STEVE KROG
COMMENTARY / THE CLASSIC INSTRUCTOR

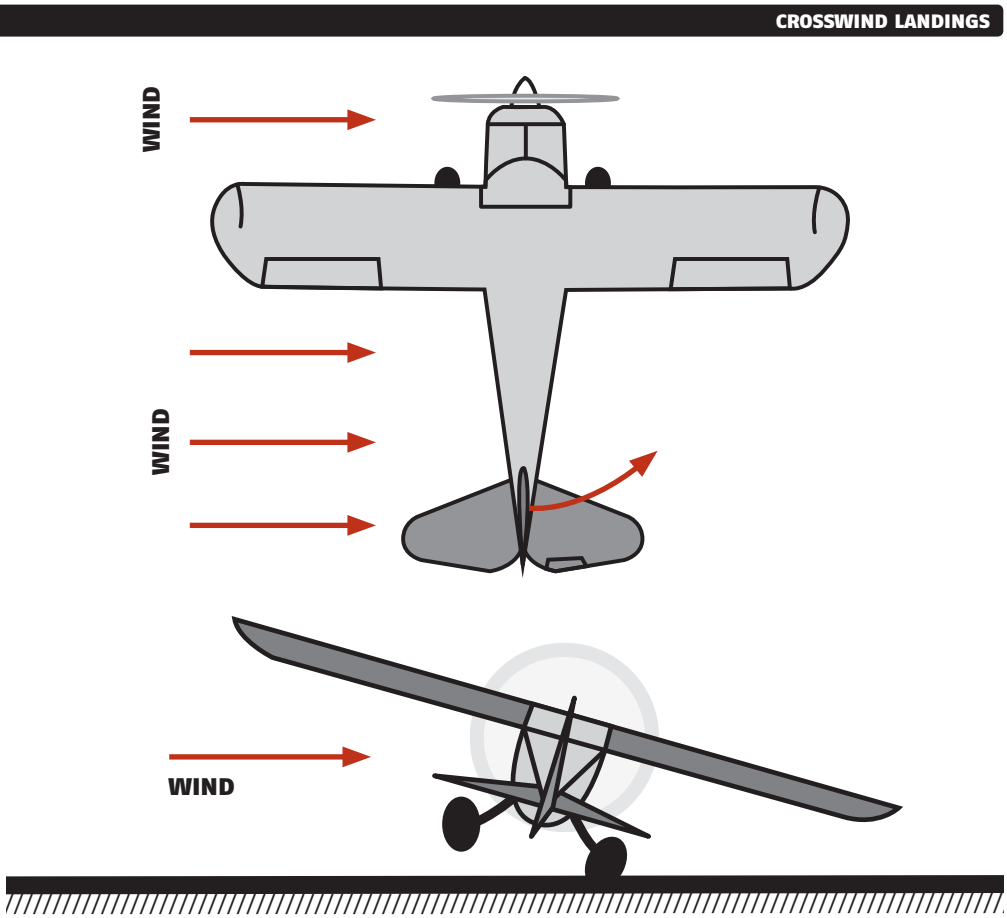
Crosswind Landings

What could possibly go wrong?

BY STEVE KROG

CROSSWIND LANDINGS CONTINUE to cause sweaty palms and mild cases of indigestion whenever discussed among the local gang of hangar pilots. As many of you have heard me say before, hours of pleasure flying are missed by many due to a fear of crosswinds.

I recently was working on crosswind landings with a longtime pilot who was relatively new to tailwheel flying. He had contacted me expressing a desire to become a better, more relaxed, and confident tailwheel pilot, as he was experiencing a lot of anxiety whenever he flew his recently acquired Cub.



In this illustration the pilot relaxed on both the aileron and elevator input. The windward wing and the tail lift off the ground. Now the pilot has a situation on their hands.

SETTING THE STAGE

We began our flights working from the turf runway, which provided us with a good starting point from which to establish a base and to measure progress. Other than experiencing a few bounces during the three-point landing, all went well. The wheel landings were equally safe and smooth. His ability to handle the Cub safely on turf was evident, especially with no crosswind.

Then it was time to switch runways and begin tackling crosswind landings, in this case a crosswind from left to right at approximately 30 degrees and 10 mph. It was immediately apparent that his anxiety was building at the mention of a crosswind landing. A method I like to use in this situation is to do a crosswind takeoff and closely observe the pilot's control inputs. He made all the right control movements, but they were very stiff and almost always a split-second behind the aircraft when they were needed.

As we made our turn onto the left downwind leg of the pattern, I told the student we would not land on this approach but rather align the aircraft with the runway and make a low pass at 10 feet. This allows the pilot to first establish the needed left wing down and right rudder inputs, and then hold these for the length of the runway as needed for the left to right crosswind. I manage the power inputs when conducting this maneuver, so the pilot can concentrate on maintaining runway alignment.

One or two passes of this nature help build confidence. If the wind is somewhat gusty or the direction is variable, the 10-foot pass also allows the individual to experience those changes and make the needed control corrections without having to worry about maintaining proper direction on the runway surface. The next approach includes a crosswind landing using the three-point or near full stall landing configuration.

Upon turning onto the final approach, the pilot establishes the correct left wing down, opposite right rudder inputs to keep the airplane flying and descending on a straight line toward the runway end. At approximately 10 feet above the runway, back-pressure is applied to arrest the descent, and the pilot's line of sight transitions from looking over the nose to looking approximately 30 degrees left or right of the nose and extending the line of sight until it intersects the runway edge. On a 75-foot-wide runway, this distance is the equivalent to about two runway lights ahead of the aircraft. This sight picture allows the pilot to maintain depth perception while the peripheral vision detects nose movement left and right.

