U.S. Department
of Transportation

**Federal Aviation
Administration**

**FAA-S-8081-26
(with Changes 1, 2, 3, & 4)**

Aviation Mechanic General
Practical Test Standards

June 2003

Flight Standards Service
Washington, DC 20591

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Note

FAA-S-8081-26, Aviation Mechanic General Practical Test Standards (PTS) is to replace the oral and practical test guides currently used. Both testing procedures will be in effect until all examiners have been trained to administer the test in accordance with the PTS, or 2 years after the effective date of Order 8900.2, General Aviation Airman Designee Handbook. After which time, **all** tests must be administered under the PTS guidelines. New examiners must use the PTS upon completion of initial training. Previously appointed examiners must transition to the PTS within 60 days after completion of recurrent training.

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Foreword

This Aviation Mechanic General Practical Test Standards book has been published by the Federal Aviation Administration (FAA) to establish the standards for the Aviation Mechanic General Practical Test. The passing of this practical test is a required step toward obtaining the Aviation Mechanic certificate with Airframe and/or Powerplant ratings. **FAA inspectors and Designated Mechanic Examiners (DMEs) shall conduct practical tests in compliance with these standards.** Applicants should find these standards helpful in practical test preparation.

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Joseph K. Tintera
Manager, Regulatory Support Division
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Record of Changes

Change 1 (8/8/2003)

- **Introduction***: Performance Levels*

    - Level 1 – Z3b. “Nondestructive” changed to “specified” (page 5).
    - Level 1 – Performance Standard deleted (page 5).
    - Level 2 – bullet 2: added additional text (page 5).
    - Level 2 – Performance Standard deleted (page 5).
    - Level 3 – bullet 4: added additional text (page 5).
    - Level 3 – z3e. “Verify” changed to “check” (page 5).
    - Level 3 – Performance Standard deleted (page 6).

Change 2 (9/24/2003)

- **Introduction***: Performance Levels*

    - Level 1 – Performance Standard added (page 5).
    - Level 2 – Performance Standard added (page 5).
    - Level 3 – Performance Standard added (page 6).

- **Section 1—Aviation Mechanic General**

    - A. Basic Electricity, Objective 1 – Changed “at least four” to “at least two” (page 7).
    - B. Aircraft Drawings, Objective 1 – changed “at least four” to “at least two” (page 8).
    - C. Weight and Balance, Objective 1 – changed “at least four” to “at least two” (page 9).
    - D. Fluid Lines and Fittings, Objective 1 – changed “at least four” to “at least two” (page 10).
    - D. Fluid Lines and Fittings, Objective 2 a – Added the words “fabrication and tubefittings” (page 11).
    - E. Materials and Processes, Objective 1 – changed “at least four” to “at least two” (page 12).
    - F. Ground Operation and Servicing, Objective 1 – changed “at least four” to “at least two” (page 13).
    - G. Cleaning and Corrosion Control, Objective 1 – changed “at least four” to “at least two” (page 15).

- H. Mathematics, Objective 1 – changed “at least four” to “at least two” (page 16).
- I. Maintenance Forms and Records, Objective 1 – changed “at least four” to “at least two” (page 17).
- J. Basic Physics, Objective 1 – changed “at least four” to “at least two” (page 18).
- K. Maintenance Publications, Objective 1 – changed “at least four” to “at least two” (page 20).
- L. Aviation Mechanic Privileges and Limitations, Objective 1 – changed “at least four” to “at least two” (page 22).

Change 3 (6/21/2004)

- Revised *Unsatisfactory Performance* section of the Introduction (page 6).
- Revised the following subject areas in Section 1—Aviation Mechanic General:

  - A. Basic Electricity (page 7).
  - B. Aircraft Drawings (page 8).
  - C. Weight and Balance (page 9).
  - E. Materials and Processes (page 12).
  - F. Ground Operation and Servicing (page 13).
  - G. Cleaning and Corrosion Control (page 15).
  - K. Maintenance Publications (page 20).

