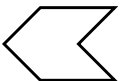




Airworthiness Requirements

General Overview

THE BACKSEAT PILOT



Overview

- **What**
 - Airworthiness requirements are the basis for deciding whether an aircraft is worthy of safe flight. They are what must be met to ensure an aircraft is safe and therefore legal to fly.
- **Why**
 - For an airplane to be airworthy, specific documents must be on board and current, inspections must be completed, and instruments must be functioning, otherwise the airplane is un-airworthy, or illegal to fly.

Content

- **Airworthiness without an MEL**
 - Deferring Equipment
 - Required Inspections & Documents
- **Airworthiness with an MEL**
- **Special Flight Permit**
- **Record Keeping**

Airworthiness without an MEL

- Widely used due to simplicity and minimal paperwork
- When inoperative equipment is found prior to flight, decide whether to:
 - Cancel the flight, and have the equipment fixed
 - Continue the flight by deferring inoperative equipment ([FAR 91.213\(d\)](#))
 - To defer, the item must not be required for flight
 - Equipment must be deactivated (or removed) and placarded as INOPERATIVE
- To defer equipment, verify it is not required by any of the following in [FAR 92.213\(d\)](#)
 - [FAR 91.205](#): Day / Night VFR required instruments
 - Kinds of Equipment List and Equipment List
 - Type Certificate
 - Airworthiness Directive

Deferring Equipment (FAR 91.213)

- [FAR 91.205](#): Required Instruments and Equipment for Day and Night VFR Flight
- Day VFR: TOMATO FFLAAMES
 - Tachometer for each engine
 - Oil pressure gauge for each engine
 - Manifold pressure gauge for each altitude engine
 - Airspeed Indicator
 - Temperature gauge for each liquid-cooled engine
 - Oil temperature gauge for each air-cooled engine
 - Fuel gauge for each tank
 - Flotation gear (for hire beyond glide distance)
 - Landing gear position indicator
 - Altimeter
 - Anti-Collision Lights (if certified after Mar 11, 1996)
 - Magnetic Compass
 - Emergency Locator Transmitter
 - Safety Belts / Should Harnesses
- Night VFR: FLAPS
 - Fuses (if required)
 - Landing Light (electric)
 - Anti-Collision Lights
 - Position Lights
 - Source of electricity for all equipment

Deferring Equipment (FAR 91.213)

- **Kinds of Equipment List and Equipment List**
 - Kinds of Equipment List – Chap 2 of POH - Lists manufacturer required equipment based on type of flight
 - Equipment List – Usually found in the weight and balance data and / or the POH
 - Specifies required equipment and all equipment approved for installation in the aircraft
- **Type Certificate**
 - Formal description of the airplane, engine, propeller
 - Specifies things like the type of engine, propeller, number of seats, etc.
 - Lists limitations and information required for type certification (airspeed, weight, thrust limitations, etc.)
 - Type certificate cannot be changed without a supplemental type certificate
 - Found on [the FAA TCDS website](#)
- **Airworthiness Directives**
 - Like a recall on a car – Notifies pilots of unsafe conditions and the required action / fix
 - Two Categories:
 - Emergency in nature, requiring immediate compliance prior to further flight
 - Less urgent nature requiring compliance in a specified time period
 - Aircraft is no longer airworthy if not complied with by the required date – must maintain record of compliance

Deferring Equipment (FAR 91.213)

Inoperative Equipment Decision Sequence

During the preflight inspection, the pilot recognizes inoperative instruments or equipment.

1. Is the equipment required by the Equipment List or Kinds of Equipment list in the AFM?

→ YES →

The aircraft is unairworthy and maintenance is required

NO

2. Is the equipment required by the aircraft's type certificate?

→ YES →

The aircraft is unairworthy and maintenance is required

NO

3. Is the equipment required by an Airworthiness Directive (AD)?

→ YES →

The aircraft is unairworthy and maintenance is required

NO

4. Is the equipment required by the FAR required Day/Night equipment (above)?

→ YES →

The aircraft is unairworthy and maintenance is required

NO

The aircraft is airworthy. The inoperative equipment must be removed or deactivated and placarded as inoperative.

The pilot must make the decision that the aircraft is still safe for flight.

Required Inspections

- Remember AV1ATE
- Annual
 - Aircraft less than 12,500 pounds flown for business or pleasure
 - Requires an Airframe and Powerplant mechanic (A&P) with an Inspection Authorization (IA)
 - May be substituted for a required 100-hour inspection
- VOR – Must have been checked in the preceding 30 days (IFR requirement)
- 100 Hour
 - Aircraft less than 12,500 pounds (except turbo powered) used for hire / flight instruction
 - Requires an A&P at an FAA certified repair station, or done by the manufacturer
 - Can exceed 100 hours by no more than 10 hours if enroute to inspection location
- Altimeter / Pitot Static – [FAR 91.411](#) – Requires inspection in the last 24 months (IFR)
- Transponder – [FAR 91.413](#) – Must be tested and inspected in the last 24 months
- ELT – [FAR 91.207\(d\)](#) – If required, must be inspected every 12 calendar months

Required Documents – ARROW

- Airworthiness Certificate
- Registration Certificate
- Radio Operator's License
 - If international
- Operating Limitations (POH)
- Weight and Balance
 - Specific to the aircraft tail number



Airworthiness with an MEL

- **MEL: Minimum Equipment List**
 - Precise listing of required equipment based on the type of flight
 - Basically, combines FAR 91.205, Kinds of Equipment List, ADs, and Type Certificate into one document
 - Common at airlines, but less common in general aviation
 - Must be requested from the FAA
- **Required Equipment**
 - If equipment is inoperative, refer to the MEL to determine if it's required for the type of flight
 - If the equipment is not deferrable, it must be repaired prior to flight
 - A special flight permit can be obtained if necessary to make repairs

Special Flight Permit

- [FAR 21.197](#): Special Flight Permit
 - Authorization for an aircraft that is not currently airworthy, but is safe for a specific flight
 - Examples:
 - Flying to an airport where repairs / maintenance can be performed
 - Delivering or exporting an aircraft
 - Conducting customer demonstration flights
- **Obtaining a Special Flight Permit**
 - Contact the local FSDO or Designated Airworthiness Representative (DAR)
 - [FAR 21.199](#): Must submit a statement to the FAA describing the flight



Record Keeping

- [FAR 91.417](#) – Maintenance Records
- Required inspections are located in the aircraft and engine logbooks
- 100-Hour, Annual Inspection must be kept for 1 year or until the work is repeated
- Records containing the following must be retained and transferred with the aircraft if sold
 - Total time in service (airframe, engine, propeller, rotor)
 - Status of life-limited parts / Time since last required overhaul (for parts requiring periodic overhauls)
 - Current inspection status of the airplane
 - Status of any ADs
 - Copies of forms for major alternations
- **Removing / Installing Equipment not on the Equipment List**
 - AMT must update the weight and balance for the new empty weight and CG, as well as the equipment list
- **Repairs and Alterations**
 - Major – [14 CFR Part 43](#) – Approved on Form 337 by a certified repair station, A&P with an IA, or a designated rep
 - Minor – Approved with an entry in the maintenance records by an A&P or certified repair station



Questions?

