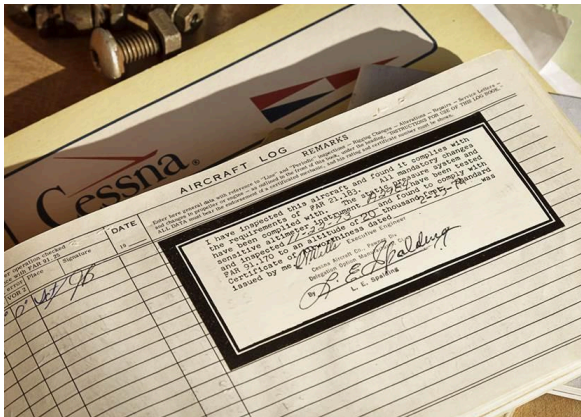


Airworthiness Requirements

Objective	
<p>To ensure the applicant learns the required items necessary for establishing the airworthiness of an airplane, and what to do when inoperative equipment is found.</p>	
Purpose	
<p>All pilots are responsible for ensuring that any airplane they will fly is in an airworthy condition. This lesson introduces pilots to the FARs related to maintenance, required inspections, the process for dealing with inoperative equipment, and preventative maintenance.</p>	
Schedule	Equipment
<ul style="list-style-type: none"> ● Ground Lesson: 15 minutes ● Student Q&A: 10 minutes 	<ul style="list-style-type: none"> ● FAR/AIM ● Airplane Logbooks (optional) ● Whiteboard / Markers (optional)
Student Actions	Instructor Actions
<ul style="list-style-type: none"> ● Ask any questions, receive study material for the next lesson. ● Watch linked video. ● Review listed references. 	<ul style="list-style-type: none"> ● Deliver the ground lesson (below). ● Answer student questions.
Completion Standards	
<ul style="list-style-type: none"> ● Student can explain the following items: <ul style="list-style-type: none"> ● Equipment and instruments required for VFR Day and Night operations. ● Process for determining airworthiness when inoperative instruments or equipment are found. ● The purpose of Special Flight Permits and the process for obtaining one. ● Required airworthiness documentation and inspections. ● Preventative and deferred maintenance. ● Student can demonstrate to the instructor that their aircraft is airworthy for a particular scenario, 	

References

- 14 CFR Part 91 (General Operating and Flight Rules)
- 14 CFR Part 43 (Maintenance) / Coleal (2009) FAA Letter of Legal Interpretation
- FAA-S-ACS-6C (Private Pilot ACS) - Area I Task B
- FAA-S-ACS-7B (Commercial Pilot ACS) - Area I Task B
- FAA-S-ACS-25 (CFI ACS) - Area III Task B

Ground Lesson Outline

- Required Instruments and Equipment - § 91.205
 - Day VFR
 - Airspeed Indicator, Altimeter, Magnetic Compass, Tachometer, Oil Pressure Gauge, Temperature Gauge (liquid cooled), Oil Temperature Gauge (air cooled), Manifold Pressure Gauge (if applicable), Fuel Gauge (each tank), Landing Gear Indicators (if applicable), Red or White Anticollision (Certified after March 11, 1996), Seat Belts, ELT, Flotation/Flare (For Hire, etc.)
 - Night VFR
 - Position Lights, Anticollision Lights, Landing Light (for hire), Source of Power, Fuses
- Airworthiness with Inoperative Instruments and Equipment - § 91.213
 - With MEL - MEL states which items can be inoperative and the requirements for deferral
 - Without MEL - Must not be required by
 - VFR Day Type Certification Requirements for the airplane (e.g. 14 CFR Part 23)
 - KOEL / Equipment List
 - 91.205
 - Required by Airworthiness Directive
 - Special Flight Permit - § 21.199
 - How to Obtain - Apply to FSDO, State Purpose, Itinerary, Crew, Unairworthy Items
 - Owner/Operator Responsibilities - § 91.405 - Fix or inspect at next inspection, etc.
 - Technically can be deferred indefinitely
- Required Documents - Must be carried onboard
 - Airworthiness Certificate - § 91.203(a)(1) - Valid as long as airplane is airworthy
 - Standard vs. Special Airworthiness Certificate
 - Registration - § 91.203(a)(2) - Valid 7 years from month issued
 - Operating Instructions / Limitations (POH) - § 91.9(b)
 - W&B, Aircraft Flight Manual Supplements - e.g. for STC's or updated Avionics
- Required Inspections
 - Annual / 100 Hour Inspections - § 91.409(a)(1) / § 91.409(b)
 - Transponder Test and Inspection - § 91.413(a) - 24 Months
 - ELT Test and Inspection - § 91.207(c/d) - 12 Months / 1 hour cumulative use or 50% of useful life
 - Airworthiness Directives and Inspections - § 39.7 - Mandatory to follow guidance in AD
 - One-Time vs Recurring ADs
- Maintenance
 - Record Keeping - § 91.417
 - Inspections, etc. - 1 year or until superseded
 - Total time in service (engine, propeller, life-limited items, etc.), AD compliance, etc. - Transfer with airplane
 - Preventative Maintenance - § 91.407 - Logbook entry, (sometimes) test flight
 - Items - § 43 Appendix A (c) / Coleal (2009) Letter of Legal Interpretation
 - Deferred Maintenance
 - With MEL - MEL states which items can be deferred and the rules for doing so
 - Without MEL - If no safety of flight issue exists, placard and remove, placard and disable, with appropriate logbook entry - § 91.213

