifications to aircraft owners of a known safety deficiency with a specific model of aircraft, engine, avionics, or other system.

Code of Federal Regulations

The portion of 14 CFR containing what was formerly known as the Federal Aviation Regulations can be found on the Website. 14 CFR contains regulations designed to promote aviation safety, and govern all aviation activities in the United States.

Computer Testing Supplement

The Flight Engineer knowledge test questions may refer to figures contained in the Computer Testing Supplement for Flight Engineer (FAA-CT-8080-6 as revised). The supplement figures contain graphics, legends, and maps the applicant will need to successfully respond to certain knowledge test items. Testing center personnel will provide this supplement during the airman knowledge test. You can review the supplement prior to testing at http://www.faa.gov/training_testing/testing/supplements/media/FAA-CT-8080-6A.pdf. Marking in the supplement book is prohibited; however, you may request a photo copy of any figure either before or during your exam. This marked or unmarked copy must be returned to the proctor at the end of the exam.

Knowledge Test Statistics

Test statistics for all airman knowledge tests are contained in a series of tables organized by year and subject area. Individual tables are provided for the following subject areas: test volume, pass rates, average test scores, countries, regions, and district offices.

Practical Test Standards

The practical test standards outline the knowledge and skill requirements for each airman certificate and rating. The references listed in each task of the practical test standards indicate the specific publications used to develop the skill standards. The ability to issue immediate changes prior to publishing revised printed copies ensures the practical test standards are always accurate and usable.

Training Handbooks

The training handbooks are the basic information sources an airman applicant should refer to when preparing for the knowledge and practical tests for a specific certificate or rating.

Classification Code

Topic, Content and Specific (TCS) codes listed in this guide are **not** a description of the Learning Statement Codes (LSC) found in the 'Learning Statement Reference Guide for Airman Knowledge Testing' document, but are a hierarchical sequence of classification codes placing a question in a unique category. FAA knowledge test question development uses the following hierarchy:

- Topic— Overall subject matter topic code. The highest classification of overall subject matter a knowledge test item was developed to assess (e.g., Aerodynamics).
- Content—Secondary level subject matter code (e.g., Airspeed).
- Specific— the basic hierarchical classification code the subject matter for a knowledge test item (e.g., Thrust).

References Appendix

The Flight Engineer knowledge tests are based on the following references.

- 14 CFR part 1 Definitions and Abbreviations
- 14 CFR part 25 Airworthiness Standards: Transport Category Airplanes
- 14 CFR part 61 Certification: Pilots, Flight Instructors, and Ground Instructors
- 14 CFR part 63 Certification: Flight Crewmembers other than Pilots
- 14 CFR part 91 General Operating and Flight Rules
- 14 CFR part 121 Operating Requirements: Domestic, Flag, and Supplemental Operations
- 14 CFR part 125 Certification and Operations: Airplanes having seating capacity of 20 or more
- AC 00-33 – Nickel-Cadmium Battery Op/Man/Overhaul Practices
- AC 00-6 – Aviation Weather
- AC 20-117 – Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft
- AC 20-29 - Use of Aircraft Fuel Anti-icing Additive
- AC 43.13-1 - Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair
- AC 91-74 – Pilot Guide: Flight in Icing Conditions
- AC 120-58 – Pilot Guide for Large Aircraft Ground Deicing
- Aerodynamics for Naval Aviators
- Aeronautical Information Manual
- FAA-H-8083-1 – Aircraft Weight and Balance Handbook
- FAA-H-8083-3 - Airplane Flying Handbook
- FAA-H-8083-15 – Instrument Flying Handbook
- FAA-H-8083-25 – Pilot's Handbook of Aeronautical Knowledge
- FAA-H-8083-30 – Aviation Maintenance Technician Handbook – General
- FAA-H-8083-31 – Aviation Maintenance Technician Handbook – Airframe
- FAA-H-8083-32 – Aviation Maintenance Technician Handbook – Powerplant
- Type Certificate Data Sheets and Specifications

Note: *The latest revision of these references should be used.*