

Gold Seal's Top Five Landing Mistakes

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Mistake #1 – Excess Airspeed

Almost all landing mistakes come from the same pool of pilot errors. Many are so commonplace that students commit them over and over again on nearly every landing.

One of the most common mistakes, and one that has the most apparent consequences, is carrying **too much airspeed**. It's easy to think that it is just too much airspeed into the roundout, but the problem usually begins much earlier. Pilots who do not "fly by the numbers" are much more prone to make this mistake.

If you start on the downwind leg by hitting your target airspeed, it will be considerably easier to maintain the proper airspeed all the way down to short final. It takes a lot less effort to make small corrections than it does to make large ones. If you nail the proper airspeed early, it will be easier to keep it there.

The later in the pattern that you try to achieve your proper target airspeed, the less time you have to work with it. You will absolutely reduce your workload by getting your airspeed under control as early as possible. That frees you up for all the other little things you have to do to transition from flight to ground operation.

A pilot who finds himself coming into the roundout phase of the landing with too much airspeed is more likely to roundout too high, balloon, and/or become impatient and drop it in hard. Let's look at these results one at a time.

(1) When an airplane is coming in on short final with five or ten knots too much airspeed, the pilot frequently doesn't realize it until he or she recognizes the ground rushing up at a faster than expected rate. The pilot's response is to treat the symptom. He rounds out early and high. This stops the ground rush but does nothing to help the rest of the landing. Now he has to figure how to ease the airplane down to the flare from an abnormally high altitude. This creates all sorts of new problems.

(2) High or not, a post-roundout airplane with excess airspeed is also creating more lift with a shallower angle of attack. Small pitch corrections are easily exaggerated and the airplane begins to climb. Now the pilot is too high, but even worse, he may be there with decreasing kinetic energy (he ballooned, remember?). Decreasing energy equates to decreasing lift. Unless power

is quickly applied, excess nose-up is needed to maintain adequate lift. Get that nose-up just a little too much and a stall can occur.

(3) The third result of bringing too much airspeed to the landing happens when the pilot manages to roundout at the proper altitude, elegantly controlling pitch so that a balloon doesn't result.

Everything seems fine. He's floating along in ground effect waiting for his excess speed to decay. This is when he hears the little voice in his head: *"You sure have been in the air for a long time. Shouldn't you be on the ground already?"*

The pilot's response to this moment of uncertainty is to slightly lower the nose. He thinks he has held it off the runway too long. But what really happens is that the nose-down change reduces the angle of attack and lift drops quickly. It is difficult enough to hold altitude plus or minus 50 feet in the air. Now the pilot has to control his altitude plus or minus 2 feet. The airplane has lost lift and it's going to come down. Hard!

If you don't make any changes in your landing profile except to maintain proper airspeed control throughout the entire pattern, you will see an improvement in your performance.

There is more to landing than airspeed, but your skillful management of this key issue is guaranteed to make things better.

Mistake #2 – Distractions

Distractions give us all problems on a daily basis. We don't even need to be in an airplane. Automobiles, workshops, sports, even conversations provide ample opportunities to see how destructive distractions can be. In the landing profile, distractions during the roundout and flare are obvious problems. Yet, we focus so intently during these times that distractions usually don't have a chance to affect our performance. During landings, distractions tend to do the most damage when we're only moderately engaged - while flying the downwind leg.

The downwind leg provides us our first opportunity to prepare for a great landing. Sloppy performance for whatever reason will most likely have a big impact on that final touchdown that looms ahead. We can be distracted by the radio, other traffic, or passengers. But possibly the most common distraction is ourselves.

On the downwind, it is imperative that we fly precisely at pattern altitude and at a precise predetermined airspeed (dictated by a specific power setting). This isn't just to show what excellent pilots we are - precision altitude and airspeed on the downwind makes the rest of the landing considerably easier.

We distract *ourselves* by engaging passengers in conversation. "See those numbers down there on the end of the runway? That's where we'll be touching down." Sure, it's nice to explain the act of piloting to passengers, but this removes us from our goal of nailing our altitude and airspeed. All it takes is, "What numbers? Those over there?" from a passenger and ten seconds are tied up in unnecessary chatter.

We can also be distracted by calls on the radio and by other aircraft that share the pattern with us. But these are necessary distractions - we must learn to multitask and handle them. Unnecessary distractions? Be pilot in command - **force yourself to eliminate or ignore any distractions that don't require your involvement.** Do this and you will fly a more precise downwind leg. Do that, and everything else in the landing process will be easier and less stressful.

