

Select Cruise Power Setting and Altitude

Selecting a power setting for cruise usually goes one of two ways. Some pilots have a single RPM setting or RPM/MP combination they like for cruise. They set it as close as possible given the current altitude and motor on. The other camp looks at the performance charts or engine monitor and sets power based on a target percent power to match what was planned during preparation for the trip.

Both methods get you from Point A to Point B. However, pilots who understand the subtleties of different power combinations might extract a few more knots or miles from the airplane for the same amount of fuel. Said pilot might even extract a few more hours out of the engine for the same amount of dollars.

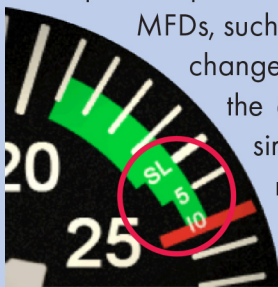
Start by checking the POH performance tables and find the percent power you want for flight. Many pilots use between 65 to 75 percent for a good balance between getting there fast and keeping the fuel bill down. You'll probably find a couple choices for altitude and power settings that give you the same power. Obviously, terrain and weather may eliminate

TACHOMETER COLOR BANDS

Your tachometer may have a green band with different altitudes. This is common with fixed-pitch props and shows the approximate RPM for 75 percent power (usually) at each altitude.

MFDs, such as the G1000, may simply change the top of the green arc as the airplane climbs. These are simply advisory and don't represent a limit unless the POH specifically states that they are.

A yellow or red arc on a tachometer is a limitation. You'll have to reference your POH for the details, but it's commonly no continuous operation at those RPMs, or a time limit. These are commonly due to maximum continuous horsepower limitations or vibration issues with certain engine/prop combinations.



TIP

Some engine monitors display percent power. However, the calculation for percent power changes depending on running ROP or LOP. Check which calculation your monitor uses, or if it's capable of doing both.

some options, but all other things being equal, what you choose affects your efficiency of flight.

Fixed Pitch: Fly High Enough For WOT

If you have a fixed-pitch prop, your most efficient altitude will be the one where you can get the power setting you want at wide-open throttle (WOT). For many fixed-pitch props, this is 5000-8000 feet for 65 to 75 percent power. For some carbureted engines, it's "nearly" WOT to turn off the economizer circuit (page 41) and to improve fuel distribution.

In addition to the efficiency gain of WOT, your true airspeed increases about 2 percent per thousand feet, so the higher you fly for the desired power setting, the better your true airspeed will be.

If you must fly higher than the ideal power altitude, you'll produce less power and burn less fuel, but your true airspeed will diminish further. This increases absolute efficiency in terms of miles per gallon, so you will get more range. However, you may wish you brought that portable urinal.

Constant Speed: Don't Fear Reducing RPM

With a constant-speed prop, you have a choice about setting your cruise RPM first, or your cruise throttle setting (MP). Some instructors will swat your hands if you reduce engine RPM before reducing the throttle setting. Unless your POH specifically requires reducing throttle first: Swat back. There are advantages to reducing RPM first.

There's nothing cursed about "over square" operation, where the RPM/100 is lower than MP in inches. In fact, your total efficiency is usually best at higher MP settings and lower RPM. This is mostly due to increased efficiency of the propeller and volumetric efficiency, which is how well air can enter the engine. A small factor is the fixed timing in airplane engines. Slowing the engine is functionally equivalent to ad-