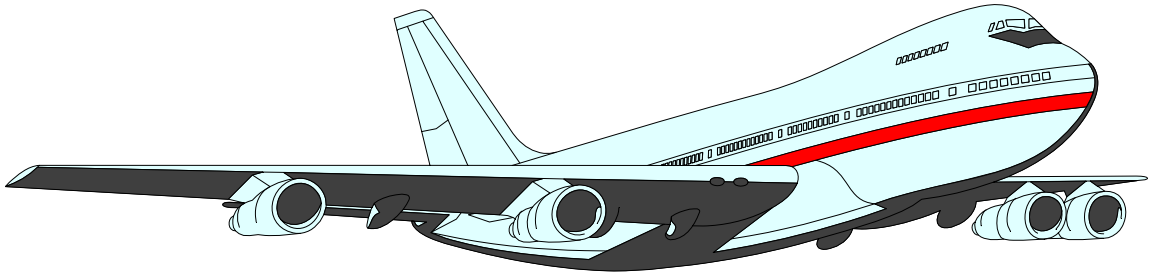
FAA-G-8082-9F

# FLIGHT ENGINEER
# KNOWLEDGE TEST GUIDE



**August 2012**

U.S. Department of Transportation
Federal Aviation Administration

# INTRODUCTION

FAA-G-8082-5F, Flight Engineer Knowledge Test Guide, provides information for preparing you to take one or all of the following airman knowledge tests. This document supersedes FAA-G-8082-9E, dated February 2012.

| TEST NAME | TEST CODE |
|---|---|
| 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 pilot needs to operate safely in the National Airspace System (NAS).

Comments may be e-mailed to AFS630Comments@faa.gov.

## KNOWLEDGE TEST ELIGIBILITY REQUIREMENTS

Prior to taking a Flight Engineer Knowledge Test, you must be able to read, speak, and understand the English language; have appropriate documentation to verify that you are 19 years of age; and meet the experience requirements of Title 14 of the Code of Federal Regulation (14 CFR) part 63, section 63.37.

The proof of age may be satisfied by presenting photo identification, such as a driver's license, a government or military identification card, passport, or similar identification.

To verify that you meet the experience requirements of 14 CFR part 63, section 63.37, it is necessary to obtain a written statement and signature from one of the following authorized persons:

- A qualified flight engineer with the appropriate class rating
- A U.S. Armed Forces flight engineer instructor for the same class of airplane
- A flight engineer instructor associated with 14 CFR part 121 training program
- An FAA Aviation Safety Inspector (operations/airworthiness)

The endorser must include a statement that they have personally verified that you meet the experience requirements of 14 CFR part 63, section 63.37. They must also identify their position, such as flight engineer certificate number, name of the training facility, and FAA inspector's office identification.

For a summary of knowledge test eligibility requirements for all certification areas listed above, refer to the FAA Airman Knowledge Testing Authorization Matrix located at:

http://www.faa.gov/training_testing/testing/airmen/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).

## DESCRIPTIONS OF THE TESTS

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 3 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 2 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

The FAA has designated two Airman Knowledge Testing (AKT) Organization Designation Authorization (ODA) Holders, which sponsor hundreds of knowledge testing center locations. These testing centers offer a full range of airman knowledge tests including: Aircraft Dispatcher, Airline Transport Pilot, Aviation Maintenance Technician, Commercial Pilot, Flight Engineer, Flight Instructor, Flight Navigator, Ground Instructor, Inspection Authorization, Instrument Rating, Parachute Rigger, Private Pilot, Recreational Pilot, Sport Pilot and Military Competence. Contact information for the AKT ODA Holders is provided below under Knowledge Test Centers.

The first step in taking a knowledge test is the registration process. You may either call a central registration phone number or appear at a testing center on a walk-in basis. If you choose to use a central registration phone number to schedule your test, you will need to be prepared to select a test date, choose a testing center, 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 AKT ODA Holder's cancellation policy. If you do not follow the AKT ODA Holder's cancellation policies, you could be subject to a cancellation fee.

## APPLICANT IDENTIFICATION AND TEST AUTHORIZATION

The next step in taking a knowledge test is providing proper identification. You should determine what knowledge test prerequisites are necessary before going to the computer-testing center. Your instructor or local 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.

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/airmen/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 AFS-630, 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 Standards Branch (AFS-630) 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 online at:

*www.faa.gov/training_testing/testing/airmen/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.

## 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 $1.00, payable to the FAA. Send the request to:

Federal Aviation Administration
Airmen Certification Branch, AFS-760
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
- Sample Knowledge Test questions
- 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 Supplements**

The knowledge testing supplements contain the graphics, legends, and maps that are needed to successfully respond to certain knowledge test items. ODA test center personnel will provide these supplements during the airman knowledge test. You can review them prior to testing at: http://www.faa.gov/training_testing/testing/airmen/test_questions/#cts

**Knowledge Test Centers**

The Knowledge Test Centers portion of the Website contains current listings of Airman Knowledge Testing (AKT) Organization Designation Authorization (ODA) Holders and other testing centers, and the registration telephone numbers to call to register for a test.

The following is a list of the ODA holders authorized to give FAA airman knowledge tests. This list should be helpful in case you choose to register for a test or simply want more information.

- **Computer Assisted Testing Service (CATS)**
  777 Mariners Island Blvd., Suite 200
  San Mateo, CA 94404
  **Applicant inquiry and test registration: 1-800-947-4228**
  From outside the U.S. (650) 259-8550

- **PSI**
  16821 SE McGillivray Blvd., Suite 201
  Vancouver, WA 98683
  **Applicant inquiry and test registration: 1-800-211-2753 or 1-800-211-2754**
  From outside the U.S. (360) 896-9111

**Knowledge Test Questions**

Sample questions are located in the Airman Knowledge Test Questions section of the Website and represent the types of questions included in the actual test banks. Practicing these questions will help you become familiar with similar questions on the airman knowledge tests. The knowledge test is not designed to intimidate any prospective airman; it is designed to measure an applicant's understanding of the rules, regulations and knowledge areas required to receive an FAA certificate.

**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:** the (usually hierarchical) sequence of classification codes that places 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).

# Flight Engineer Turbojet/Basic (FEX)
# Sample Questions

# FLIGHT ENGINEER TURBOJET/BASIC (FEX)

**1. While starting a turbine engine with an air starter, a hung start occurs before the starter disengages. Which procedure is correct?**

A—Shut down the engine.
B—Increase the air velocity to the starter.
C—Slowly increase the power lever until the engine accelerates to idle.

*Answer: A.*
*Learning Statement: Recall starter engine-starting procedures.*

**2. What is the highest ambient temperature that ice is likely to form in the engine inlet?**

A—visibly moist air and +45 °F.
B—visibly moist air and +70 °F.
C—relatively dry air and +32 °F.

*Answer: A.*
*Learning Statement: Recall effects of temperature-density altitude/icing.*

**3. Thermal protectors are used to**

A—stop windshield heaters from melting the glass.
B—protect motors from overheating.
C—allow pitot heaters to melt any icing near the tube.

*Answer: B.*
*Learning Statement: Recall electrical system-components/operating principles/characteristics/ static bonding and shielding.*

**4. What recovery would be appropriate in the event of compressor stall?**

A—reduce the thrust lever and then rapidly advance the thrust lever to decrease the angle of attack on the compressor blades, creating more airflow.
B—reduce the thrust lever and then follow the procedures in the AFM/POH/CFM.
C—advance the thrust lever slowly to increase airflow and decrease the angle of attack on one or more compressor blades.

*Answer: B.*
*Learning Statement: Recall turbine engines-components/operational characteristics/associated instruments.*

**5. (Refer to figures 46 and 47) What is the airplane weight at the end of cruise under operating conditions No. 2?**

A—100,860 pounds.
B—101,900 pounds.
C—110,900 pounds.

*Answer: A.*
*Learning Statement: Calculate weight and balance.*

# LIST OF REFERENCE MATERIALS SPECIFIC TO THE FLIGHT ENGINEER TURBOJET/BASIC (FEX)

| *Topic* | *Content* | *Specific* |
|---|---|---|
| **PLT002** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Airspeed |
| Aircraft Performance | Limitations | Airspeeds |
| **PLT003** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Weight and Balance | Center of Gravity | TCDS |
| Type Certificate Data Sheets and Specifications | | |
| Weight and Balance | Center of Gravity | TCDS |
| **PLT007** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | EPRs |
| **PLT011** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | EPRs |
| Aircraft Performance | Charts | Takeoff Power |
| Aircraft Performance | Charts | Temperature |
| **PLT012** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Computations | NM/1000# |
| **PLT016** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Aircraft Performance | Computations | Fuel Dump |
| **PLT018** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aerodynamics | Principles of Flight | Load Factor |
| **PLT019** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Computations | Cabin Altitude |
| **PLT021** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Weight and Balance | Aircraft Loading | Definitions |
| Weight and Balance | Aircraft Loading | Formulas |
| Weight and Balance | Center of Gravity | % of MAC |
| Weight and Balance | Center of Gravity | Shifting Weight |
| Weight and Balance | Center of Gravity | Weight Shift |
| **PLT028** | | |
| 14 CFR 1 | | |
| Regulations | 14CFR Part 1 | Flightcrew Member |
| **PLT041** | | |
| AC 00-6 Aviation Weather | | |
| Weather | Meteorology | Pressure |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Systems | Flight Instruments | Altimeter |
| **PLT094** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Weight and Balance | Aircraft Loading | Definitions |
| **PLT108** | | |
| AC 120-58 Pilot Guide for Large Aircraft Ground Deicing | | |
| Airport Operations | Ground Deicing | Glycol |
| Airport Operations | Ground Deicing | Glycol Properties / Mixtures |
| Airport Operations | Ground Deicing | Procedures / Good Practices |
| Airport Operations | Ground Deicing | Temperature |
| Airport Operations | Ground Deicing | Types |
| AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft | | |
| Airport Operations | Ground Deicing | Temperature |
| Airport Operations | Ground Deicing | Two Step Deice / Anti-ice |
| **PLT109** | | |
| Aviation Maintenance Technician Handbook - General FAA-H-8083-30 FAA-H-8083-30 | | |
| Aircraft Systems | Electrical | Batteries / Maintenance / Hazards |

