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PRIVATE PILOT REGULATIONS

Part 91

This regulatory summary is provided by Gold Seal Ground School to assist you as a supplemental study guide by presenting some of the most common aviation regulations in plain language. The summaries herein aim to simplify the complex language often found in the official Code of Federal Regulations (CFR) to enhance your understanding and learning experience.

Please note that this summary is not a replacement for the official CFR. It is essential for all aviators to be familiar with and understand the full legal texts of the regulations, as they govern all aspects of aviation operations and safety. This document should be used in conjunction with your regular study materials and any instructions provided by your instructors.

Utilize this guide as a tool to aid your comprehension and retention of regulatory requirements. For any questions or clarifications, always refer back to the official Code of Federal Regulations or consult with your instructors.

Pilot in Command (14 CFR 91.3) - The pilot in command is directly responsible for and the final authority as to the operation of the aircraft. In an emergency, the pilot in command may deviate from any rule or clearance to the extent needed to meet that emergency.

The pilot in command must ensure that all passengers have been orally briefed before flight.

Civil Aircraft Airworthiness (14 CFR 91.7) - You must ensure the aircraft is in safe operating condition before flying, and any inoperative instruments or equipment must be noted and treated according to regulations.

Civil Aircraft Flight Manual, Marking, and Placard Requirements (14 CFR 91.9) - The aircraft must be operated in accordance with its flight manual and any additional instructions and markings placed within the aircraft.

Dropping Objects (14 CFR 91.15) - You might be surprised to learn that it is legal to drop objects from an aircraft, but ONLY if reasonable precautions have been taken to avoid injury or damage to persons or property.

Alcohol and Drug Use (14 CFR 91.17) - You may not act as a crewmember of an aircraft if your alcohol blood level exceeds .04 percent by weight.

You may not act as a crewmember of an aircraft if you have consumed any alcoholic beverage in the previous 8 hours. ("Eight hours from bottle to throttle.")

You may not act as a crewmember of any aircraft while under the influence of any drug that affects your faculties in any way that is contrary to safety.

In an emergency the pilot may carry a passenger under the influence of drugs if the person is a medical patient under proper care.

The FAA requires pilots to report drug- and/or alcohol-related motor vehicle actions to the agency's Security and Hazardous Materials Safety Office.

Flight Planning Requirements (14 CFR 91.103) - There is one, final requirement for VFR flight. It applies to IFR as well. The CFRs demand that a pilot familiarizes himself with *all available information concerning the flight*. That is pretty much a catch all, but the FAA in its wisdom chose to go one further. Specifically, we are admonished to determine the runway lengths at our destination airport and to be aware of our airplane's takeoff and landing capabilities.

Flight Crewmembers at Stations (14 CFR 91.105) - During critical phases of flight (like takeoff and landing), all crewmembers must be in their assigned stations and properly restrained.

Seat Belts and Shoulder Harnesses (14 CFR 91.107) - All required crewmembers must wear seat belts during all taxi and flight operations.

If shoulder harnesses are available, they must be used by required crewmembers during takeoff and landing.

Passenger must wear seat belts during taxiing, takeoffs, and landings.

Formation Flight (14 CFR 91.111) - Do not operate so close to another aircraft as to create a collision hazard or disrupt the other aircraft's flight path. Aircraft may be flown in formation only with the prior agreement of the pilots in command of the aircraft.

Right-of-Way (14 CFR 91.113) - Aircraft in distress always have the right of way.

When aircraft of different categories are converging, the least maneuverable aircraft has the right of way. (*The right of way belongs to balloons over gliders over airships over airplanes or rotorcraft.*)

When aircraft of the same category are converging – except head on (or nearly so) – the aircraft to the other's right has the right of way.

When aircraft are approaching head on or nearly so, each aircraft should veer to the right, regardless of category.

When two or more aircraft are approaching an airport for the purpose of landing, the aircraft at the lower altitude has the right-of-way, but it shall not take advantage of this rule to cut in front of another which is on final approach to land or to overtake that aircraft.

Airspeed Restrictions (14 CFR 91.117)

- Below 10,000 MSL or in Class B airspace: 250 knots
- Under Class B airspace or in VFR corridors through Class B airspace: 200 knots
- At or below 2,500 AGL and within 4nm of the primary airport in Class C or D: 200 knots

For further information refer to the Airport Operations lesson.

Minimum Altitudes (14 CFR 91.119) - Over a heavily populated area, the legal minimum altitude is 1000 feet above the highest obstacle within a 2000-foot radius.

Over open water or sparsely populated areas, there is no minimum altitude, although a pilot must remain at least 500 feet from any person, vehicle, or structure.

Everywhere else, and that means lightly populated areas, the minimum altitude is 500 feet above the surface. You may fly below these minimum altitudes when taking off and landing.

