1. What does “Airworthy” mean?

You can find the definition of “Airworthy” on the Airworthiness Certificate itself. Authority and Basis for Issuance, says

- …the aircraft to which issued has been inspected and found to conform to the type certificate therefor, to be in condition for safe operation,…”

The FAA determined the aircraft was “Airworthy” when a set of manufacturing conditions contained in the type certificate were met

- Then the FAA issued an Airworthiness Certificate

The type certificate

- Was approved by the FAA, and
- Can be found on the FAA website

The aircraft must conform to all the specifications listed on the Type Certificate Data Sheet.

- This is the responsibility of the owner/operator

The aircraft remains airworthy indefinitely if the conditions listed in the Terms and Conditions section continue to be met; those are

- a. Maintenance, preventive maintenance, and alterations must be performed according to the FARs, and
- b. The aircraft must be registered in the United States

Maintenance

Must be performed according to the FARs, specifically

- Part 21
  - Specifies what parts are acceptable for the aircraft
  - Generally called “Approved Parts”
- Part 43
  - Specifies who can do the maintenance

- Specifies how the maintenance must be done
- Part 91
  - Specifies what maintenance must be done

Aircraft must be in a Condition for Safe Flight

- While “Safe” is not specifically defined, 91.7 says
  - The aircraft must be airworthy
  - Nothing has happened to cause it to be unairworthy
  - The PIC determines whether it’s in condition for safe flight

While not specifically mentioned on the Airworthiness Certificate, 14 CFR 39 (Airworthiness Directives) requires that all Airworthiness Directives be complied with, and if not

- The aircraft isn’t airworthy

Other airworthiness inspections include the

- Annual (91.409)
- 100-Hour (91.409)
  - Only required if the aircraft is being
    - Operated for hire, or
    - Used for flight instruction for hire
      - Note: An aircraft used for a practical test is neither being operated for hire or being used for flight instruction
- Transponder (91.413)
  - Every 24 months
- Static System (91.411)
  - If flying IFR
  - Every 24 months
- ELT (91.207)
  - Must be operational
    - Inspected every 12 months
  - Batteries must be replaced or recharged when
    - The ELT has been used for more than 1 cumulative hour, or
    - 50% of their useful life has expired
- GPS Data Base is current
  - If flying IFR

- VOR check has been accomplished (91.171)
  - If flying IFR
  - Every 30 days

2. Who can do the maintenance on an aircraft?

Part 43 says:

- A certificated Airframe and Powerplant Mechanic (A&P) can
  - Do maintenance, and
  - Sign-off most inspections
- An A&P with Inspection Authorization (IA) can
  - Do everything above, and
  - Sign-off an Annual Inspection
- The owner or operator (only) of the aircraft
  - If they are also at least a Private Pilot
  - Can do some limited preventive maintenance
    - There is a list of items like oil changes that can be performed
- Anyone else working on an aircraft must be under the supervision of an A&P

3. How good does the maintenance have to be?

14 CFR 43.13 says:

- "…shall do that work in such a manner and use material of such a quality, that the condition of the aircraft, airframe, aircraft engine, propeller, or appliance worked on will be at least equal to its original or properly altered condition (with regard to aerodynamic function, structural strength, resistance to vibration and deterioration, and other qualities affecting airworthiness)."

In short, the maintenance must be *functionally* as good as if it were new, meaning it

- Must meet the service limits as prescribed in the type certificate data sheets, but
- Does not have to be cosmetically as good as if it were new

4. Under what conditions can I fly with inoperative equipment?

You can fly with inoperative equipment unless

- The equipment is specifically required by regulation or guidance, or
- You, the PIC, think it is necessary for the flight

Many learners memorize the required equipment in 91.205 (Powered civil aircraft with standard category U.S. airworthiness certificates: Instrument and equipment requirements)

- But they don't know how to apply the rule

To determine if the equipment is required, follow this process:

Is it required by an Airworthiness Directive?

- 14 CFR 39

Is it required by the Type Certificate or a Supplemental Type Certificate?

Is it required by the Manufacturer?

- Listed as a Limitation or Required Equipment in the Airplane Flight Manual (AFM)

Is it exempted by a Minimum Equipment List (MEL) approved for that specific aircraft?

- The MEL may allow operations even if 91.205 would not
- An MEL is only valid for that specific aircraft

Is it required by 91.205?

- In the absence of an MEL, 91.205 applies

Is it exempted by a Kinds of Operation Equipment List?

- Found in the limitations section of the POH

Is it required for the flight?

- GPS, VOR, Transponder, etc.

Has it been removed or deactivated, and placarded? (91.213(d)(3))

- If removed, has the weight and balance been amended?
  - A maintenance record must be made for removed equipment
- If deactivated and placarded “Inoperative”, has it actually been disconnected?
  - For electrical equipment, the electrical power to the unit must be disconnected
  - A maintenance record is required if the deactivation involves maintenance

Do you think the flight can be conducted safely without it?

5. When do I need a Special Flight Permit?

You need a special flight permit when the aircraft

- Is not airworthy, but
- Needs to be relocated to a place where repairs can be made

You need to apply for the Special Flight Permit from the local FSDO.

An A&P must certify before takeoff that the flight can be made safely.

- They must make a logbook entry attesting to that