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COMMENTARY / THE CLASSIC INSTRUCTOR

A Slip Is a Slip, Right?

Not exactly
BY STEVE KROG

I WAS BRIEFING A fairly new private pilot a few days ago who wanted to obtain a tailwheel endorsement. All of his training had been in a C-172, accruing about 100 hours of flight time to date. He had never flown an aircraft with a control stick or even ridden in a tailwheel airplane.

We would be flying the well-known Piper J-3 Cub for his training, so we discussed airspeeds, handling characteristics, flight attitudes, and maneuvers including slips. My tailwheel candidate immediately commented that he had only ever done one or two slips, and a slip is a slip, right? And, so, the lesson began!

Unfortunately, slips have almost become a forgotten maneuver in today's flying environment. Long hard-surface runways and little or no training conducted on shorter turf runways have partially been the cause for this lack of training. Some aircraft manufacturers recommend not doing slips when flaps are extended on their particular make and models. Sadly, not knowing how to do a slip, and not doing one correctly and safely, denies a pilot a very useful tool. It may save a lot of damage or possible injury in an emergency situation someday.

A slip, according to aviation authorities, is an aerodynamic state where an aircraft is moving somewhat sideways as well as forward relative to the oncoming airflow or relative wind. The nose will be pointing in the opposite direction to the bank of the wings.

Some time ago I mentioned doing slips in a previous article. This resulted in several emails chastising me while claiming slips are very unsafe and can easily lead to a stall-spin! A slip, when done properly, is a very safe maneuver and can be quite useful depending upon the situation.

THERE ARE SEVERAL TYPES OF SLIPS

"A slip is a slip" is not a true statement. There are several types of slips, such as the turning slip, side slip, and forward slip. These are intentional slips. If a pilot is inexperienced, he or she may unknowingly perform a slip on every climb out of the traffic pattern. During the full power climb, torque and P-factor pull the nose of the aircraft leftward. Rather than correcting by applying slight but constant right rudder, the pilot will apply right aileron to create a slip configuration. Performance is compromised, affecting airspeed and rate of climb.

WHEN TO USE A SLIP

One key time to know how to employ a slip is when landing over an obstacle such as trees or power lines. Here in Wisconsin, we have a centrally located airport that has three turf runways, most of which have tall trees at both ends. The local EAA chapter serves lunch every Friday during the summer and attracts 20-30 airplanes each time. Every one of the participating pilots knows how to perform a slip to safely approach and land. Without doing a slip, most of these aircraft would never be able to use this beautiful airport.

Using a slip to lose excess altitude can be especially useful. For example, consider a scenario where you are flying to a pancake breakfast at a nearby airfield. Upon approaching, you enter downwind and blend in with

Note the direction of flight toward the runway. The inside wing is down, but the nose is pointed to the outside or away from the turn.



Recognizing the excess altitude on short final, the pilot has entered a forward slip. The left wing is down and right rudder is applied to keep the aircraft near the runway centerline while eliminating the altitude.

the flow of traffic. Due to the amount of traffic both in front of you and now joining the pattern behind you, the pattern becomes extended. When you finally turn onto the final approach, you're 2 miles out following two aircraft in front of you. Misjudging your altitude due to the various traffic distractions causes you to be higher than desired. You now have three options, go around (and become number 10 in the pattern), land really long, or employ a good aggressive forward slip to lose all of the excess altitude without creating excess airspeed. Employing the latter properly will probably earn a "nice slip and landing" from any observer.

Looking at the approaching Cub, the pilot is bringing the aircraft out of the slip in preparation for a normal landing.



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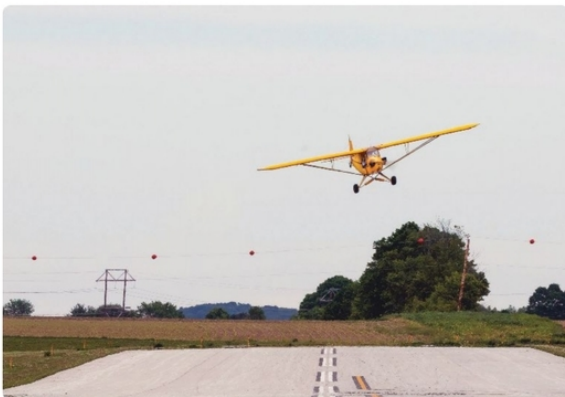
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A slip can be used to align your aircraft with the runway should you have a crosswind causing you to underestimate the turn to final. Assume you are planning to land on Runway 27 and the surface wind is from 300 degrees at a steady 12 knots. You compensated for the wind while on the downwind and base legs by crabbing. The tailwind, while on downwind, threw off your calculations a bit. When turning onto base, your groundspeed slowed significantly. While finishing your pre-landing cockpit check, you begin making your turn onto final only to realize you are well left of the runway centerline. Depending on your proficiency and level of comfort, you have only two real options — go around or establish a side slip to realign with the runway. Keep in mind, a side slip is nothing more than a somewhat exaggerated setup for making a crosswind landing.



The pilot has turned onto final and is well to the left of the runway centerline. Employing a side slip in this situation allows her to align the aircraft with the centerline in preparation for landing.



This is the same approach, but shown from the ground. The Cub is now aligned with the centerline and is removing the slip in preparation for landing.

There is another time in the traffic pattern where a slip can be beneficial. Should you realize while on downwind that you have gained considerably more altitude than desired, a turning slip might be used, either on the turn to base or the turn from base to final, to help dissipate the excess altitude well before turning onto final.



In this situation, the pilot recognizes that he has excess altitude. Rather than waiting until turning final to lose the excess, the inside wing is lowered for the left-hand turn and opposite rudder is applied, causing the aircraft to lose altitude while in the turn. Note how the nose is turned slightly away from the runway.

If you are uncomfortable with doing slips, I suggest you practice the turning slips at a safe altitude. Pick a road and simulate it as your runway and assume that you need to get rid of 500 feet of altitude. Practice this several times and you'll be amazed at how easy they become. They will feel awkward and a bit uncomfortable at first, but they are well worth learning how to perform them.

According to today's FAA requirements, a pilot must be able to safely demonstrate a rapid safe descent of at least 500 feet. Do you know the best way to perform this maneuver in your aircraft? Here, again, is a situation where a hard forward slip may be executed to lose the altitude.

If you ever have an opportunity to fly in a biplane, be it a Travel Air or a Pitts, you will quickly learn the need for learning to perform a slip. You can't see over the nose of this type of aircraft when on final. Rather, a slight forward slip is required to view the runway during the approach. Only when reaching the desired level off height do you remove the slip and prepare for landing. Your visual reference will then be off to the side about 150-200 feet forward of the aircraft.

Slips are not a maneuver to be feared. When taught properly, and then practiced from time to time, a slip can be a valuable option in a pilot's toolbox. If you feel apprehensive about performing slips, find an instructor who will provide both direction and safety while learning how to use a slip proficiently. **EAA**

Steve Krog, EAA 173799, has been flying for more than four decades and giving tailwheel instruction for nearly as long. In 2006, he launched Cub Air Flight, a flight training school using tailwheel aircraft for all primary training.