**PLT110**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Landing Gear | Brake System Operation and Components |
| Aircraft Systems | Landing Gear | Brakes |

**PLT114**

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

| | | |
|---|---|---|
| Airport Operations | Preflight | Aluminum Corrosion |
| Airport Operations | Preflight | Self-Locking Nuts |

**PLT118**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Emergency Instruments |

**PLT124**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Aircraft Performance | Atmospheric Effects | Atmospheric Density |
| Weather | Meteorology | Air Masses |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Performance | Atmospheric Effects | Airspeed |

**PLT128**

AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft

| | | |
|---|---|---|
| Weather | Hazardous | Icing |

**PLT132**

14 CFR 1

| | | |
|---|---|---|
| Regulations | 14CFR Part 1 | V speeds |
| Regulations | 14CFR Part 1 | V2 |

Aeronautical Information Manual

| | | |
|---|---|---|
| Weather | Meteorology | Pressure |

**PLT135**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Pressurization / Valves / Controls / Operation |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Performance | Charts | Cabin Pressure Altitude |
| Aircraft Systems | Environmental | Pressurization / Valves / Controls / Operation |

**PLT136**

AC 91-51 Effect of Icing on Aircraft Control and Airplane Deice and Anti-Ice Systems

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Turbine Characteristics |

**PLT137**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Vapor Cycling |

Cooling/Component/Operation/Servicin

**PLT138**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Landing Gear | Fusible Plugs |
| Aircraft Systems | Landing Gear | Tires |
| Aircraft Systems | Landing Gear | Wheels |

**PLT139**

14 CFR 121

| | | |
|---|---|---|
| Aircraft Systems | Landing Gear | Retracted Safety / Warning System |
| Regulations | 14CFR Part 121 | TAWS |

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fire Control | Sensors / Testing / Operation |

**PLT166**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | Pressure |

Aeronautical Information Manual

| | | |
|---|---|---|
| Aircraft Systems | Flight Instruments | Altimeter |
| Instrument Procedures | En Route | Altimeter Setting Procedures |

**PLT168**

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Angle of Attack |
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |

**PLT173**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | Atmosphere |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Weather | Meteorology | Atmosphere |
| Weather | Meteorology | Pressure |

**PLT174**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Secondary | Yaw Dampner |

**PLT196**

Aeronautical Information Manual

| | | |
|---|---|---|
| Weather | Aeronautical Weather Reports | ATIS |

**PLT203**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | Atmosphere |
| Weather | Meteorology | High Altitude |

**PLT205**

14 CFR 91

| | | |
|---|---|---|
| Regulations | 14CFR Part 91 | Alcohol / Drug Limitations |

**PLT206**

AC 91-74 Pilot Guide: Flight in Icing Conditions

| | | |
|---|---|---|
| Aircraft Systems | De-Icing / Anti-Icing | Intake / Carburetor Icing |

**PLT207**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Emergency Lights |

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Static Wicks / Lightning Protection / Bonding |

Aviation Maintenance Technician Handbook - General  FAA-H-8083-30

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Circuit Breakers / Fuses / Relays / Switches |
| Aircraft Systems | Electrical | Generators / Alternators / Controls / Systems |
| Aircraft Systems | Electrical | Properties |

**PLT208**

Aeronautical Information Manual

| | | |
|---|---|---|
| Flight Operations | Emergency Procedures | Declare an Emergency |
| Flight Operations | Emergency Procedures | Hijacking |

**PLT209**

AC 91-74 Pilot Guide: Flight in Icing Conditions

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Instruments |

**PLT210**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Operation |
| Aircraft Systems | Powerplant | Turbine Components / Functions |

**PLT212**

14 CFR 1

| | | |
|---|---|---|
| Regulations | 14CFR Part 1 | Definitions |

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fire Control | Extinguishing Agent / System / Preflight |
| Aircraft Systems | Fire Control | Sensors / Testing / Operation |

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fire Control | Extinguishing Agent / System / Preflight |

Aviation Maintenance Technician Handbook - General  FAA-H-8083-30

| | | |
|---|---|---|
| Flight Operations | Emergency Procedures | Electrical Fires |
| Flight Operations | Emergency Procedures | Flammable Fluid Fires |
| Flight Operations | Emergency Procedures | Ground Emergencies |

**PLT214**

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aerodynamics | Flight Characteristics | Swept / Tapered Wing |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Flight Characteristics | Wing / Airfoil Characteristics |

**PLT235**

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |

**PLT236**
Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Flight Characteristics | Wing / Airfoil Characteristics

**PLT242**
Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Principles of Flight | Forces Acting on Aircraft

**PLT248**
Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Principles of Flight | Forces Acting on Aircraft

**PLT251**
Aviation Maintenance Technician Handbook - General FAA-H-8083-30
Aircraft Systems | Fuel / Oil | Fuel Servicing
Aircraft Systems | Fuel / Oil | Specifications
Aircraft Systems | Powerplant | Fuel Requirements

**PLT252**
Aviation Maintenance Technician Handbook - General FAA-H-8083-30
Aircraft Systems | Fuel / Oil | Fuel Specifications

**PLT253**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fuel / Oil | Fuel Boost Bumps
Aircraft Systems | Fuel / Oil | Fuel Heat

**PLT266**
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aerodynamics | Airfoils | Slots

**PLT273**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Hydraulic | Hazards
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Hydraulic | Accumulators
Aircraft Systems | Hydraulic | Filters / System
Aircraft Systems | Hydraulic | Hazards
Aircraft Systems | Hydraulic | Specifications

**PLT274**
AC 00-6 Aviation Weather
Weather | Meteorology | Icing

**PLT278**
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Performance | Atmospheric Effects | Temperature
AC 91-51 Effect of Icing on Aircraft Control and Airplane Deice and Anti-Ice Systems
Aircraft Systems | De-Icing / Anti-Icing | Intake / Carburetor Icing
Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Flight Instruments | Mach Meter

**PLT303**
Aerodynamics for Naval Aviators
Aerodynamics | Principles of Flight | Angle of Attack

**PLT305**
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aerodynamics | Airfoils | High Lift Devices

**PLT310**
Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Load Factor | Atmospheric Criteria
Aerodynamics | Performance | Weights / V Speeds / Runway Lengths

**PLT313**
Aircraft Weight and Balance Handbook, FAA-H-8083-1
Weight and Balance | Aircraft Loading | Definitions

**PLT318**
Aeronautical Information Manual
Flight Operations | Normal Procedures | Minimum Fuel Advisory

**PLT324**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fuel / Oil | Oil System
Aircraft Systems | Fuel / Oil | Oil System Failure Modes

**PLT326**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Gaseous Oxygen |
| Aircraft Systems | Environmental | Oxygen |

Aeronautical Information Manual

| | | |
|---|---|---|
| Human Factors | Aeromedical | Oxygen Mask Operation |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Oxygen |

**PLT327**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Oxygen |

**PLT338**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Pneumatics | Pneumatics |

**PLT343**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Performance | Atmospheric Effects | Temperature |
| Aircraft Performance | Density Altitude | Humidity / Temperature / Air Density |

**PLT346**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Primary | Ailerons |

**PLT347**

14 CFR 1

| | | |
|---|---|---|
| Regulations | 14CFR Part 1 | Definitions |

**PLT368**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Admission to Flight Deck |

**PLT385**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Cargo / Passenger Compartment |

14 CFR 91

| | | |
|---|---|---|
| Regulations | 14CFR Part 125 | Part 91 Operations |

**PLT386**

14 CFR 63

| | | |
|---|---|---|
| Regulations | 14CFR Part 63 | Certificate |
| Regulations | 14CFR Part 63 | Replacement Certificate |

**PLT388**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Cockpit Voice Recorders |
| Regulations | 14CFR Part 121 | Data Retention |
| Regulations | 14CFR Part 121 | Flight Recorder |

**PLT389**

14 CFR 125

| | | |
|---|---|---|
| Regulations | 14CFR Part 119 | Private Carriage / Non-common |

**PLT398**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Dispatch Contents |

**PLT400**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Required Documents for Flight |

**PLT404**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Emergency Equipment |
| Regulations | 14CFR Part 121 | Emergency Lights |