Altimeter Settings (14 CFR 91.121) - Before takeoff, the altimeter should be set to the current local altimeter setting (i.e. the barometric pressure). If a local setting is not available, set it to the airport's elevation.

When flying at or above 18,000 MSL (Class A airspace) the altimeter must be set to 29.92.

Reports (14 CFR 91.123) - Pilots must comply with all air traffic control instructions and clearances. A pilot is required to submit a detailed report of an emergency which caused the pilot to deviate from an ATC clearance within 48 hours if requested by ATC.

ATC Light Signals (14CFR 91.125) - Understand and respond to visual light signals from ATC, which may be used when radio communication is not available.

Fuel Requirements (14 CFR 91.151) - Fuel management is obviously a very big issue to pilots. A surprisingly large number of off-airport landings are the result of fuel starvation. If you run an airplane out of gas, but set it down without a scratch in a beautiful forced landing, your pilot buddies will *not* admire you. In fact, some insurance policies will not pay a claim that results from a crash landing when the pilot simply ran the airplane out of gas. Civil Air Patrol pilots have it really tough – if they run an airplane dry, they are grounded as CAP pilots permanently.

Day VFR flight requires adequate fuel to reach the first airport of intended landing with enough remaining fuel to fly an additional 30 minutes. At night, it's enough fuel to fly to the airport and remain flying an additional 45 minutes. (A prudent pilot will always allow for at least one hour of reserve fuel.)

Airspace	Entry Requirements	Equipment Required	Minimum Pilot Requirements
A	ATC Clearance	IFR Equipped	Instrument rating
B	ATC Clearance Must hear the words “Cleared into the Bravo”	Two-way radio, transponder with altitude reporting capability <i>Note: Most Class B’s have a Mode C veil which requires an operable radar beacon transponder with automatic altitude reporting and operable ADS-B Out equipment.</i>	Private Pilot Certificate § 91.131 - or - Recreational Pilot Certificate if all § 61.101 requirements are met - or - Sport Pilot Certificate if all § 61.325 requirements are met - or - Student seeking Private Pilot or Recreational/ Sport Pilot certificates if all § 61.95 or § 61.94 are met
C	Two-way radio communication prior to entry Must hear your tail number or callsign	Two-way radio, transponder with altitude reporting capability	No specific requirement
D	Two-way radio communication prior to entry	Two-way radio	No specific requirement
E	None for VFR	No specific requirement	No specific requirement
G	None	No specific requirement	No specific requirement

Required Aircraft Documents

Required documents for flight can be remembered using the acronym A-R-O-W:

- (A) Airworthiness certificate (**14 CFR 91.203**)
- (R) Registration (**14 CFR 91.203**)
- (O) Operating limitations (**14 CFR 23.2620**)
- (W) Weight and balance data (**14 CFR 23.2620**)

The airplane's airworthiness certificate remains valid for as long as the airplane remains in airworthy condition as defined in Code of Federal Regulations (CFRs).

VFR Equipment Requirements (14 CFR 91.205) - Finally, there are some equipment requirements for day VFR flight. There are all sorts of elaborate acronyms to help students remember them. Honestly, I think it's easier to simply memorize them. *Seat belts are required in all aircraft. Newer aircraft must also have shoulder harnesses. And with a few exceptions, an ELT is required equipment.*

For VFR flight, an aircraft must have three navigation instruments:

1. Airspeed Indicator
2. Altimeter
3. Compass

Think about it - you must be able to tell how fast, how high, and in what direction you're going. *Airspeed indicator, altimeter, and compass.*

The airplane must also have an

1. Oil pressure gage
2. Temperature gage
3. Fuel gage(s)

These are the instruments that let us monitor the engine's likelihood to remain running. *Oil pressure gage, temperature gage, and fuel gages.*

So that the pilot can control the airplane:

1. Tachometer,
2. Manifold pressure gage (if the airplane has a constant-speed propeller, and a
3. Landing gear position indicator (if the airplane has retractable landing gear)

Think of what you need to control the engine's power and the airplane's landing gear. Unless you'll be doing your checkride in a high performance or complex airplane, the only gage you'll need from this final group is the tachometer.

Instruments required for day VFR flight include:

1. Airspeed indicator
2. Altimeter
3. Compass
4. Oil pressure gage
5. Oil temperature gage
6. Oil fuel gage
7. Tachometer
8. Manifold pressure gage (if equipped)
9. Landing gear position indicator

Separation from Clouds (14 CFR 91.155) - For VFR flight, we also must remain specific distances from clouds. There's nothing inherently *wrong* with being close to a cloud. The issue is IFR traffic that might suddenly emerge. You need to remain far enough away so that you and the IFR pilot have enough time to see and avoid each other.