Change 4 (4/18/2014)

- Changed “Order 8610.4K, Aviation Mechanic Examiner Handbook” to “Order 8900.2, General Aviation Airman Designee Handbook” in the Note (page i)
- Revised the Introduction (page 1).
- Revised the Reference List from the *Practical Test Standard Description* section of the Introduction (page 3).
- Changed “Order 8610.4” “Order 8900.2” in the *Use of the Practical Test Standards* section of the Introduction (page 3).
- Revised the *Unsatisfactory Performance* section of the Introduction (page 6).
- Revised references for the following subject areas:

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Introduction

Section I – Aviation Mechanic General

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Introduction

The Flight Standards Service of the Federal Aviation Administration (FAA) has developed these practical test standards (PTS) to be used by examiners[1] when conducting aviation mechanic practical tests. Instructors are expected to address all of the elements contained in this PTS when preparing applicants for practical tests. Applicants should be familiar with this PTS and refer to these standards during their training.

Information considered directive in nature is described in this practical test document in terms, such as “shall” and “must” indicating the actions are mandatory. Guidance information is described in terms, such as “should” and “may” indicating the actions are desirable or permissive but not mandatory.

The FAA gratefully acknowledges the valuable assistance provided by the many individuals and organizations that contributed their time and talent in assisting with the development of these practical test standards.

This PTS is available for download, in pdf format, from http://www.faa.gov/mechanics/testing/practical/

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Practical Test Standards Concept

Title 14 of the Code of Federal Regulations (14 CFR) specifies the subject areas in which knowledge and skill must be demonstrated by the applicant before the issuance of an Aviation Mechanic Certificate with an airframe and/or powerplant rating. The CFRs provide the flexibility that permits the FAA to publish practical test standards containing knowledge and skill specifics in which competency must be demonstrated.

> "Knowledge" (oral) elements are indicated by use of the words *"Exhibits knowledge of...."*

[1] The word “examiner” denotes either the FAA inspector, FAA designated examiner, or other authorized person who conducts the practical test.

"Skill" (practical) elements are indicated by the use of the words *"Demonstrates the ability to...."*

The FAA will revise this book whenever it is determined that changes are needed. **Adherence to the applicable regulations, the policies set forth in the current revision of FAA Order 8900.2 – General Aviation Airman Designee Handbook and the practical test standards is mandatory for the evaluation of aviation mechanic applicants.**

Practical Test Book Description

This test book contains the following Aviation Mechanic Practical Test Standards:

Section I—Aviation Mechanic General

Practical Test Standard Description

The Aviation Mechanic Practical Test Standards include the subject areas of knowledge and skill for the issuance of an aviation mechanic certificate and/or the addition of a rating. The subject areas are the topics in which aviation mechanic applicants must have knowledge and/or demonstrate skill.

The *Reference* identifies the publication(s) that describe(s) the subject area. Descriptions of the subject area are not included in the practical test standards, because this information can be found in the references listed and/or in manufacturer- or FAA-approved/acceptable data related to each subject area. Publications other than those listed may be used as references if their content conveys substantially the same information as the referenced publications. Except where appropriate, (e.g., pertinent CFRs) references listed in this document are not meant to supersede or otherwise replace manufacturer or other FAA-approved or acceptable data, but to serve as general information and study material sources.

Information contained in manufacturer- and/ or FAA-approved/acceptable data always takes precedence over advisory or textbook referenced data. Written instructions given to applicants for the completion of assigned skill portions of the practical test standards may include service bulletins; airworthiness directives or other CFRs; type certificate data sheets or specifications; manufacturer maintenance manuals or other similar approved/acceptable data necessary for accomplishment of objective testing.

Reference List:

14 CFR part 1	Definitions and Abbreviations
14 CFR part 21	Certification Procedures for Products and Parts
14 CFR part 43	Maintenance, Preventive Maintenance, Rebuilding, and Alteration
14 CFR part 65	Certification: Airmen Other Than Flight Crewmembers
14 CFR part 91	Air Traffic and General Operating Rules
FAA-H-8083-30	Aviation Maintenance Technician Handbook—General
FAA-H-8083-31	Aviation Maintenance Technician Handbook—Airframe
FAA-H-8083-1	Aircraft Weight and Balance Handbook

Each subject area has an objective. The objective lists the important knowledge and skill elements that must be utilized by the examiner in planning and administering aviation mechanic tests, and that applicants must be prepared to satisfactorily perform.