**PLT405**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Flashlight |
| Regulations | 14CFR Part 121 | MEL/CDL |

**PLT407**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Differences Training |
| Regulations | 14CFR Part 121 | Flight Crewmember Training |
| Regulations | 14CFR Part 121 | Initial Training |
| Regulations | 14CFR Part 121 | Recurrent Training |

**PLT409**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Deadhead / Duty Time |
| Regulations | 14CFR Part 121 | Duty Time Limitations |
| Regulations | 14CFR Part 121 | Duty Time Limitations - Sole Position |
| Regulations | 14CFR Part 121 | Flag Operations |
| Regulations | 14CFR Part 121 | Rest Periods |

**PLT410**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Recency of Experience |

14 CFR 125

| | | |
|---|---|---|
| Regulations | 14CFR Part 125 | Part 91 Operations |

14 CFR 63

| | | |
|---|---|---|
| Regulations | 14CFR Part 63 | Suspension or Revocation |

**PLT413**

14 CFR 25

| | | |
|---|---|---|
| Regulations | 14CFR Part 25 | Fuel Jettisoning |

**PLT427**

14 CFR 63

| | | |
|---|---|---|
| Regulations | 14CFR Part 63 | Required Certificates |

**PLT438**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Preflight |
| Regulations | 14CFR Part 121 | Supplemental Oxygen |

**PLT439**

14 CFR 125

| | | |
|---|---|---|
| Regulations | 14CFR Part 125 | Maintenance Tasks |

**PLT440**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Crew Duty Stations |
| Regulations | 14CFR Part 121 | Critical Phase of Flight |
| Regulations | 14CFR Part 121 | Emergency Evacuation Duties |

**PLT443**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Qualifications |

**PLT444**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Maintenance Log Entries |

**PLT447**

14 CFR 63

| | | |
|---|---|---|
| Regulations | 14CFR Part 63 | Medical Certificate Duration |
| Regulations | 14CFR Part 67 | Medical Deficiency |

**PLT448**

14 CFR 63

| | | |
|---|---|---|
| Regulations | 14CFR Part 63 | Certificate |

**PLT449**

14 CFR 1

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | IOE |

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Testing Prerequisites |

**PLT451**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Qualifications |

**PLT460**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | High Altitude Physiology |
| Regulations | 14CFR Part 121 | Qualifications |

**PLT462**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Emergency Equipment |

**PLT463**

14 CFR 63

| | | |
|---|---|---|
| Regulations | 14CFR Part 63 | Alcohol / Drug Testing |
| Regulations | 14CFR Part 63 | Drug / Alcohol Convictions |
| Regulations | 14CFR Part 63 | Suspension or Revocation |

**PLT464**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Crew Duty Stations |

**PLT473**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Secondary | Servo Tabs |
| Aircraft Systems | Flight Controls / Secondary | Tabs |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Secondary | Servo Tabs |
| Aircraft Systems | Flight Controls / Secondary | Trim tabs |

**PLT479**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Start |
| Aircraft Systems | Powerplant | Starting |

**PLT480**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Flight Characteristics | Stability / Control |

**PLT493**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | Icing |

AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft

| | | |
|---|---|---|
| Weather | Hazardous | Icing |

Instrument Flying Handbook, FAA-H-8083-15

| | | |
|---|---|---|
| Weather | Hazardous | Icing |

**PLT495**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Static Wicks / Lightning Protection / Bonding |

**PLT497**

Aeronautical Information Manual

| | | |
|---|---|---|
| Flight Operations | Emergency Procedures | Declare an Emergency |
| Publications | AIM | Transponder Operation |

**PLT499**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Instruments |
| Aircraft Systems | Powerplant | Engine Operation |
| Aircraft Systems | Powerplant | Starting |
| Aircraft Systems | Powerplant | Turbine Components / Functions |
| Aircraft Systems | Powerplant | Turbine Compressors |
| Aircraft Systems | Powerplant | Turbine Sensors |

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Turbine Characteristics |
| Aircraft Systems | Powerplant | Turbine Compressors |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Turbine Components / Functions |

**PLT502**

Aeronautical Information Manual

| | | |
|---|---|---|
| Publications | AIM | Light Gun Signals |

**PLT509**

Aeronautical Information Manual

| | | |
|---|---|---|
| Aerodynamics | Flight Characteristics | Vortex Generation |

**PLT523**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aerodynamics | Airfoils | Vortex Generators |

**PLT525**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Oxygen |

# Flight Engineer Turboprop/Basic (FET)
# Sample Questions

# FLIGHT ENGINEER TURBOPROP/BASIC (FET)

**1. During flight with zero angle of attack, the pressure along the upper surface of the wing will be**

A—equal to atmospheric pressure.
B—less than atmospheric pressure.
C—greater than the pressure below the wing.

*Answer: B.*
*Learning Statement: Recall angle of attack-characteristics/forces/principles.*

**2. Oil extracts the most heat from which turbine engine components?**

A—Turbine bearings.
B—Compressor bearings.
C—Accessory drive bearings.

*Answer: A.*
*Learning Statement: Recall powerplant-controlling engine temperature.*

**3. Why should hydraulic fluid be filtered?**

A—Water in the fluid could freeze.
B—It assures a positive feed of foam free fluid to the hydraulic pump inlet.
C—Contaminants may damage the seals and cylinder walls causing internal leakage.

*Answer: C.*
*Learning Statement: Recall hydraulic systems-components/operating principles/characteristics.*

**4. What precaution should be taken when using truck-mounted deice/anti-ice equipment?**

A—Run the airplane engines at idle.
B—Spray engine and APU inlets directly.
C—Spray pitot inlets and static ports indirectly.

*Answer: C.*
*Learning Statement: Recall aircraft anti-icing/deicing-methods/fluids.*

**5. Which maintenance task may a flight engineer perform while operating under 14 CFR part 125?**

A—Landing light replacement if there is no certificated mechanic available.
B—Remove, inspect, and replace a chip detector if the malfunction occurs in a remote area.
C—Replenish hydraulic fluid in accordance with applicable regulations and the certificate holder’s manuals.

*Answer: C.*
*Learning Statement: Recall regulations-persons authorized to perform maintenance.*

# LIST OF REFERENCE MATERIALS SPECIFIC TO THE FLIGHT ENGINEER TURBOPROP/BASIC (FET)

| *Topic* | *Content* | *Specific* |
|---|---|---|
| **PLT002** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Atmospheric Effects | Airspeed |
| Aircraft Performance | Limitations | Airspeeds |
| **PLT003** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Weight and Balance | Center of Gravity | TCDS |
| Type Certificate Data Sheets and Specifications | | |
| Weight and Balance | Center of Gravity | TCDS |
| **PLT011** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Take Off Power |
| Aircraft Performance | Charts | Takeoff / Landing / Alternate Values |
| Aircraft Performance | Charts | Takeoff Power |
| Aircraft Performance | Charts | Temperature |
| **PLT012** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Computations | Fuel |
| **PLT016** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Aircraft Performance | Computations | Fuel Dump |
| **PLT018** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aerodynamics | Principles of Flight | Load Factor |
| **PLT019** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Cabin Altitude |
| Aircraft Performance | Computations | Cabin Altitude |
| **PLT021** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Weight and Balance | Aircraft Loading | Definitions |
| Weight and Balance | Aircraft Loading | Formulas |
| Weight and Balance | Aircraft Loading | Limitations |
| Weight and Balance | Center of Gravity | Computations |
| Weight and Balance | Center of Gravity | Shifting Weight |
| **PLT026** | | |
| Airplane Flying Handbook, FAA-H-8083-3A | | |
| Aerodynamics | Performance | Atmospheric Effects / Density / Pressure Altitudes |
| **PLT028** | | |
| 14 CFR 1 | | |
| Regulations | 14CFR Part 1 | Flightcrew Member |
| **PLT038** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Torque in Inch-Pounds |
| **PLT041** | | |
| AC 00-6 Aviation Weather | | |
| Weather | Meteorology | Pressure |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Systems | Flight Instruments | Altimeter |
| **PLT108** | | |
| AC 120-58 Pilot Guide for Large Aircraft Ground Deicing | | |
| Airport Operations | Ground Deicing | Glycol |
| Airport Operations | Ground Deicing | Glycol Properties / Mixtures |
| Airport Operations | Ground Deicing | Procedures / Good Practices |
| Airport Operations | Ground Deicing | Temperature |
| Airport Operations | Ground Deicing | Types |
| **PLT109** | | |
| Aviation Maintenance Technician Handbook - General FAA-H-8083-30 | | |
| Aircraft Systems | Electrical | Batteries / Maintenance / Hazards |

**PLT114**

Aviation Maintenance Technician Handbook - General  FAA-H-8083-30

| | | |
|---|---|---|
| Airport Operations | Preflight | Aluminum Corrosion |
| Airport Operations | Preflight | Self-Locking Nuts |

**PLT118**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Emergency Instruments |

**PLT124**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Aircraft Performance | Atmospheric Effects | Atmospheric Density |