In most controlled airspaces, a VFR pilot should remain at least 500 feet below a cloud, 1000 feet above a cloud, and at least 2000 feet away horizontally. Above 10,000 feet the requirements enlarge: 1000 feet above, 1000 feet below, and 1 statute mile horizontally.

In uncontrolled airspace, Class G to be specific, you must remain clear of clouds. There are further rules. Refer to the VFR Minimums lesson in the Aviation Weather section.

Visibility Requirements (14 CFR 91.155)

In addition to cloud separation and altitude requirements, there are also visibility requirements for VFR flight. Generally speaking, anything less than three statute miles is considered IFR, but that does vary with airspace. In class G, for example, you can legally fly VFR with a one-mile visibility during the day.

Another note about visibilities: Visibility is always defined in terms of statute miles. Virtually everything else we do as pilots are in nautical miles, but just remember that visibility is measured in statute miles.

Special VFR (14 CFR 91.157) - Special VFR is a clearance that allows a certificated pilot (not a student pilot) to operate in Class D airspace in other than legal VFR conditions. To obtain an SVFR clearance, visibility must be at least 1 statute mile and the aircraft must remain clear of clouds.

A special VFR clearance in Class D airspace is obtained from the control tower. If at night, the pilot must be instrument rated and the aircraft IFR equipped.

Course and Altitude – The Hemispherical Rule (14 CFR 91.159) - Assume that the clouds are not an issue. Conditions are clear VFR. We're on a trip from Tyler, Texas to Houston. True course is 177 degrees, but with the magnetic variation thrown in, our magnetic course will be 171. What altitudes may we choose from?

Of course, it has to be some number of thousands plus five hundred feet. We're going in an easterly direction, so we use odd thousands plus five hundred feet. For example, 5,500 feet, 7,500 feet.

Now, consider that we have a stiff crosswind from the west, and we need to put in about 10 degrees of crab angle. We add our 10-degree crosswind correction to our 171 degree magnetic course yielding a new magnetic heading of 181 degrees. What happens to our altitude now? Nothing. That's right, absolutely nothing. It is not about magnetic heading, what matters is the *course* that we track over the ground and that's still 171 degrees.

So, the rule that says we use odd thousands plus 500 for *easterly* courses, and even thousands plus 500 for *westerly* courses means exactly what it says. Use your magnetic course, *not* your magnetic heading. And note that *the hemispherical rule is not a requirement at altitudes of 3000 feet AGL or less*.

Special awareness training required (14 CFR 91.161) - Pilots flying into certain designated airports (e.g. Washington DC special flight rules area) must complete special awareness training due to unique conditions or airspace complexity.

Civil Aircraft: Certifications Required (14 CFR 91.203) - An aircraft must have a valid registration, airworthiness certificate, and other necessary documentation onboard to operate.

Night VFR Flight Equipment (14 CFR 91.205) - For night flight, the aircraft must also have: *Approved position lights, approved anticollision lights, a landing light* (if the aircraft is used for hire), and a spare set of fuses (obviously, not needed if the aircraft is equipped with circuit breakers). For further information, refer to the Night Flight lesson.

Emergency Locator Transmitters (14 CFR 91.207) - Most aircraft must be equipped with an emergency locator transmitter to aid in locating the aircraft in the event of a crash.

ELT batteries must be replaced (14 CFR 91.207(c)(2)) -

When the transmitter has been in use for more than 1 cumulative hour

- Or -

When 50 percent of their useful life (or, for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval.

Aircraft Lights (14 CFR 91.209) - Aircraft must use specific lights (i.e. position lights) during operations between sunset and sunrise to enhance visibility.

Oxygen Requirements (14 CFR 91.211) - The majority of VFR flights are conducted below 10,000 feet. Above 12,500, however, there are some requirements for oxygen use that you must be aware of.

From 12,500 to 14,000 feet, the crew of an aircraft, and that is usually just the pilot for small piston-driven airplanes, is required to be on supplemental oxygen for any period of time longer than 30 minutes. The crew is required to use supplemental oxygen during periods longer than 30 minutes at altitudes from 12,500 to 14,000 feet.

At altitudes above 14,000 feet, the crew is required to be on supplemental oxygen continuously.

At altitudes above 15,000 feet, supplemental oxygen must be available for everyone on board.

Continued:



So, from 12,500 to 14,000 feet, the pilot and crew have a grace period of thirty minutes. After that, they must be on oxygen. Above 14,000 feet, there is no grace period. They must be on oxygen continuously. At altitudes in excess of 15,000 feet, oxygen must be provided for the passengers although there is no requirement for anyone but the crew to actually use it.

