

The Short Course

VFR Cruising Altitude

One of aviation's many axioms is "See and Avoid." (Older pilots may remember it as "See and be Seen"). It ranks right up there with "Fly the Airplane" and is just as important for safe flight.

A number of regulations were written specifically to keep aircraft from colliding with each other. Right of Way (14CFR91.113) and Basic VFR Weather Minimums (CFR1491.155) may be the best known "See and Avoid" rules for VFR (Visual Flight Rules) pilots, but there are a number of others. In the limit, however, the PIC (Pilot in Command) has the final responsibility for seeing and avoiding other aircraft.

Two aircraft approaching head on have the least amount of time to allow the pilots to "See and Avoid" each other. In addition, aircraft in a cruising configuration, straight and level, are moving much faster than in a climb or descent, thus minimizing the closing time.

The regulation that attempts to separate aircraft by establishing altitudes for straight and level flight is 14CFR91.159 - VFR Cruising Altitude. The responsibility to see and avoid is that of the PIC.

The key elements of the VFR Cruising Altitude regulation are:

- Straight and level flight
- More than 3,000 feet above the surface
- The Magnetic Course

While in straight and level flight, at an altitude more than 3,000 feet above the surface, a pilot should fly at an altitude determined by the Magnetic Course.

For a Magnetic Course of 0 degrees thru 179 degrees at odd altitudes, MSL, plus 500 feet. Examples are 3500, 5500 and 7500 feet MSL (Mean Sea Level)

For a Magnetic Course of 180 degrees thru 359 degrees at even altitudes, MSL, plus 500 feet. Examples are 4500, 6500 and 8500 feet MSL (Mean Sea Level)

VFR traffic flying easterly should be at odd altitudes plus 500 feet. Westerly bound traffic should be at even altitudes. Aircraft that are below 3,000 feet above the surface, climbing, descending, changing course or maneuvering are not governed by the rule.

As structured, VFR aircraft, cruising above 3,000 AGL will be separated from VFR traffic cruising in the opposite direction by 1,000 feet. An aircraft headed westerly at 4,500 feet will be separated from an aircraft headed easterly at 3,500 feet or 5,500 feet. The thousand foot separation assists in the "See and Avoid" scanning process.

One might ask about the plus 500 foot portion of the equation. VFR traffic is at even or odd altitudes plus 500 feet - 3500, 4500, 5500, etc. IFR (Instrument Flight Rules) traffic uses the even or odd altitudes without adding 500 feet - 3000, 4000, 5000, etc. The even or odd altitude is determined by Magnetic Course.

Remember, we share the sky. If you are holding your VFR Cruising Altitude, IFR traffic could be 500 feet above or below you. Good reason to hold your altitude and not wander into someone else's altitude

During cross country preflight planning, I select a VFR Cruising Altitude based on my Magnetic Course ($MC = \text{True Course} \pm \text{Variation}$) and the Winds Aloft Forecast. I want the best ground speed for my direction of flight.

While Enroute, if I must change my cruising altitude due to unfavorable winds or weather (clouds), I still have to adhere to the VFR Cruising Altitude rule. Traveling easterly, a change from 5,500 feet would mean climbing to 7500 feet or descending to 3500 feet. I could also choose an altitude below the VFR Cruising Altitude floor - 3000 AGL.

Clouds often present a problem. I must maintain a minimum distance from the clouds of 1,000 feet above, 500 feet below and 2,000 feet horizontally. In order to maintain cloud clearance, I may have to select a VFR Cruising Altitude other than planned.

At altitude, there is an expectation that you will be at a proper altitude for your direction of flight. At altitude, you can expect faster aircraft and less time to "See and Avoid". By flying at the correct altitude "See and Avoid" time is enhanced by altitude separation.

Care should be taken that the altimeter is set properly before departure and checked regularly while enroute. An altimeter setting can be obtained from AWOS/ASOS/ATIS or Flight Service.

The VFR Cruising Altitude rule does not apply below 3,000 feet AGL. There are some altitudes, however, that pilots seem to choose for level flight. Close to sea level they are 1000, 1500, 2000 and 2500. They are easy to read and remember on an altimeter. At higher terrain, there is a similar set of numbers. Watch for traffic at these common altitudes.

You can expect to see increased traffic near airports at the traffic pattern altitude and 500' above the traffic pattern. Within 10 miles of the airport, aircraft will be climbing and descending, so there is no specific altitude. Use vigilance and a good scanning technique.

Traffic can also be heavy over a VOR (Very high frequency Omni Range) transmitter station at all altitudes.

The aircraft strobe light and other lighting can help other pilot see and avoid you. If a strobe is installed, turn it on. (Airman's Information Manual, 4-3-23 - Use of Aircraft Lights)

It is always best to use good scanning techniques or "Keep your Head on a Swivel". It also helps to know where to look.