Mistake #3 – Non-Rectangular Pattern

The Private Pilot Practical Test Standards (PTS) specifies a rectangular pattern as one of the ground reference maneuvers that should be mastered. Most examiners simply consider your trip around the traffic pattern as your rectangular pattern and don't focus too heavily on its precision. Yet failure to fly these with precision is one of the most common mistakes made by pilots.

Flyers tend to think, "Rectangular pattern? Squared off corners? Big deal. Who needs 'em?" Well, you do if you want to minimize your workload during the landing process.

The landing profile requires precision. The goal is to stack the deck in your favor. You are most likely to get a smooth touchdown right on the centerline if everything up until that point has been easy and required minimal corrections. To ensure that you have the lowest workload and the easiest time of it, a rectangular traffic pattern is required. Here's why:

Good landings are all about timing, power settings, and altitude. Your goal is to hit specific, predetermined power settings and altitudes at specific spots in the traffic pattern. To do this, each leg must be consistently the same length, every time you fly (in any given conditions). Changing the length of legs changes your timing and tends to place you at points in the pattern with incorrect altitude and airspeeds. That forces you to make changes and obviously increases your workload.

The things most likely to cause you to lose the geometry of your rectangular pattern are (1) winds, (2) traffic, (3) improper judgment of distance, and (4) distraction. Regardless of the culprit, the result is sloppiness and increased workload.

It's easy to say that squaring up your pattern will help you to improve your landings. Doing something about it takes some forethought. **Give this some serious consideration and imagine what you can do to fly better rectangular patterns.**

Mistake #4 – Improper Use of Trim

The best way to get consistently good landings is to make the process as easy as possible. And that means doing anything you can to minimize workload.

Pilots, especially those bent on improving their landings, too frequently fail to practice what they were taught (hopefully) in the classroom. Pitch controls airspeed. That is, the elevator is the primary control for modulating airspeed. Trim is how you dial it in for the airspeed you desire.

You should begin setting yourself up for a good landing on the downwind. Set the power to the predetermined setting, then trim for level flight. *"But wait," you say. "I thought trim was for airspeed and now you're saying trim for pitch."*

Read it again. Trim for level flight on the downwind. Don't trim for a pitch. You are holding level flight with the yoke, so trim to remove the backpressure. This will result in a specific airspeed. Thus, trim produces a fixed airspeed.

At the abeam point, reduce your power and trim again. But this time, instead of using altitude as your benchmark, trim up for a specific airspeed. In most trainers this will be something near 70 knots. The key here is to recognize that every time you change airspeed you should change the trim. If the airplane is trimmed to a certain speed, a momentary distraction is less likely to result in a change in that speed. If the airplane is trimmed and you relax your grip on the yoke, guess what happens to airspeed? Nothing. It stays right where you want it.

On final, and particularly on short final, keeping the airplane trimmed for your ideal airspeed allows you to operate the stick or yoke with very little effort. Your arm muscles are largely relaxed and it is simply easier to make fine adjustments. **Get the airplane trimmed properly just before your roundout and you will find that those last seconds of roundout, float, and flare pass with minimal needed corrections from you.**

Mistake #5 – Improper or Inadequate Use of Rudder

If you ask a student pilot what is the phrase he hears most from his instructor it is likely to be "*right rudder!*" Pilots must learn to fly with all four appendages and this clearly takes a lot of practice. Feet feel oddly disconnected to the student and he or she just can't seem get them to move. I guess it's like the dream where you are trying to run through quicksand.

You just can't get the command to move from your brain to your feet.

Coming in on final, you make turns to align your line of flight with the runway centerline using coordinated aileron and rudder. If you are applying inadequate rudder control here, you might not notice it unless you look at the ball in the inclinometer. In no wind situations, once you are tracking the extended centerline in a low power stabilized descent, little rudder is needed. But when you raise the nose in the roundout, subtle left-turning tendencies can easily cause the airplane to yaw. Rudder is required to keep the longitudinal axis of the airplane aligned straight down the runway. It is easy to keep the wings level with the yoke. That comes naturally. But the feet? They might as well be sitting in a pair of shoes in a different airplane.

Typically, students start out with little to no rudder correction. The instructor bails them out each time with some helpful foot action, giving that ever so popular instruction of "*right rudder, right rudder.*" After several attempts, the student becomes aware that during those seconds of float and flare, rudder correction really is needed. This is the point where they start to respond. They put the right rudder in - and they leave it there, causing the airplane to yaw off the centerline to the right.

This, then, describes the full problem with incorrect rudder use during the landing - first it's too little rudder, then it becomes too much.

On short final I have two things I want you to do: (1) Trim the airplane for neutral yoke pressure, and (2) wiggle your toes. That second little action wakes your feet up, reminding them that they have work to perform. Do these two simple things every time you land and I promise you will see improvement in your landings.



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