**PLT128**

AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft

| | | |
|---|---|---|
| Weather | Hazardous | Icing |

**PLT132**

14 CFR 1

| | | |
|---|---|---|
| Regulations | 14CFR Part 1 | V speeds |

**PLT135**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Pressurization / Valves / Controls / Operation |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Performance | Charts | Cabin Altitude |

**PLT137**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Vapor Cycling |

Cooling/Component/Operation/Servicin

**PLT138**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Landing Gear | Fusible Plugs |
| Aircraft Systems | Landing Gear | Wheels |

**PLT139**

14 CFR 121

| | | |
|---|---|---|
| Aircraft Systems | Landing Gear | Retracted Safety / Warning System |

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fire Control | Sensors / Testing / Operation |
| Aircraft Systems | Landing Gear | Retracted Safety / Warning System |

**PLT164**

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aerodynamics | Airspeed | Wind effects |

**PLT166**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | Pressure |

Aeronautical Information Manual

| | | |
|---|---|---|
| Instrument Procedures | En Route | Altimeter Setting Procedures |

**PLT168**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Angle of Attack |
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |

**PLT173**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Weather | Meteorology | Pressure |

**PLT203**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | Atmosphere |

**PLT205**

14 CFR 91

| | | |
|---|---|---|
| Regulations | 14CFR Part 91 | Alcohol / Drug Limitations |

**PLT207**

14 CFR 121

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Circuit Breakers / Fuses / Relays / Switches |
| Regulations | 14CFR Part 121 | Emergency Lights |

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Static Wicks / Lightning Protection / Bonding |

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Circuit Breakers / Fuses / Relays / Switches |
| Aircraft Systems | Electrical | Generators / Alternators / Controls / Systems |

**PLT210**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Operation |
| Aircraft Systems | Powerplant | Turbine Components / Functions |

**PLT212**

14 CFR 1

| | | |
|---|---|---|
| Regulations | 14CFR Part 1 | Definitions |

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fire Control | Extinguishing Agent / System / Preflight |

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

| | | |
|---|---|---|
| Flight Operations | Emergency Procedures | Electrical Fires |
| Flight Operations | Emergency Procedures | Flammable Fluid Fires |
| Flight Operations | Emergency Procedures | Ground Emergencies |

**PLT235**

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |

**PLT236**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |

**PLT242**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |

**PLT243**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Propeller | Centrifugal Twisting |

**PLT251**

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

| | | |
|---|---|---|
| Aircraft Systems | Fuel / Oil | Fuel Servicing |
| Aircraft Systems | Fuel / Oil | Specifications |

**PLT273**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Hydraulic | Accumulators |
| Aircraft Systems | Hydraulic | Filters / System |
| Aircraft Systems | Hydraulic | Specifications |
| Aircraft Systems | Hydraulic | System Operation |

**PLT274**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | Icing |

AC 91-74 Pilot Guide: Flight in Icing Conditions

| | | |
|---|---|---|
| Aircraft Systems | De-Icing / Anti-Icing | Ambient Temperature |

**PLT278**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Performance | Atmospheric Effects | Temperature |

**PLT310**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Load Factor | Atmospheric Criteria |
| Aerodynamics | Performance | Weights / V Speeds / Runway Lengths |

**PLT313**

Aircraft Weight and Balance Handbook, FAA-H-8083-1

| | | |
|---|---|---|
| Weight and Balance | Aircraft Loading | Definitions |

**PLT318**

Aeronautical Information Manual

| | | |
|---|---|---|
| Flight Operations | Normal Procedures | Minimum Fuel Advisory |

**PLT324**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fuel / Oil | Oil System |
| Aircraft Systems | Fuel / Oil | Oil System Failure Modes |

**PLT326**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Oxygen |

Aeronautical Information Manual

| | | |
|---|---|---|
| Human Factors | Aeromedical | Oxygen Mask Operation |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Oxygen |

**PLT327**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Oxygen |

**PLT338**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Pneumatics | Pneumatics |
| Aircraft Systems | Pneumatics | Servicing |

**PLT342**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Turbine Compressors |

**PLT343**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Performance | Atmospheric Effects | Temperature |
| Aircraft Performance | Density Altitude | Humidity / Temperature / Air Density |

**PLT346**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Primary | Ailerons |

**PLT347**

14 CFR 1

| | | |
|---|---|---|
| Regulations | 14CFR Part 1 | Definitions |

**PLT351**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Propeller | Beta Range |
| Aircraft Systems | Propeller | Feathering |
| Aircraft Systems | Propeller | Governor Operation |
| Aircraft Systems | Propeller | Propeller Forces |
| Aircraft Systems | Propeller | Stresses |
| Aircraft Systems | Propeller | Unfeathering |

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aircraft Systems | Propeller | Feathering |

**PLT385**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Cargo / Passenger Compartment |

14 CFR 91

| | | |
|---|---|---|
| Regulations | 14CFR Part 125 | Part 91 Operations |

**PLT386**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | International Crewmember Certificates |

14 CFR 63

| | | |
|---|---|---|
| Regulations | 14CFR Part 63 | Certificate |

**PLT388**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Cockpit Voice Recorders |
| Regulations | 14CFR Part 121 | Data Retention |

**PLT398**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Dispatch Contents |

**PLT404**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Emergency Equipment |
| Regulations | 14CFR Part 121 | Emergency Lights |

**PLT405**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | MEL/CDL |

**PLT407**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | IOE |

**PLT409**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Deadhead / Duty Time |
| Regulations | 14CFR Part 121 | Duty Time Limitations |
| Regulations | 14CFR Part 121 | Rest Periods |

**PLT410**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Recency of Experience |

14 CFR 125

| | | |
|---|---|---|
| Regulations | 14CFR Part 125 | Part 91 Operations |

**PLT413**

14 CFR 25

| | | |
|---|---|---|
| Regulations | 14CFR Part 25 | Fuel Jettisoning |

**PLT438**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Preflight |
| Regulations | 14CFR Part 121 | Supplemental Oxygen |

**PLT439**

14 CFR 125

| | | |
|---|---|---|
| Regulations | 14CFR Part 125 | Maintenance Tasks |

**PLT440**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Crew Duty Stations |
| Regulations | 14CFR Part 121 | Critical Phase of Flight |
| Regulations | 14CFR Part 121 | Emergency Evacuation Duties |

**PLT442**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Qualifications |

**PLT444**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Maintenance Log Entries |

**PLT447**

14 CFR 63

| | | |
|---|---|---|
| Regulations | 14CFR Part 63 | Medical Certificate Duration |
| Regulations | 14CFR Part 67 | Medical Deficiency |

**PLT448**

14 CFR 63

| | | |
|---|---|---|
| Regulations | 14CFR Part 63 | Certificate |

**PLT460**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | High Altitude Physiology |
| Regulations | 14CFR Part 121 | Qualifications |

**PLT462**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Emergency Equipment |

**PLT463**

14 CFR 63

| | | |
|---|---|---|
| Regulations | 14CFR Part 63 | Alcohol / Drug Testing |
| Regulations | 14CFR Part 63 | Drug / Alcohol Convictions |
| Regulations | 14CFR Part 63 | Suspension or Revocation |

**PLT464**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Crew Duty Stations |

**PLT473**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Secondary | Spoilers |
| Aircraft Systems | Flight Controls / Secondary | Trim tabs |

**PLT478**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Starters |

**PLT479**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Starters |
| Aircraft Systems | Powerplant | Starting |

**PLT493**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | Icing |

AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft

| | | |
|---|---|---|
| Weather | Hazardous | Icing |

Instrument Flying Handbook, FAA-H-8083-15

| | | |
|---|---|---|
| Weather | Hazardous | Icing |

**PLT497**

Aeronautical Information Manual

| | | |
|---|---|---|
| Publications | AIM | Transponder Operation |

**PLT499**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Instruments |
| Aircraft Systems | Powerplant | Starting |
| Aircraft Systems | Powerplant | Turbine Components / Functions |

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Turbine Characteristics |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Turbine Characteristics |

**PLT502**

Aeronautical Information Manual

| | | |
|---|---|---|
| Publications | AIM | Light Gun Signals |

**PLT523**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aerodynamics | Airfoils | Vortex Generators |

# Flight Engineer Reciprocating Engine/Basic (FEN)
# Sample Questions

# FLIGHT ENGINEER RECIPROCATING ENGINE/BASIC (FEN)

**1. Which of the following is considered an auxiliary flight control?**

A—Ruddervator.
B—Upper rudder.
C—Leading-edge flaps.

*Answer: C.*
*Learning Statement: Recall secondary flight controls –types/purpose/functionality.*

**2. What is the primary source of directional stability for an airplane?**

A—CG position.
B—Vertical tail.
C—Horizontal tail.

*Answer: B.*
*Learning Statement: Recall forces acting on aircraft-stability/controllability.*

**3. What is the purpose of electrical bonding jumpers?**

A—Decrease the probability of lightning damage to such elements as control hinges.
B—Minimize electrolytic corrosion by connecting the airplane parts to form an integral unit.
C—Provide a high-resistance path for electrical equipment, thereby eliminating ground wires.

*Answer: A.*
*Learning Statement: Recall aircraft performance-atmospheric effects.*

**4. Which type of oxygen system is the flight deck equipped with normally?**

A—Constant-flow.
B—Phase dilution.
C—Diluter-demand.