Use of the Practical Test Standards

The FAA requires that all practical tests be conducted in accordance with the appropriate Aviation Mechanic Practical Test Standards and the policies and procedures set forth in the current revision of FAA Order 8900.2. When using the practical test book, the examiner must evaluate the applicant's knowledge and skill in sufficient depth to determine that the objective for each subject area element selected is met.

An applicant is not permitted to know before testing begins which selections in each subject area are to be included in his/her test (except the core competency elements, which all applicants are required to perform). Therefore, an applicant should be well prepared in *all* oral and skill areas included in the practical test standard.

Further information about the requirements for conducting/taking the practical test is contained in FAA Order 8900.2

Aviation Mechanic Practical Test Prerequisites

All applicants must have met the prescribed experience requirements as stated in 14 CFR part 65, section 65.77. (See FAA Order 8900.2 for information about testing under the provisions of 14 CFR part 65, section 65.80.)

Examiner Responsibility

The examiner who conducts the practical test is responsible for determining that the applicant meets acceptable standards of knowledge and skill in the assigned subject areas within the appropriate practical test standard. Since there is no formal division between the knowledge and skill portions of the practical test, this becomes an ongoing process throughout the test.

The following terms may be reviewed with the applicant prior to, or during, element assignment:

1. "Inspect" means to examine by sight and/or touch (with or without inspection enhancing tools/equipment).
2. "Check" means to verify proper operation.
3. "Troubleshoot" means to analyze and identify malfunctions.
4. "Service" means to perform functions that assure continued operation.
5. "Repair" means to correct a defective condition.

Performance Levels

The following is a detailed description of the meaning of each level:

Level 1

- Know basic facts and principles.
- Be able to find information and follow directions and written instructions.
- Locate methods, procedures, instructions, and reference material.
- Interpretation of information not required.
- No skill demonstration is required.

Example:

Z3b. Locate specified nondestructive testing methods. (Level 1)

Performance Standard: The applicant will locate information for nondestructive testing.

Level 2

- Know and understand principles, theories, and concepts.
- Be able to find and interpret maintenance data and information, and perform basic operations using the appropriate data, tools, and equipment.
- A high level of skill is not required.

Example:

Z3c. Detect electrical leakage in electrical connections, terminal strips, and cable harness (at least ten will have leakage faults). (Level 2)

Performance Standard: Using appropriate maintenance data and a multimeter, the applicant will identify items with leakage faults.

Level 3

- Know, understand, and apply facts, principles, theories, and concepts.
- Understand how they relate to the total operation and maintenance of aircraft.
- Be able to make independent and accurate airworthiness judgments.
- Perform all skill operations to a return-to-service standard using appropriate data, tools, and equipment. Inspections are performed in accordance with acceptable or approved data.
- A fairly high skill level is required.

Example:

Z3e. Check control surface travel. (Level 3)

Changes 2 (9/24/2003), 3 (6/21/2004), & 4 (4/18/2014)

Performance Standard:	Using type certificate data sheets and the manufacturer's service manual, the applicant will measure the control surface travel, compare the travel to the maintenance data, and determine if the travel is within limits.

Satisfactory Performance

The practical test is passed if the applicant demonstrates the prescribed proficiency in the assigned elements (core competency and other selected elements) in each subject area to the required standard. Applicants shall not be expected to memorize all mathematical formulas that may be required in the performance of various elements in this practical test standard. However, where relevant, applicants must be able to locate and apply necessary formulas to obtain correct solutions.

Unsatisfactory Performance

If the applicant does not meet the standards of any of the elements performed (knowledge, core competency, or other skill elements), the associated subject area is failed, and thus the practical test is failed. The examiner or the applicant may discontinue testing any time after the failure of a subject area. In any case, the applicant is entitled to credit for only those subject areas satisfactorily completed. See the current revision of FAA Order 8900.2 for further information about retesting and allowable credit for subject areas satisfactorily completed.

Typical areas of unsatisfactory performance and grounds for disqualification include the following:

1. Any action or lack of action by the applicant that requires corrective intervention by the examiner for reasons of safety.
2. Failure to follow acceptable or approved maintenance procedures while performing skill (practical) projects.
3. Exceeding tolerances stated in the maintenance instructions.
4. Failure to recognize improper procedures.
5. The inability to perform to a return to service standard, where applicable.
6. Inadequate knowledge in any of the subject areas.

