

Airfreddy's **Guide on Learning To Fly**

**Step-by-Step Guide On the Private
Pilot License From Start To Finish**



Minimum Controllable Airspeed

[Airplane Flying Handbook Chapter 4-3](#)

MINIMUM CONTROLLABLE AIRSPEED: This maneuver is used to get you used to changing aircraft configurations in flight. At the same time, you will learn to maintain heading and altitude by cross-checking instruments. You can do this maneuver without any instruments except the airspeed indicator.

From the reading in your study materials you will find the PITCH / POWER relationship. You should also have read about the area of reverse command. Within this area, we have what is known as the pitch /power relationship.

It may seem strange, but there comes a point in an aircraft when we have to add power in order to go slower. Remember from the four forces, the aircraft will accelerate only when there is excess thrust. The same is true for a climb. When we begin to add flaps, we increase the drag of the aircraft and we know that drag opposes thrust, therefore we must add more power in order to increase airspeed. Once the flaps are all of the way down, we need all power just to maintain altitude. Therefore, we come up with the saying: "PITCHCONTROLS AIRSPEED AND POWER CONTROLS ALTITUDE".

Another way to put this is; “when pitch is fixed, power will control altitude, when power is fixed, pitch will control altitude”. You will want to understand this in detail for your flight test.

Starting the maneuver: First, you will get lined up on a mountain and start bringing the power back. You will see there comes a point when you must add power in order to hold altitude. Once you get used to this, you will practice Minimum Controllable Airspeed. My procedure for this maneuver is below.

1: GET THE AIRCRAFT ALIGNED WITH THEREFERENCEPOINT.

2: FUEL- ON

3: FLAPS- UP

4: MIXTURE- RICH

5:POWER-1800 RPM. In the case of bringing power back, we only need to bring enough power back so the airspeed slows to within the white arc. You do not want to stare at the RPM gauge until you are right at 1800 RPM which is just a reference number. Just bring the power back until it sounds as if the RPM is much slower(DESCENT POWER SETTING). Then cross check the airspeed indicator. Once the airspeed is within the white arc and you look at the RPM gauge, you will find that the RPM is somewhere around 1800RPM.

6: CARBURETOR HEAT-ON

7: MAGNETOS- CHECK ONBOTH

8: PRIMER- LOCKED

9: AIRSPEED WITHIN THE WHITE ARC-FLAPS TO 30 DEGREES

10: PITCH FOR AIRSPEED- MAKE SURE YOU TRIM THEAIRCRAFT. ONCE YOU HAVE THE AIRCRAFT SET UP, IT SHOULD BE ABLE TOFLY ITSELF WITH THE EXCEPTION OF YOU HOLDING RIGHTRUDDER.

11:POWER- AS REQUIRED. You will find that 2100 RPM should be about the right amount of power. This again is just a reference number, listen to the engine.

Once you have the aircraft set up and trimmed, the plane should be flying itself. You will find that all you need to do to turn the aircraft is control the rudder. The turn to the left is the easiest. All you have to do is relax the pressure on the right rudder pedal and the plane will turn itself due to the left turning tendencies. The turn to the right will require some aileron in order to get the turn established. Once the turn is established, hold the rudder.

RECOVERY BACK TO NORMAL FLIGHT: During the recovery you will tend to gain altitude unless you understand that the angle of attack must be decreased once the power is increased. You want to trim the aircraft after each ten degrees of flaps are retracted. This will make life much easier for you.

1: POWER- FULL

2: NOSE- HOLD ON THE HORIZON

3: FLAPS- RETRACT 10 DEGREES AT A TIME

4: RESUME NORMAL FLIGHT

The main mistake I see students make on this maneuver is that as soon as they bring the power back they will immediately bring the nose of the aircraft up. You don't want to do this. You need to wait until the airspeed is at best glide speed, then start bringing the nose up. You don't want to gain altitude when entering this maneuver. Keep the nose at NOSE LEVEL ATTITUDE until your airspeed slows down.



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