*Answer: C.*
*Learning Statement: Recall oxygen system-components/operating principles/characteristics.*

**5. (Refer to figure 40) What is the loaded CG in percent of MAC under operating conditions No. 1?**

A—28.9 percent.
B—30.5 percent.
C—32.9 percent.

*Answer: B.*
*Learning Statement: Calculate weight and balance.*

# LIST OF REFERENCE MATERIALS SPECIFIC TO THE FLIGHT ENGINEER RECIPROCATING ENGINE/BASIC (FEN)

| *Topic* | *Content* | *Specific* |
|---|---|---|
| **PLT002** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Atmospheric Effects | Airspeed |
| Aircraft Performance | Charts | Airspeed |
| Aircraft Performance | Limitations | Airspeeds |
| **PLT003** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Weight and Balance | Center of Gravity | TCDS |
| Type Certificate Data Sheets and Specifications | | |
| Weight and Balance | Center of Gravity | TCDS |
| **PLT011** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Takeoff / Landing / Alternate Values |
| Aircraft Performance | Charts | Takeoff Power |
| **PLT012** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Computations | Flight Computations |
| Aircraft Performance | Computations | Fuel |
| **PLT016** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Aircraft Performance | Computations | Fuel Dump |
| **PLT018** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aerodynamics | Principles of Flight | Load Factor |
| **PLT019** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Cabin Altitude |
| **PLT021** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Weight and Balance | Aircraft Loading | Computations |
| Weight and Balance | Aircraft Loading | Definitions |
| Weight and Balance | Aircraft Loading | Formulas |
| Weight and Balance | Center of Gravity | Computations |
| Weight and Balance | Center of Gravity | Shifting Weight |
| **PLT026** | | |
| Airplane Flying Handbook, FAA-H-8083-3A | | |
| Aerodynamics | Performance | Atmospheric Effects / Density / Pressure Altitudes |
| **PLT028** | | |
| 14 CFR 1 | | |
| Regulations | 14CFR Part 1 | Flightcrew Member |
| **PLT041** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Systems | Flight Instruments | Altimeter |
| **PLT094** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |
| **PLT108** | | |
| AC 120-58 Pilot Guide for Large Aircraft Ground Deicing | | |
| Airport Operations | Ground Deicing | Glycol |
| Airport Operations | Ground Deicing | Glycol Properties / Mixtures |
| Airport Operations | Ground Deicing | Temperature |
| Airport Operations | Ground Deicing | Types |
| AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook | | |
| Aircraft Systems | Propeller | Deicing Boots |
| **PLT109** | | |
| Aviation Maintenance Technician Handbook - General FAA-H-8083-30 | | |
| Aircraft Systems | Electrical | Batteries / Maintenance / Hazards |

**PLT114**
Aviation Maintenance Technician Handbook - General FAA-H-8083-30

| | | |
|---|---|---|
| Airport Operations | Preflight | Aluminum Corrosion |
| Airport Operations | Preflight | Self-Locking Nuts |

**PLT115**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fuel / Oil | Water Injection |
| Aircraft Systems | Powerplant | Detonation |
| Aircraft Systems | Powerplant | Improper Combustion |
| Aircraft Systems | Powerplant | Mixtures |

**PLT124**
Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Humidity Effects |

**PLT128**
AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft

| | | |
|---|---|---|
| Weather | Hazardous | Icing |

**PLT134**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Mixtures |

**PLT135**
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Pressurization / Valves / Controls / Operation |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Performance | Charts | Cabin Altitude |
| Aircraft Performance | Charts | Cabin Pressure Altitude |
| Aircraft Systems | Environmental | Pressurization / Valves / Controls / Operation |

**PLT138**
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Landing Gear | Fusible Plugs |
| Aircraft Systems | Landing Gear | Wheels |

**PLT139**
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Landing Gear | Retracted Safety / Warning System |

**PLT164**
Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aerodynamics | Airspeed | Wind effects |

**PLT166**
Aeronautical Information Manual

| | | |
|---|---|---|
| Aircraft Systems | Flight Instruments | Altimeter |
| Instrument Procedures | En Route | Altimeter Setting Procedures |

**PLT168**
Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Angle of Attack |

**PLT173**
Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Weather | Meteorology | Pressure |

**PLT189**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Intake / Carb / Inlet Heat |

**PLT190**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | De-Icing / Anti-Icing | Intake / Carburetor Icing |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | De-Icing / Anti-Icing | Intake / Carburetor Icing |

**PLT205**
14 CFR 91

| | | |
|---|---|---|
| Regulations | 14CFR Part 91 | Alcohol / Drug Limitations |

**PLT207**

14 CFR 121

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Circuit Breakers / Fuses / Relays / Switches |
| Regulations | 14CFR Part 121 | Emergency Lights |

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Static Wicks / Lightning Protection / Bonding |

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Batteries / Maintenance / Hazards |
| Aircraft Systems | Electrical | Circuit Breakers / Fuses / Relays / Switches |
| Aircraft Systems | Electrical | Generators / Alternators / Controls / Systems |

**PLT212**

14 CFR 1

| | | |
|---|---|---|
| Regulations | 14CFR Part 1 | Definitions |

Aviation Maintenance Technician Handbook - General FAA-H-8083-30

| | | |
|---|---|---|
| Flight Operations | Emergency Procedures | Electrical Fires |
| Flight Operations | Emergency Procedures | Flammable Fluid Fires |

**PLT234**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | CG |

**PLT235**

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |

**PLT248**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |

**PLT249**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Improper Combustion |
| Aircraft Systems | Powerplant | Mixtures |

**PLT251**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fuel / Oil | Water Injection |

**PLT253**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fuel / Oil | Fuel Boost Bumps |
| Aircraft Systems | Fuel / Oil | Fuel System |

**PLT273**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Hydraulic | Accumulators |
| Aircraft Systems | Hydraulic | Filters / System |
| Aircraft Systems | Hydraulic | Specifications |
| Aircraft Systems | Hydraulic | System Operation |

**PLT274**

AC 91-74 Pilot Guide: Flight in Icing Conditions

| | | |
|---|---|---|
| Aircraft Systems | De-Icing / Anti-Icing | Ambient Temperature |

**PLT303**

Aerodynamics for Naval Aviators

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Angle of Attack |

**PLT310**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Load Factor | Atmospheric Criteria |

**PLT313**

Aircraft Weight and Balance Handbook, FAA-H-8083-1

| | | |
|---|---|---|
| Weight and Balance | Aircraft Loading | Definitions |

**PLT318**

Aeronautical Information Manual

| | | |
|---|---|---|
| Flight Operations | Normal Procedures | Minimum Fuel Advisory |

**PLT324**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fuel / Oil | Oil System |

**PLT326**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Oxygen |

Aeronautical Information Manual

| | | |
|---|---|---|
| Human Factors | Aeromedical | Oxygen Mask Operation |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Oxygen |

**PLT327**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Oxygen |

**PLT331**

Aeronautical Information Manual

| | | |
|---|---|---|
| Human Factors | Aeromedical | Diving Decompression |

**PLT338**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Pneumatics | Pneumatics |
| Aircraft Systems | Pneumatics | Servicing |

**PLT342**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Exhaust Systems |

**PLT343**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Problems / Failure Modes |
| Aircraft Systems | Powerplant | Superchargers |
| Aircraft Systems | Powerplant | Water Injection |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Performance | Atmospheric Effects | Temperature |
| Aircraft Performance | Density Altitude | Humidity / Temperature / Air Density |

**PLT346**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Primary | Ailerons |

**PLT347**

14 CFR 1

| | | |
|---|---|---|
| Regulations | 14CFR Part 1 | Definitions |

**PLT351**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Propeller | Deicing |
| Aircraft Systems | Propeller | Feathering |
| Aircraft Systems | Propeller | Governor Operation |
| Aircraft Systems | Propeller | Propeller Forces |
| Aircraft Systems | Propeller | Stresses |
| Aircraft Systems | Propeller | Unfeathering |

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aircraft Systems | Propeller | Feathering |

**PLT365**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Specifications |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Instruments |