Section I – Aviation Mechanic General

A. Basic Electricity

*Core competency element.

Reference: *FAA-H-8083-30.*

Objective: To determine that the applicant:

1. Exhibits knowledge of at least two of the following—
   a. sources and/or effects of capacitance in a circuit.
   b. uses of capacitance in a circuit.
   c. sources and/or effects of inductance in a circuit.
   d. uses of inductance in a circuit.
   e. operation of basic AC and/or DC electrical circuits.
   f. Ohm's law.
   g. Kirchhoff's law(s).
   h. procedures used in the measurement of voltage, current, and/or resistance.
   i. determining power used in simple circuits.
   j. troubleshooting, and/or repair or alteration using electrical circuit diagrams.
   k. common types of defects that may occur in an installed battery system.
   l. aircraft battery theory/operation.
   m. servicing aircraft batteries.

2. *Demonstrates the ability to perform both of the following—
   a. use measuring equipment to measure in a circuit or circuit component(s), at least one of the following: voltage, current, resistance, or continuity. (Level 3)
   b. determine the appropriateness of measurement(s) according to instructions/specifications. (Level 2)

3. Demonstrates the ability to perform at least one of the following—

a. read and interpret one or more electrical circuit diagrams. (Level 2)
b. troubleshoot an electrical circuit. (Level 3)
c. calculate voltage, current, and resistance using Ohm's Law. (Level 2)
d. inspect a battery and installed battery system. (Level 3)
e. accomplish a battery state-of-charge (hydrometer) and/or electrical leak (cell imbalance) test. (Level 3)
f. accomplish removal and/or installation of a battery in an aircraft. (Level 3)
g. set-up and connect a charger to one or more batteries for constant current and/or constant voltage charging. (Level 3)

B. Aircraft Drawings

Reference: *FAA-H-8083-30.*

Objective: To determine that the applicant:

1. Exhibits knowledge of at least two of the following—
   a. characteristics and/or uses of any of the various types of drawings/blueprints and/or system schematics.
   b. the meaning of any of the lines and symbols commonly used in aircraft sketches/drawings/blueprints.
   c. using charts or graphs.
   d. troubleshooting an aircraft system or component(s) using drawings/blueprints and/or system schematics.
   e. inspection of an aircraft system or component(s) using drawings/blueprints and/or system schematics.
   f. repair or alteration of an aircraft system or component(s) using drawings/blueprints and/or schematics.
   g. use of drawings/blueprints in component fabrication.
   h. terms used in conjunction with aircraft drawings/blueprints and/or system schematics.

2. N/A
3. Demonstrates the ability to perform at least one of the following—
   a. maintenance and/or inspection using drawings/blueprints and/or system schematics. (Level 3)
   b. preventive maintenance using drawings/blueprints and/or schematics. (Level 3)
   c. troubleshooting using drawings/blueprints and/or schematics. (Level 3)
   d. use a control cable tension chart. (Level 3)
   e. use a servicing, limitation, or calculation chart or graph. (Level 3)
   f. draw a sketch of an alteration or repair. (Level 2)
   g. draw a diagram of an electrical circuit or other system, or portion thereof, and explain the drawing. (Level 2)

C. Weight and Balance

*Core competency element.

Reference: *FAA-H-8083-30.*

Objective: To determine that the applicant:

1. Exhibits knowledge of at least two of the following—
   a. the purpose(s) of weighing or reweighing.
   b. general preparations for weighing, with emphasis on aircraft preparation and/or weighing area considerations.
   c. the general location of airplane center of gravity (CG) in relation to the center of lift for most fixed main airfoils.
   d. definitions of any of the following: datum, arm, moment (positive or negative), or moment index.
   e. the meaning and/or application of any terms/nomenclature associated with weight and balance other than those mentioned in element “d”

above, including but not limited to any of the following: tare, ballast, and residual fuel/oil.

f. procedures for finding any of the following: datum, arm, moment (positive or negative), or moment index.

g. purpose and/or application of mean aerodynamic chord (MAC).

h. adverse loading considerations.