Transponder (14 CFR 91.215) - A transponder is required for operation in Class A, B, and C airspace, and when operating within 30 nautical miles of a Class B airport. It is also required for any operations over 10,000 MSL (above mean sea level). If your airplane is transponder equipped it must be operating in all airspaces (except Class G) unless ATC has advised you otherwise. The transponder must have been tested and inspected within the preceding 24 calendar months.

For further information, refer to the Transponders lesson.

Airspace Restrictions (14 CFR 91.129, 91.130, 91.131, 91.135) For operation in Class C or D airspace, two-way radio communications must have been established with ATC (air traffic control).

For operation in Class B airspace, a pilot must, at a minimum, hold either a Private Pilot certificate or a Student Pilot certificate (depending on the specific Class B airspace) with appropriate logbook endorsements.

All flights in Class A airspace must be flown under IFR.

ADS-B Out Equipment and Use (14 CFR 91.225) - Aircraft operating in many types of controlled airspace must be equipped with ADS-B Out to broadcast their position to ATC and other aircraft.

ADS-B Out Equipment Performance Requirements (14 CFR 91.227) - Specifies the performance and functional requirements for the ADS-B Out equipment.

Aerobatic Flight (14 CFR 91.303) - Aerobatic flight is defined as intentional maneuvers that are not necessary for normal flight and involve abrupt changes in the aircraft's attitude.

Aerobatic flight is prohibited when:

- (1) Flight visibility is less than 3sm.
- (2) Conducted below 1,500 feet AGL.
- (3) Within the lateral boundaries of the surface areas for Class B, C, D, or E airports.
- (4) Within 4nm of the centerline of a Federal Airway.
- (5) Over any congested area or over an assembly of people.

Parachutes (14 CFR 91.307) - With certain exceptions, everyone in an aircraft must wear a parachute during intentional maneuvering when either the bank angle exceeds 60° or the pitch attitude exceeds +30° or -30°. Parachutes must be repacked by a certificated Parachute Rigger every 180 days or less.

Restricted Category Civil Aircraft: Operating Limitations (14 CFR 91.313) - Aircraft with a restricted category certification have limitations on how and where they can operate.

Experimental or Restricted Aircraft (14 CFR 91.319) - Unless specifically authorized, no person may operate an aircraft that has an experimental or restricted certificate over a densely populated area or in a congested airway. Aircraft with experimental certificates have specific limitations, often related to the purpose of testing and proving new technologies.

Owner/Operator Responsibility (14 CFR 91.403) - The owner or operator of an aircraft is responsible for maintaining the aircraft in airworthy condition and for complying with all Airworthiness Directives (A/Ds). Nonetheless, the pilot in command is responsible for ensuring that the owner or operator has maintained the aircraft in airworthy condition and in compliance with all A/Ds.

Maintenance Required (14 CFR 91.405) - The owner must have the aircraft inspected and maintained according to the aircraft's maintenance manual and FAA regulations.

Operation after Maintenance, Preventive Maintenance, Rebuilding, or Alteration (14 CFR 91.407) - If an alteration or repair substantially affects an aircraft's operation in flight, that aircraft must be test flown by an appropriately-rated pilot and approved for return to service prior to being operated with passengers aboard. An aircraft must not be operated after maintenance or alterations until it is inspected and found to be in safe operating condition.

Inspections (14 CFR 91.409) - *Airplanes used for hire must undergo a 100-hour inspection every hundred hours.* The inspection must be logged in the airplane logbooks, endorsed by a licensed A&P mechanic. A&P, by the way, stands for "airframe and powerplant."

Virtually every airplane, rental or pilot-owned, must undergo an annual inspection each year. This is essentially the same as the 100-hour inspection but must be signed off by an A&P with an IA certification. IA stands for "inspection authorization."

The ELT, or emergency locator transmitter, must be inspected each year. Most A&Ps do this as part of the annual inspection. ELT batteries must be replaced after one hour of cumulative use, or when half of their useful life has expired.

If your airplane contains a transponder, it must be inspected every two years. This is not normally included in an annual inspection.

ATC Transponder Tests and Inspections (14 CFR 91.413) - Transponders must be tested and inspected regularly to ensure they function correctly.

Maintenance Records (14 CFR 91.417) - Detailed records of all maintenance, preventive maintenance, and alterations must be kept. Required items to log:

- A description of the work performed.
- The date of completion of the work performed.
- The signature, and certificate number of the person approving the aircraft for return to service.

Record Availability (14 CFR 91.417(2)(v)) - The owner or operator shall make all maintenance records required to be kept by this section available for inspection by the Administrator or any authorized representative of the National Transportation Safety Board (NTSB).

Rebuilt Engine Maintenance Records (14 CFR 91.421) - Specific records must be kept for aircraft engines that have been rebuilt.

Passenger Briefing (14 CFR 91.519) - Passengers must be briefed on safety procedures and emergency equipment before flight.