**PLT368**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Admission to Flight Deck |

**PLT385**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Cargo / Passenger Compartment |

14 CFR 91

| | | |
|---|---|---|
| Regulations | 14CFR Part 125 | Part 91 Operations |

**PLT386**

14 CFR 63

| | | |
|---|---|---|
| Regulations | 14CFR Part 63 | Certificate |

| | | |
|---|---|---|
| **PLT388** | | |
| 14 CFR 121 | | |
| Regulations | 14CFR Part 121 | Cockpit Voice Recorders |
| **PLT389** | | |
| 14 CFR 125 | | |
| Regulations | 14CFR Part 119 | Private Carriage / Non-common |
| **PLT400** | | |
| 14 CFR 121 | | |
| Regulations | 14CFR Part 121 | Required Documents for Flight |
| **PLT404** | | |
| 14 CFR 121 | | |
| Regulations | 14CFR Part 121 | Emergency Equipment |
| Regulations | 14CFR Part 121 | Emergency Lights |
| **PLT405** | | |
| 14 CFR 121 | | |
| Regulations | 14CFR Part 121 | Flashlight |
| Regulations | 14CFR Part 121 | MEL/CDL |
| **PLT407** | | |
| 14 CFR 121 | | |
| Regulations | 14CFR Part 121 | IOE |
| Regulations | 14CFR Part 121 | Recurrent Training |
| **PLT409** | | |
| 14 CFR 121 | | |
| Regulations | 14CFR Part 121 | Duty Time Limitations |
| Regulations | 14CFR Part 121 | Flag Operations |
| Regulations | 14CFR Part 121 | Rest Periods |
| **PLT410** | | |
| 14 CFR 121 | | |
| Regulations | 14CFR Part 121 | IOE |
| Regulations | 14CFR Part 121 | Recency of Experience |
| 14 CFR 63 | | |
| Regulations | 14CFR Part 63 | Suspension or Revocation |
| **PLT413** | | |
| 14 CFR 25 | | |
| Regulations | 14CFR Part 25 | Fuel Jettisoning |
| **PLT438** | | |
| 14 CFR 121 | | |
| Regulations | 14CFR Part 121 | Supplemental Oxygen |
| **PLT439** | | |
| 14 CFR 125 | | |
| Regulations | 14CFR Part 125 | Maintenance Tasks |
| **PLT440** | | |
| 14 CFR 121 | | |
| Regulations | 14CFR Part 121 | Crew Duty Stations |
| Regulations | 14CFR Part 121 | Critical Phase of Flight |
| Regulations | 14CFR Part 121 | Emergency Evacuation Duties |
| **PLT442** | | |
| 14 CFR 121 | | |
| Regulations | 14CFR Part 121 | Qualifications |
| **PLT443** | | |
| 14 CFR 121 | | |
| Regulations | 14CFR Part 121 | Qualifications |
| **PLT444** | | |
| 14 CFR 121 | | |
| Regulations | 14CFR Part 121 | Maintenance Log Entries |
| **PLT447** | | |
| 14 CFR 63 | | |
| Regulations | 14CFR Part 63 | Medical Certificate Duration |
| Regulations | 14CFR Part 67 | Medical Deficiency |
| **PLT448** | | |
| 14 CFR 63 | | |
| Regulations | 14CFR Part 63 | Certificate |

**PLT451**
14 CFR 121
Regulations | 14CFR Part 121 | Qualifications

**PLT460**
14 CFR 121
Regulations | 14CFR Part 121 | Qualifications

**PLT462**
14 CFR 121
Regulations | 14CFR Part 121 | Emergency Equipment

**PLT463**
14 CFR 63
Regulations | 14CFR Part 63 | Alcohol / Drug Testing
Regulations | 14CFR Part 63 | Drug / Alcohol Convictions
Regulations | 14CFR Part 63 | Suspension or Revocation

**PLT464**
14 CFR 121
Regulations | 14CFR Part 121 | Crew Duty Stations

**PLT479**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Preflight / Hydraulic Lock

**PLT480**
Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aerodynamics | Flight Characteristics | Stability / Control

**PLT483**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Superchargers

**PLT493**
AC 00-6 Aviation Weather
Weather | Meteorology | Icing

Instrument Flying Handbook, FAA-H-8083-15
Weather | Hazardous | Icing

**PLT497**
Aeronautical Information Manual
Publications | AIM | Transponder Operation

**PLT502**
Aeronautical Information Manual
Publications | AIM | Light Gun Signals

**PLT509**
Aeronautical Information Manual
Aerodynamics | Flight Characteristics | Vortex Generation

# Flight Engineer Turbojet-Added Rating (FEJ)
# Sample Questions

# FLIGHT ENGINEER TURBOJET-ADDED RATING (FEJ)

**1. While starting a turbine engine with an air starter, a hung start occurs before the starter disengages. Which procedure is correct?**

A—Shut down the engine.
B—Increase the air velocity to the starter.
C—Slowly increase the power lever until the engine accelerates to idle.

*Answer: A.*
*Learning Statement: Recall starter engine-starting procedures.*

**2. What is the highest ambient temperature that ice is likely to form in the engine inlet?**

A—visibly moist air and +45 °F.
B—visibly moist air and +70 °F.
C—relatively dry air and +32 °F.

*Answer: A.*
*Learning Statement: Recall effects of temperature-density altitude/icing.*

**3. Thermal protectors are used to**

A—stop windshield heaters from melting the glass.
B—protect motors from overheating.
C—allow pitot heaters to melt any icing near the tube.

*Answer: B.*
*Learning Statement: Recall electrical system-components/operating principles/characteristics/ static bonding and shielding.*

**4. What recovery would be appropriate in the event of compressor stall?**

A—reduce the thrust lever and then rapidly advance the thrust lever to decrease the angle of attack on the compressor blades, creating more airflow.
B—reduce the thrust lever and then follow the procedures in the AFM/POH/CFM.
C—advance the thrust lever slowly to increase airflow and decrease the angle of attack on one or more compressor blades.

*Answer: B.*
*Learning Statement: Recall turbine engines-components/operational characteristics/associated instruments.*

***5.*** **(Refer to figures 46 and 47) What is the airplane weight at the end of cruise under operating conditions No. 2?**

A—100,860 pounds.
B—101,900 pounds.
C—110,900 pounds.

*Answer: A.*
*Learning Statement: Calculate weight and balance.*

# LIST OF REFERENCE MATERIALS SPECIFIC TO THE FLIGHT ENGINEER TURBOJET-ADDED RATING (FEJ)

| *Topic* | *Content* | *Specific* |
|---|---|---|
| **PLT002** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Atmospheric Effects | Airspeed |
| Aircraft Performance | Charts | Airspeed |
| **PLT007** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | EPRs |
| **PLT011** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Temperature |
| **PLT012** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Computations | NM/1000# |
| **PLT016** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Aircraft Performance | Computations | Fuel Dump |
| **PLT021** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Weight and Balance | Aircraft Loading | Computations |
| Weight and Balance | Aircraft Loading | Formulas |
| Weight and Balance | Center of Gravity | Computations |
| Weight and Balance | Center of Gravity | Shifting Weight |
| **PLT108** | | |
| AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft | | |
| Airport Operations | Ground Deicing | Two Step Deice / Anti-ice |
| AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook | | |
| Aircraft Systems | Environmental | Rain |
| **PLT109** | | |
| Aviation Maintenance Technician Handbook - General FAA-H-8083-30 | | |
| Aircraft Systems | Electrical | Batteries / Maintenance / Hazards |
| **PLT110** | | |
| AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook | | |
| Aircraft Systems | Landing Gear | Brake System Operation and Components |
| Aircraft Systems | Landing Gear | Brakes |
| **PLT124** | | |
| AC 00-6 Aviation Weather | | |
| Aircraft Performance | Atmospheric Effects | Atmospheric Density |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Atmospheric Effects | Airspeed |
| **PLT128** | | |
| AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft | | |
| Weather | Hazardous | Icing |
| **PLT135** | | |
| AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook | | |
| Aircraft Systems | Environmental | Pressurization / Valves / Controls / Operation |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Cabin Altitude |
| Aircraft Performance | Charts | Cabin Pressure Altitude |
| **PLT136** | | |
| AC 91-51 Effect of Icing on Aircraft Control and Airplane Deice and Anti-Ice Systems | | |
| Aircraft Systems | Powerplant | Turbine Characteristics |
| **PLT137** | | |
| AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook | | |
| Aircraft Systems | Environmental | Vapor Cycling |
| Cooling/Component/Operation/Servicin | | |
| **PLT138** | | |
| AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook | | |
| Aircraft Systems | Landing Gear | Chine Tires |
| Aircraft Systems | Landing Gear | Tires |
| **PLT139** | | |
| AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook | | |
| Aircraft Systems | Fire Control | Sensors / Testing / Operation |

**PLT174**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Secondary | Yaw Dampner |

**PLT203**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | High Altitude |

**PLT207**

Aviation Maintenance Technician Handbook - General  FAA-H-8083-30

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Circuit Breakers / Fuses / Relays / Switches |
| Aircraft Systems | Electrical | Generators / Alternators / Controls / Systems |
| Aircraft Systems | Electrical | Properties |

**PLT208**

Aeronautical Information Manual

| | | |
|---|---|---|
| Flight Operations | Emergency Procedures | Hijacking |

**PLT209**

AC 91-74 Pilot Guide: Flight in Icing Conditions

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Instruments |

**PLT210**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Operation |
| Aircraft Systems | Powerplant | Turbine Components / Functions |

**PLT212**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fire Control | Extinguishing Agent / System / Preflight |

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fire Control | Extinguishing Agent / System / Preflight |

**PLT214**

Aerodynamics for Naval Aviators

| | | |
|---|---|---|
| Aerodynamics | Flight Characteristics | Swept / Tapered Wing |

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aerodynamics | Flight Characteristics | Swept / Tapered Wing |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Flight Characteristics | Wing / Airfoil Characteristics |
| Aerodynamics | Stability / Control | Dutch Roll |

**PLT236**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Flight Characteristics | Wing / Airfoil Characteristics |

**PLT251**

Aviation Maintenance Technician Handbook - General  FAA-H-8083-30

| | | |
|---|---|---|
| Aircraft Systems | Fuel / Oil | Fuel Servicing |
| Aircraft Systems | Fuel / Oil | Specifications |