2. *Demonstrates the ability to calculate weight and balance CG and complete aircraft weight and balance documentation. (Level 3)

3. Demonstrates the ability to perform at least one of the following—

a. weighing equipment preparation and setup according to manufacturer's instructions. (Level 3)

b. locate procedures for leveling and the leveling points for an aircraft. (Level 2)

c. locate weigh points, procedures for determining CG, and determine the weigh point arms for an aircraft. (Level 2)

d. identify tare items for a specific aircraft and weighing procedure. (Level 2)

e. find the datum for at least two different aircraft. (Level 2)

f. determine the weight and location of required ballast after an (actual or hypothetical) equipment change. (Level 2)

D. Fluid Lines and Fittings

*Core competency element.

References: FAA-H-8083-30; AC 43.13-1B.

Objective: To determine that the applicant:

1. Exhibits knowledge of at least two of the following—

a. tubing materials.

b. tubing materials application.
c. tubing sizes.
d. flexible hose material.
e. flexible hose materials application.
f. flexible hose sizes.
g. flexible hose identification.
h. AN, MS, and/or AC plumbing fittings.
i. rigid line fabrication techniques/practices.
j. rigid line installation techniques/practices.
k. flexible hose fabrication techniques/practices.
l. flexible hose installation techniques/practices.

2. *Demonstrates the ability to perform at least one of the following—

a. rigid line fabrication to include tube fittings, bending, and tube flaring. (Level 3)
b. flexible line fabrication using replaceable fittings on at least one end. (Level 3)

3. Demonstrates the ability to perform at least one of the following—

a. inspect for and identify defects in rigid and/or flexible lines. (Level 3)
b. install and remove a rigid and/or flexible line. (Level 3)
c. identify correct and/or incorrect rigid line installations. (Level 2)
d. identify correct and/or incorrect flexible line installations. (Level 2)
e. form a bead on tubing. (Level 3)
f. select components and assemble a flareless fitting tube connection. (Level 3)
g. repair a damaged rigid line. (Level 3)
h. identify various sizes and types of aircraft fittings. (Level 2)
i. secure a rigid line with clamps. (Level 3)
j. identify fluid and/or air lines that may be installed on an aircraft. (Level 2)

Changes 2 (9/24/2003), 3 (6/21/2004), & 4 (4/18/2014)

E. Materials and Processes

*Core competency element.

Reference: FAA-H-8083-30.

Objective: To determine that the applicant:

1. Exhibits knowledge of at least two of the following—
   a. any of the metals commonly used in aircraft and their general application.
   b. composites and other nonmetallic components and their general application.
   c. heat-treated parts precautions, using DD or "icebox" rivets.
   d. typical wood materials and fabric coverings.
   e. visible characteristics of acceptable and/or unacceptable welds.
   f. precision measurement and precision measurement tools.
   g. using inspection techniques/methods, including any of the following: visual, metallic ring test, dye/fluorescent penetrant, magnetic particle, and/or eddy current.
   h. identification, selection, installation, and/or use of aircraft hardware.
   i. safetying of components and/or hardware.
   j. finding information about material types for specific application(s).

2. *Demonstrates the ability to torque to specification(s), and safety-wire aircraft component(s)/hardware. (Level 3)

3. Demonstrates the ability to perform at least one of the following—
   a. select and install standard aircraft hardware, to include one or more self-locking nuts. (Level 3)
   b. select, install, and secure a clevis bolt and associated hardware. (Level 3)

c. select and install one or more appropriate screws/bolts, nuts, cotter pins, and washers. (Level 3)
d. inspect hardware for defects, proper installation. (Level 3)
e. safety a turnbuckle. (Level 3)
f. perform a dye or fluorescent penetrant inspection. (Level 3)
g. find a (not visible) defect using eddy current or ultrasonic inspection equipment. (Level 2)
h. perform, read, and record a precision measurement using a dial indicator, or micrometer, or vernier caliper. (Level 2)
i. visually inspect welds and determine acceptability. (Level 3)
j. identify rivets by physical characteristics. (Level 2)

F. Ground Operation and Servicing

Reference: FAA-H-8083-30.