Ground Lesson Content

- **Required Instruments and Equipment - § 91.205**
 - **Day VFR**
 - Airspeed Indicator
 - Altimeter
 - Magnetic Compass
 - Tachometer
 - Oil Pressure Gauge
 - Temperature Gauge (liquid cooled)
 - Oil Temperature Gauge (air cooled)
 - Manifold Pressure Gauge (if applicable)
 - Fuel Gauge (each tank)
 - Landing Gear Indicators (if applicable)
 - Red or White Anticollision (Certified after March 11, 1996)
 - Seat Belts
 - ELT
 - Flotation/Flare (For Hire, etc.)
 - **Night VFR**
 - Position Lights
 - Anticollision Lights
 - Landing Light (for hire)
 - Source of Power - i.e. Alternator, Battery
 - Fuses - One spare set, or 3 of each type, accessible to pilot
- **Airworthiness with Inoperative Instruments and Equipment - § 91.213**
 - **With MEL** - MEL states which items can be inoperative and the requirements for deferral
 - **Without MEL** - Must not be required by
 - VFR Day Type Certification Requirements for the airplane (e.g. 14 CFR Part 23)
 - For example: Stall Indicators may be required in this way
 - KOEL / Equipment List
 - Not all airplanes have this
 - 91.205 -ATOMATO FLAMES, etc.
 - Required by Airworthiness Directive
 - **Special Flight Permit - § 21.199**
 - **How to Obtain** - Apply to FSDO, State Purpose, Itinerary, Crew, Unairworthy Items
 - **Owner/Operator Responsibilities - § 91.405** - Fix or inspect at next inspection, etc.
 - Technically can be deferred indefinitely
- **Required Documents** - Must be carried onboard, airworthiness must be displayed
 - **Airworthiness Certificate - § 91.203(a)(1)** - Valid as long as airplane is airworthy.

- **Maintenance** - The owner or operator of the airplane is responsible for maintaining the airplane in an airworthy condition, pilots are responsible for verifying the paperwork is in order, etc.
 - **Record Keeping - § 91.417**
 - Inspections, etc. - 1 year or until superseded
 - Total time in service (engine, propeller, life-limited items, etc.), AD compliance, etc. - Transfer with airplane
 - **Preventative Maintenance - § 91.407** - Logbook entry, (sometimes) test flight
 - **Items** - § 43 Appendix A (c) - Can be performed **by the owner**, simple items not requiring complex disassembly operations.
 - E.g. Oil changes, changing tires, etc.
 - Per Coleal (2009) FAA Letter of Legal Interpretation, Part 43 Appendix A is not exhaustive, however it is a good guide
 - **Deferred Maintenance**
 - **With MEL** - MEL states which items can be deferred and the rules for doing so
 - **Without MEL** - If no safety of flight issue exists, placard and remove, placard and disable, **with appropriate logbook entry.** - § 91.213