**PLT253**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fuel / Oil | Fuel Heat |

**PLT266**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aerodynamics | Airfoils | Slots |

**PLT273**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Hydraulic | Hazards |

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Hydraulic | Specifications |

**PLT278**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Performance | Atmospheric Effects | Temperature |

AC 91-51 Effect of Icing on Aircraft Control and Airplane Deice and Anti-Ice Systems

| | | |
|---|---|---|
| Aircraft Systems | De-Icing / Anti-Icing | Intake / Carburetor Icing |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Flight Instruments | Mach Meter |

**PLT305**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aerodynamics | Airfoils | High Lift Devices |

**PLT315**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Airspeed | Mach |

**PLT318**

Aeronautical Information Manual

| | | |
|---|---|---|
| Flight Operations | Normal Procedures | Minimum Fuel Advisory |

**PLT326**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Gaseous Oxygen |

**PLT342**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Fuel to Oil Heat Exchanger |

**PLT346**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Primary | Ailerons |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Primary | Ailerons |

**PLT386**

14 CFR 63

| | | |
|---|---|---|
| Regulations | 14CFR Part 63 | Replacement Certificate |

**PLT407**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | Initial Training |

**PLT473**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Secondary | Servo Tabs |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Secondary | Servo Tabs |
| Aircraft Systems | Flight Controls / Secondary | Spoilers |

**PLT479**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Starters |
| Aircraft Systems | Powerplant | Starting |
| Aircraft Systems | Powerplant | Turbine Starting Fire Procedures |

**PLT493**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | Icing |

**PLT499**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Instruments |
| Aircraft Systems | Powerplant | Starting |
| Aircraft Systems | Powerplant | Turbine Components / Functions |
| Aircraft Systems | Powerplant | Turbine Compressors |
| Aircraft Systems | Powerplant | Turbine Sensors |

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Turbine Components / Functions |
| Aircraft Systems | Powerplant | Turbine Compressors |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Turbine Components / Functions |

**PLT502**

Aeronautical Information Manual

| | | |
|---|---|---|
| Publications | AIM | Light Gun Signals |

**PLT523**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aerodynamics | Airfoils | Vortex Generators |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Airfoils | Vortex Generators |

# Flight Engineer Turboprop-Added Rating (FEP)
# Sample Questions

**6. During flight with zero angle of attack, the pressure along the upper surface of the wing will be**

A—equal to atmospheric pressure.
B—less than atmospheric pressure.
C—greater than the pressure below the wing.

*Answer: B.*
*Learning Statement: Recall angle of attack-characteristics/forces/principles.*

**7. Oil extracts the most heat from which turbine engine components?**

A—Turbine bearings.
B—Compressor bearings.
C—Accessory drive bearings.

*Answer: A.*
*Learning Statement: Recall powerplant-controlling engine temperature.*

**8. Why should hydraulic fluid be filtered?**

A—Water in the fluid could freeze.
B—It assures a positive feed of foam free fluid to the hydraulic pump inlet.
C—Contaminants may damage the seals and cylinder walls causing internal leakage.

*Answer: C.*
*Learning Statement: Recall hydraulic systems-components/operating principles/characteristics.*

**9. What precaution should be taken when using truck-mounted deice/anti-ice equipment?**

A—Run the airplane engines at idle.
B—Spray engine and APU inlets directly.
C—Spray pitot inlets and static ports indirectly.

*Answer: C.*
*Learning Statement: Recall aircraft anti-icing/deicing-methods/fluids.*

**10. Which maintenance task may a flight engineer perform while operating under 14 CFR part 125?**

A—Landing light replacement if there is no certificated mechanic available.
B—Remove, inspect, and replace a chip detector if the malfunction occurs in a remote area.
C—Replenish hydraulic fluid in accordance with applicable regulations and the certificate holder’s manuals.

*Answer: C.*
*Learning Statement: Recall regulations-persons authorized to perform maintenance.*

# LIST OF REFERENCE MATERIALS SPECIFIC TO THE FLIGHT ENGINEER TURBOPROP-ADDED RATING (FEP)

| *Topic* | *Content* | *Specific* |
|---|---|---|
| **PLT002** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Atmospheric Effects | Airspeed |
| **PLT011** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Take Off Power |
| Aircraft Performance | Charts | Takeoff Power |
| Aircraft Performance | Charts | Temperature |
| **PLT012** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Computations | Fuel |
| **PLT016** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Aircraft Performance | Computations | Fuel Dump |
| **PLT018** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aerodynamics | Principles of Flight | Load Factor |
| **PLT019** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Cabin Altitude |
| Aircraft Performance | Computations | Cabin Altitude |
| **PLT021** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Weight and Balance | Aircraft Loading | Computations |
| Weight and Balance | Aircraft Loading | Formulas |
| Weight and Balance | Center of Gravity | Computations |
| Weight and Balance | Center of Gravity | Shifting Weight |
| **PLT038** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Torque in Inch-Pounds |
| **PLT041** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Systems | Flight Instruments | Altimeter |
| **PLT108** | | |
| AC 120-58 Pilot Guide for Large Aircraft Ground Deicing | | |
| Airport Operations | Ground Deicing | Glycol Properties / Mixtures |
| Airport Operations | Ground Deicing | Precautions |
| Airport Operations | Ground Deicing | Procedures / Good Practices |
| Airport Operations | Ground Deicing | Types |
| AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook | | |
| Aircraft Systems | Propeller | Deicing Boots |
| **PLT109** | | |
| Aviation Maintenance Technician Handbook - General FAA-H-8083-30 | | |
| Aircraft Systems | Electrical | Batteries / Maintenance / Hazards |
| **PLT110** | | |
| AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook | | |
| Aircraft Systems | Landing Gear | Brake System Operation and Components |
| **PLT117** | | |
| AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook | | |
| Aircraft Systems | De-Icing / Anti-Icing | Anti-icing / Deicing Equipment |
| **PLT124** | | |
| AC 00-6 Aviation Weather | | |
| Aircraft Performance | Atmospheric Effects | Atmospheric Density |
| **PLT128** | | |
| AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft | | |
| Weather | Hazardous | Icing |

**PLT135**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Pressurization / Valves / Controls / Operation |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Performance | Charts | Cabin Altitude |
| Aircraft Performance | Charts | Cabin Pressure Altitude |

**PLT136**

AC 91-51 Effect of Icing on Aircraft Control and Airplane Deice and Anti-Ice Systems

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Turbine Characteristics |

**PLT137**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Vapor Cycling |

Cooling/Component/Operation/Servicin

**PLT138**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Landing Gear | Wheels |

**PLT139**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fire Control | Sensors / Testing / Operation |
| Aircraft Systems | Landing Gear | Retracted Safety / Warning System |

**PLT166**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | Pressure |

Aeronautical Information Manual

| | | |
|---|---|---|
| Instrument Procedures | En Route | Altimeter Setting Procedures |

**PLT168**

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Angle of Attack |

**PLT173**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | Atmosphere |

**PLT203**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | High Altitude |

**PLT207**

14 CFR 121

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Circuit Breakers / Fuses / Relays / Switches |

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Static Wicks / Lightning Protection / Bonding |

Aviation Maintenance Technician Handbook - General  FAA-H-8083-30

| | | |
|---|---|---|
| Aircraft Systems | Electrical | Generators / Alternators / Controls / Systems |

**PLT210**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Operation |
| Aircraft Systems | Powerplant | Turbine Components / Functions |

**PLT212**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fire Control | Extinguishing Agent / System / Preflight |

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fire Control | Extinguishing Agent / System / Preflight |

**PLT235**

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aerodynamics | Principles of Flight | Forces Acting on Aircraft |

**PLT243**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Propeller | Centrifugal Twisting |

**PLT251**

Aviation Maintenance Technician Handbook - General  FAA-H-8083-30

| | | |
|---|---|---|
| Aircraft Systems | Fuel / Oil | Fuel Servicing |
| Aircraft Systems | Fuel / Oil | Fuel Specifications |
| Aircraft Systems | Fuel / Oil | Specifications |
| Aircraft Systems | Powerplant | Fuel Requirements |

**PLT253**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fuel / Oil | Fuel Boost Bumps |

**PLT273**
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Hydraulic | Specifications |
| Aircraft Systems | Hydraulic | System Operation |

**PLT278**
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Performance | Atmospheric Effects | Temperature |

**PLT310**
Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aerodynamics | Load Factor | Atmospheric Criteria |

**PLT318**
Aeronautical Information Manual

| | | |
|---|---|---|
| Flight Operations | Normal Procedures | Minimum Fuel Advisory |

**PLT324**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Fuel / Oil | Oil System Failure Modes |

**PLT326**
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Oxygen |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Oxygen |

**PLT327**
Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Environmental | Oxygen |

**PLT342**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Turbine Compressors |

**PLT346**
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Primary | Ailerons |

**PLT351**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Propeller | Beta Range |
| Aircraft Systems | Propeller | Deicing |
| Aircraft Systems | Propeller | Feathering |
| Aircraft Systems | Propeller | Governor Operation |
| Aircraft Systems | Propeller | Propeller Forces |
| Aircraft Systems | Propeller | Stresses |
| Aircraft Systems | Propeller | Unfeathering |