Objective: To determine that the applicant:

1. Exhibits knowledge of at least two of the following—
   a. general procedures for towing aircraft.
   b. Air Traffic Control (ATC) considerations/requirements for towing aircraft on or across active runways.
   c. general procedures for starting, ground operating, and/or taxiing a reciprocating engine powered aircraft.
   d. general procedures for starting, ground operating, and/or taxiing a turbine engine powered aircraft.
   e. the hazards associated with starting, ground operating, and/or taxiing aircraft and procedures for preventing, minimizing or otherwise managing any of them.
   f. procedures for refueling and/or defueling aircraft.
   g. oxygen system safety practices/precautions.

h. characteristics of aviation gasoline and/or turbine fuels, including basic types and means of identification.
i. fuel contamination hazards.
j. fuel additives commonly used in the field.
k. use of automobile fuel in aircraft engines.
l. types/classes of fires, using proper fire extinguishers/methods.

2. N/A

3. Demonstrates the ability to perform at least one of the following—

a. service an aircraft with compressed air or nitrogen. (Level 3)
b. set-up an aircraft and cockpit controls for engine start. (Level 2)
c. start and ground operate an aircraft engine[2] (taxiing optional), and use or respond to standard hand or light wand signals. (Level 3)
d. determine the engine oil for a specific engine. (Level 2)
e. secure an aircraft for outside storage. (Level 3)
f. fuel and/or defuel an aircraft (may be simulated). (Level 3)
g. sample fuel and inspect for proper fuel and contaminates. (Level 3)
h. set-up and connect an aircraft to an external power source. (Level 2)
i. connect a towbar to an aircraft and prepare for towing. (Level 3)
j. direct the movement (may be simulated) of aircraft. (Level 3)
k. locate and clear a liquid lock (actual or simulated) in an aircraft engine. (Level 3)
l. identify the types/classes of fires that local shop and/or flightline fire extinguishers may be used on. (Level 2)

[2] If an operable engine is available.

G. Cleaning and Corrosion Control

*Core competency element.

Reference: *FAA-H-8083-30.*

Objective: To determine that the applicant:

1. Exhibits knowledge of at least two of the following—
    a. aircraft preparation for washing, general aircraft cleaning (washing) procedures.
    b. postcleaning (washing) procedures.
    c. corrosion theory.
    d. types/effects of corrosion.
    e. conditions that cause corrosion.
    f. corrosion prone areas in aircraft.
    g. corrosion preventive maintenance procedures.
    h. inspection for and identification of corrosion in any of its various forms.
    i. corrosion removal and treatment procedures.
    j. use of Material Safety Data Sheets (MSDS).
2. *Demonstrates the ability to inspect for and identify two or more of the various forms of corrosion that affect aircraft. (Level 3)
3. Demonstrates the ability to perform at least one of the following:
    a. identify and select materials used to clean interior and/or exterior surfaces according to aircraft manufacturer's instructions. (Level 2)
    b. corrosion removal from any of the metals commonly used in aircraft. (Level 3)
    c. preventive corrosion treatment on any of the metals commonly used in aircraft. (Level 3)
    d. identify and select appropriate corrosion preventive methods and materials for a specific aircraft application. (Level 2)

Changes 2 (9/24/2003) & 4(4/18/2014)

H. Mathematics

Note: *The practical portion of the Mathematics subject area may be tested simultaneously when performing calculation(s) in subject areas Basic Electricity and/or Weight and Balance.*

Reference: *FAA-H-8083-30.*

Objective: To determine that the applicant:

1. Exhibits knowledge of at least two of the following—
   a. areas of various geometrical shapes.
   b. volumes of various geometrical shapes.
   c. definitions/descriptions of geometrical terms, including but not limited to any of the following: polygon, pi, diameter, radius, and hypotenuse.
   d. ratio problems, including one or more examples of where or how they may be used in relation to aircraft maintenance or system(s) operation.
   e. proportion problems, including one or more examples of where or how they may be used in relation to aircraft maintenance or system(s) operation.
   f. percentage problems, including one or more examples of where or how they may be used in relation to aircraft maintenance or system(s) operation.
   g. algebraic operations, including one or more examples of where or how they may be used in relation to aircraft maintenance.
   h. conditions or areas where metric conversion may be necessary.