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aircraft Systems | Propeller | Feathering |

**PLT410**
14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | IOE |

**PLT413**
14 CFR 25

| | | |
|---|---|---|
| Regulations | 14CFR Part 25 | Fuel Jettisoning |

**PLT473**
Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Primary | Elevators / Horizontal Stabilizer |
| Aircraft Systems | Flight Controls / Secondary | Trim tabs |

**PLT478**
Aviation Maintenance Technician Handbook - General FAA-H-8083-30

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Starters |

**PLT479**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Start |
| Aircraft Systems | Powerplant | Starters |
| Aircraft Systems | Powerplant | Starting |

**PLT493**

AC 00-6 Aviation Weather

| | | |
|---|---|---|
| Weather | Meteorology | Icing |

**PLT497**

Aeronautical Information Manual

| | | |
|---|---|---|
| Publications | AIM | Transponder Operation |

**PLT499**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Instruments |
| Aircraft Systems | Powerplant | Starting |
| Aircraft Systems | Powerplant | Turbine Components / Functions |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Turbine Characteristics |

**PLT502**

Aeronautical Information Manual

| | | |
|---|---|---|
| Publications | AIM | Light Gun Signals |

**PLT523**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aerodynamics | Airfoils | Vortex Generators |

# Flight Engineer Reciprocating Engine-Added Rating (FER)
# Sample Questions

# FLIGHT ENGINEER RECIPROCATING ENGINE–ADDED RATING (FER)

**1. Which of the following is considered an auxiliary flight control?**

A—Ruddervator.
B—Upper rudder.
C—Leading-edge flaps.

*Answer: C.*
*Learning Statement: Recall secondary flight controls –types/purpose/functionality.*

**2. What is the primary source of directional stability for an airplane?**

A—CG position.
B—Vertical tail.
C—Horizontal tail.

*Answer: B.*
*Learning Statement: Recall forces acting on aircraft-stability/controllability.*

**3. What is the purpose of electrical bonding jumpers?**

A—Decrease the probability of lightning damage to such elements as control hinges.
B—Minimize electrolytic corrosion by connecting the airplane parts to form an integral unit.
C—Provide a high-resistance path for electrical equipment, thereby eliminating ground wires.

*Answer: A.*
*Learning Statement: Recall aircraft performance-atmospheric effects.*

**4. Which type of oxygen system is the flight deck equipped with normally?**

A—Constant-flow.
B—Phase dilution.
C—Diluter-demand.

*Answer: C.*
*Learning Statement: Recall oxygen system-components/operating principles/characteristics.*

**5. (Refer to figure 40) What is the loaded CG in percent of MAC under operating conditions No. 1?**

A—28.9 percent.
B—30.5 percent.
C—32.9 percent.

*Answer: B.*
*Learning Statement: Calculate weight and balance.*

# LIST OF REFERENCE MATERIALS SPECIFIC TO THE FLIGHT ENGINEER RECIPROCATING ENGINE-ADDED RATING (FER)

| *Topic* | *Content* | *Specific* |
|---|---|---|
| **PLT011** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Takeoff Power |
| **PLT012** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Computations | Flight Computations |
| Aircraft Performance | Computations | Fuel |
| **PLT016** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Aircraft Performance | Computations | Fuel Dump |
| **PLT018** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aerodynamics | Principles of Flight | Load Factor |
| **PLT019** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Cabin Altitude |
| Aircraft Performance | Computations | Cabin Altitude |
| **PLT021** | | |
| Aircraft Weight and Balance Handbook, FAA-H-8083-1 | | |
| Weight and Balance | Aircraft Loading | Formulas |
| Weight and Balance | Center of Gravity | Shifting Weight |
| **PLT108** | | |
| AC 120-58 Pilot Guide for Large Aircraft Ground Deicing | | |
| Airport Operations | Ground Deicing | Glycol Properties / Mixtures |
| Airport Operations | Ground Deicing | Temperature |
| Airport Operations | Ground Deicing | Types |
| AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook | | |
| Aircraft Systems | Propeller | Deicing Boots |
| **PLT109** | | |
| Aviation Maintenance Technician Handbook - General FAA-H-8083-30 | | |
| Aircraft Systems | Electrical | Batteries / Maintenance / Hazards |
| **PLT115** | | |
| AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook | | |
| Aircraft Systems | Fuel / Oil | Fuel System |
| Aircraft Systems | Fuel / Oil | Water Injection |
| Aircraft Systems | Powerplant | Detonation |
| Aircraft Systems | Powerplant | Improper Combustion |
| Aircraft Systems | Powerplant | Mixtures |
| **PLT124** | | |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Systems | Powerplant | Humidity Effects |
| **PLT128** | | |
| AC 20-117 Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft | | |
| Weather | Hazardous | Icing |
| **PLT134** | | |
| AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook | | |
| Aircraft Systems | Powerplant | Mixtures |
| **PLT135** | | |
| AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook | | |
| Aircraft Systems | Environmental | Pressurization / Valves / Controls / Operation |
| Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25 | | |
| Aircraft Performance | Charts | Cabin Altitude |
| Aircraft Performance | Charts | Cabin Pressure Altitude |
| **PLT137** | | |
| AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook | | |
| Aircraft Systems | Environmental | Vapor Cycling |
| Cooling/Component/Operation/Servicin | | |
| **PLT138** | | |
| AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook | | |
| Aircraft Systems | Landing Gear | Wheels |

**PLT173**
AC 00-6 Aviation Weather
Weather | Meteorology | Atmosphere

**PLT189**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Intake / Carb / Inlet Heat

**PLT190**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | De-Icing / Anti-Icing | Intake / Carburetor Icing

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | De-Icing / Anti-Icing | Intake / Carburetor Icing

**PLT207**
14 CFR 121
Aircraft Systems | Electrical | Circuit Breakers / Fuses / Relays / Switches

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Electrical | Static Wicks / Lightning Protection / Bonding

Aviation Maintenance Technician Handbook - General .FAA-H-8083-30
Aircraft Systems | Electrical | Circuit Breakers / Fuses / Relays / Switches
Aircraft Systems | Electrical | Generators / Alternators / Controls / Systems

**PLT210**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Engine Operation

**PLT212**
Aviation Maintenance Technician Handbook - General .FAA-H-8083-30
Flight Operations | Emergency Procedures | Electrical Fires

**PLT243**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Propeller | Centrifugal Twisting

**PLT249**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Improper Combustion
Aircraft Systems | Powerplant | Mixtures

**PLT253**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fuel / Oil | Fuel Boost Bumps
Aircraft Systems | Fuel / Oil | Fuel System

**PLT273**
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Hydraulic | Accumulators
Aircraft Systems | Hydraulic | Specifications
Aircraft Systems | Hydraulic | System Operation

**PLT324**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Fuel / Oil | Oil Cooler System
Aircraft Systems | Fuel / Oil | Oil System
Aircraft Systems | Fuel / Oil | Specifications

**PLT326**
AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook
Aircraft Systems | Environmental | Oxygen

Aeronautical Information Manual
Human Factors | Aeromedical | Oxygen Mask Operation

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Environmental | Oxygen

**PLT327**
Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25
Aircraft Systems | Environmental | Oxygen

**PLT342**
AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook
Aircraft Systems | Powerplant | Exhaust Systems

**PLT343**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Problems / Failure Modes |
| Aircraft Systems | Powerplant | Superchargers |
| Aircraft Systems | Powerplant | Turbochargers |
| Aircraft Systems | Powerplant | Water Injection |

**PLT346**

AC 65-15 Airframe and Powerplant Mechanics Airframe Handbook

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Primary | Ailerons |

**PLT351**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Propeller | Deicing |
| Aircraft Systems | Propeller | Feathering |
| Aircraft Systems | Propeller | Governor Operation |
| Aircraft Systems | Propeller | Propeller Forces |
| Aircraft Systems | Propeller | Stresses |
| Aircraft Systems | Propeller | Unfeathering |

Airplane Flying Handbook, FAA-H-8083-3A

| | | |
|---|---|---|
| Aircraft Systems | Propeller | Feathering |

**PLT365**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Instruments |
| Aircraft Systems | Powerplant | Specifications |

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Engine Instruments |

**PLT410**

14 CFR 121

| | | |
|---|---|---|
| Regulations | 14CFR Part 121 | IOE |

**PLT413**

14 CFR 25

| | | |
|---|---|---|
| Regulations | 14CFR Part 25 | Fuel Jettisoning |

**PLT473**

Pilot`s Handbook of Aeronautical Knowledge, FAA-H-8083-25

| | | |
|---|---|---|
| Aircraft Systems | Flight Controls / Primary | Elevators / Horizontal Stabilizer |
| Aircraft Systems | Flight Controls / Secondary | Trim tabs |

**PLT478**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Ignition System Hazard |

**PLT479**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Preflight / Hydraulic Lock |

**PLT483**

AC 65-12 Airframe and Powerplant Mechanics Powerplant Handbook

| | | |
|---|---|---|
| Aircraft Systems | Powerplant | Superchargers |

**PLT497**

Aeronautical Information Manual

| | | |
|---|---|---|
| Publications | AIM | Transponder Operation |