2. N/A

3. Demonstrates the ability to perform at least one of the following, using appropriate formulas—
   a. calculate the area of a polygon and/or circle. (Level 2)

b. calculate the volume of a sphere, cube, or cylinder. (Level 2)
c. algebraic operations involving addition, subtraction, multiplication, and/or division of positive and negative numbers. (Level 2)
d. locate mathematical formulas used to assist in the maintenance, preventive maintenance, or alteration of aircraft. (Level 1)

I. Maintenance Forms and Records

*Core competency element.

References: *14 CFR parts 1, 43, and 91.*

Objective: To determine that the applicant:

1. Exhibits knowledge of at least two of the following—
   a. writing descriptions of work performed and approval for return to service after minor repairs or minor alterations.
   b. the content, form, and disposition of aircraft maintenance records reflecting approval for return to service after a 100-hour inspection.
   c. the content, form, and disposition of aircraft maintenance records reflecting disapproval for return to service after a 100-hour inspection.
   d. the recording content, form, and disposition requirements for certificated aviation mechanics (without an Inspection Authorization) who perform major repairs and/or major alterations.
   e. the inoperative instruments or equipment provisions of 14 CFR part 91.
   f. the definition/explanation of any of the terms used in relation to aircraft maintenance, such as overhaul(ed), rebuilt, time in service, maintenance, preventive maintenance, inspection, major alteration, major repair, minor alteration, and minor repair.

2. *Demonstrates the ability to write appropriate entries on FAA Form 337, Major Repair and Major Alteration, indicating performance of a major repair, and make appropriate corresponding aircraft maintenance record entry. (Level 3)

3. Demonstrates the ability to write entries for at least one of the following—

   a. performance of minor repair or minor alteration. (Level 3)
   b. performance of preventive maintenance. (Level 3)
   c. compliance with an airworthiness directive. (Level 3)
   d. performance of a 100-hour inspection with approval for return to service, including a list of some allowable inoperative instruments or equipment in accordance with the provision of 14 CFR part 91. (Level 3)
   e. performance of a 100-hour inspection with disapproval for return to service because of needed maintenance, or noncompliance with applicable specifications or airworthiness directive(s). (Level 3)
   f. FAA Form 337, Major Repair and Major Alteration, for additional equipment installation or an alteration in accordance with a supplemental type certificate (STC) and make appropriate maintenance record entry. (Level 3)
   g. FAA Form 8010-4, Malfunction or Defect Report. (Level 3)

J. Basic Physics

Reference: *FAA-H-8083-30.*

Objective: To determine that the applicant:

1. Exhibits knowledge of at least two of the following—

   a. any of the simple machines, how they function, and/or how mechanical advantage is applied in one or more specific examples.

b. sound resonance, how it can be a hazard to aircraft, and how sound may be used to aid in inspecting aircraft.
c. the relationship between fluid density and specific gravity.
d. the characteristic of specific gravity of fluids and how it may be applied to aircraft maintenance.
e. the general effects of pressure and temperature on gases and liquids and how the qualities of compressibility and/or incompressibility of gases and liquids are generally applied to aircraft systems.
f. density altitude and the effects of temperature, and/or pressure, and/or humidity on aircraft and/or engine performance.
g. heat, how it is manifested in matter, and how heat transfer is accomplished through conduction, and/or convection, and/or radiation.
h. coefficient of linear (thermal) expansion as related to aircraft materials.
i. aircraft structures and theory of flight/physics of lift.
j. the operation of aerodynamic factors in the flight of airplanes and/or helicopters.
k. the relationship between force, area, and pressure.
l. the five forces or stresses affecting aircraft structures.
m. the two forms of energy and how they apply to aircraft and/or aircraft systems.

2. N/A

3. Demonstrates the ability to perform at least one of the following—

   a. identify any parts or systems of an aircraft and/or engine where Bernoulli's principle and/or Newtonian law is applied. (Level 2)
   b. identify parts or systems of an aircraft where Boyle's, Charles', and/or Pascal's Laws apply. (Level 2)
   c. calculate force, area, or pressure in a specific application. (Level 3)

d. identify one or more methods of heat transfer in aircraft systems and where and how heat damage may occur when performing aircraft maintenance. (Level 2)
e. identify any of the following and describe how they function aerodynamically: stall strips, wing fences, vortex generators, flaps, slats, spoilers, ailerons, stabilators, elevators, rudders, or trim tabs. (Level 2)
f. determine which of the five forces/stresses are acting on an aircraft or aircraft parts at specific points under given conditions. (Level 2)
g. design a simple machine (on paper) that uses one or more methods of mechanical advantage. (Level 2)

K. Maintenance Publications

*Core competency element.

Reference: *FAA-H-8083-30.*

Objective: To determine that the applicant:

1. Exhibits knowledge of at least two of the following—
   a. how a mechanic makes use of Type Certificate Data Sheets (TCDSs) and/or Aircraft Specifications in conducting maintenance or inspections.
   b. aircraft maintenance manuals and associated publications including any of the following types of publications and how they are used: service bulletin, maintenance manual, overhaul manual, structural repair manual, or instructions for continued airworthiness.
   c. the requirements of 14 CFR parts 43.13, 43.15, or 43.16 in the performance of maintenance.
   d. Airworthiness Directives (AD), including purpose and/or AD categories and/or ADs issued to other than aircraft.
   e. in what form individuals may receive FAA published AD summaries and/or how they may be obtained.
   f. the AD identification numbering system.

g. FAA Advisory Circulars (ACs) including any of the following: significance of the AC numbering system, one or more examples of ACs issued to provide information in designated subject areas, one or more examples of ACs issued to show a method acceptable to the FAA complying with the CFRs.
h. the intent or function of the Aviation Maintenance Alerts.
i. the Air Transport Association (ATA) Specification 100.

2. *Demonstrates the ability to perform both of the following—
   a. read, comprehend, and apply information contained in a manufacturer's maintenance manual or illustrated parts manual. (Level 3)
   b. locate and list all applicable ADs for at least one particular make, model, and serial number of an aircraft, engine, propeller, or appliance. (Level 2)

3. Demonstrates the ability to read, comprehend, and apply the information contained in at least one of the following—
   a. service bulletin. (Level 3)
   b. overhaul manual. (Level 3)
   c. structural repair manual. (Level 3)
   d. instructions for continued airworthiness. (Level 3)
   e. at least one maintenance related section, or appendix, or portion(s) thereof, of 14 CFR. (Level 3)
   f. an AD. (Level 3)
   g. Aircraft Specifications or TCDSs to specific maintenance or inspection operations, or portions thereof. (Level 3)

L. Aviation Mechanic Privileges and Limitations

References: *14 CFR part 65; AC 65-30A.*

Objective: To determine that the applicant:

Change 2 (9/24/2003)

1. Exhibits knowledge of mechanic privileges and limitations and exercise thereof, including at least two of the following—
    a. required evidence of eligibility experience satisfactory to the Administrator.
    b. length of experience required for eligibility.
    c. practical experience required for eligibility.
    d. the privileges of a mechanic in relation to 100-hour and annual inspections.
    e. change of address reporting requirements.
    f. minimum age requirements.
    g. recent experience requirements to exercise privileges of a certificate.
    h. who is authorized to perform maintenance/inspection, preventive maintenance, rebuilding, or alteration and/or approve for return to service afterwards.
    i. causes for revocation or suspension.
    j. criteria for determining major and minor repair or alteration.

2. N/A

3. When given a copy of 14 CFR part 65, demonstrates the ability to understand mechanic privileges and limitations by finding and interpreting/explaining essential information contained in at least two of the following—
    a. Offenses involving alcohol or drugs. (Level 2)
    b. Written tests: Cheating or other unauthorized conduct. (Level 2)
    c. Applications, certificates, logbooks, reports, and records: falsification, reproduction, or alteration. (Level 2)
    d. Refusal to submit to a drug or alcohol test. (Level 2)
    e. General privileges and limitations. (Level 2)
    f. Recent experience requirements. (Level 2)
    g. Airframe rating; additional privileges and/or Powerplant rating; additional privileges. (Level 2)
    h. Display of certificate. (Level 2)