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As the aircraft slows and begins to settle, additional back-pressure is applied, establishing the flare. While doing so, left wing down aileron and opposite right rudder are continued, keeping the longitudinal axis aligned with the runway centerline. As the touchdown occurs, the stick or yoke is held in the full aft position throughout the rollout. If the crosswind is more than a few miles per hour, the left main landing gear should touch down simultaneously with the tailwheel. As speed and lift dissipate, the right main will touch down. Aileron and rudder correction may vary depending on crosswind velocity and directional variability. Both aileron and rudder inputs should be maintained throughout the rollout, preventing the aircraft from weathervaning or pointing into the wind. Continue holding the aileron correction and frequently tapping the right rudder pedal until exiting the runway. It sounds quite simple, doesn't it?

ERRORS AND OBSERVATIONS

The most common error I've observed is pilots getting tense and apprehensive, leading to stiff, slow control inputs. Tension builds as they get closer to the runway and touching down. Sometimes I've seen people hold their breath on short final, adding to tension. With tension comes tight muscles, leading to stiff, mechanical, and slow control inputs. The grip on the control stick or yoke can be measured in foot-pounds.

It is imperative that pilots relax as much as can be achieved prior to the crosswind landing. I have students take long, deep, relaxing breaths while on the base leg of the traffic pattern. Then, after turning onto the final approach and establishing the correct aileron and rudder inputs to compensate for the crosswind, I ask the students to continue those deep breaths while wiggling their toes and fingers. This practice helps relax the leg and arm muscles, allowing for more fluid control inputs as needed.

The second most common error is students slamming the stick or yoke all the way to the stop in the direction of the wind the instant the wheels touch the runway. For several more seconds after the touchdown and while the airspeed is dissipating, the wings are still able to generate enough lift to raise the aircraft off the runway. This movement will usually cause the wing opposite the wind's direction to rise, picking up the main gear with it. Rather than making this mistake, I have students continue full aileron application but at a steady, slower, and more fluid rate, as the airplane slows.

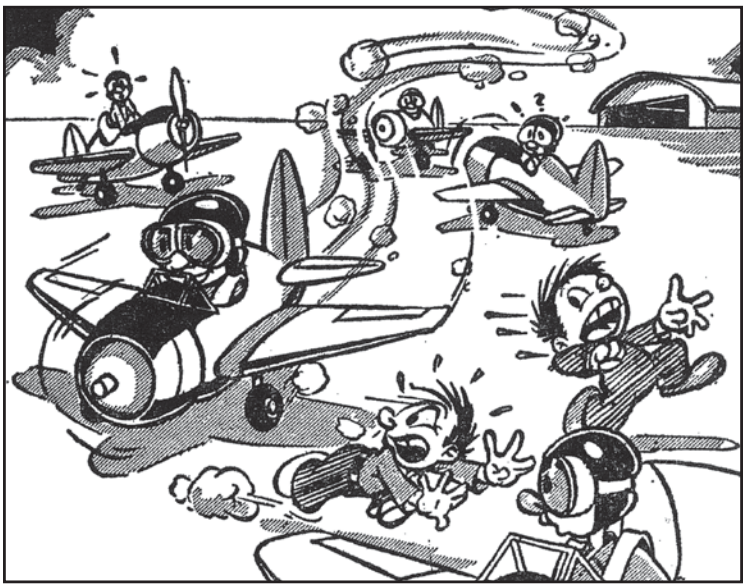
A third error is really a continuation of the second error. When full aileron deflection is applied too quickly, raising the wing away from the wind, the first reaction students will make is to rapidly move the control stick from full deflection in one direction to full deflection in the other to bring the wing down. While doing so, they frequently release the back-pressure on the stick. In our example, the left wing rises as well as the tail. The wings — especially the left wing — are again generating lift rather than being in a stall configuration. At this point, if no corrective action is taken, the airplane will weathervane into the wind and begin heading for the tall grass bordering the runway. The left wing is generating lift but also drag, further pulling the aircraft leftward toward the runway edge, or worse. A quick right rudder application aligning the airplane's longitudinal axis with the runway and applying full power for a go-around is the best solution at this point.

Another error I've observed during a crosswind landing is forgetting to continue flying the airplane immediately after touching down. Pilots will relax on all control inputs. This is often a sign they were quite tense in preparation for the landing. The pilots are so happy to have landed in a crosswind that once on the ground, they breathe a sigh of relief, relax, and forget to keep flying. Most crosswind landing incidents and accidents occur 5-10 seconds after touching down, confirming this observation.

Throughout flight training, instructors often preach to students to touch down on the runway centerline, sometimes chastising them for not doing so. When landing in a crosswind and missing the centerline, students or low-time pilots might attempt to direct the airplane over to the centerline. This, in my opinion, is a huge mistake during a crosswind landing. If touching down slightly left or right of the centerline, I teach getting the aircraft parallel with the centerline and proceeding straight forward from there. Do not attempt to move to the centerline when landing in a crosswind. You're only creating an opportunity for a problem that need not exist.

A less common crosswind error I've observed is the attempt by pilots to look over the nose while in the flare and before touching down. Some tailwheel aircraft have a low enough profile that pilots can comfortably see over the nose while taxiing and, with a little effort, can still see over the nose during the flare and landing. The Cessna 170 is a good example. However, many other tailwheel aircraft have a profile that restricts forward visibility even while taxiing.

CROSSWIND LANDINGS



Crosswind landings can also create anxiety among the folks on the ground.

If landing in a gusty crosswind, attempting to look over the nose in one of these aircraft will potentially cause pilots a big problem. Because forward visibility is restricted, they have no reference to determine either the height above the runway or the left or right drift that may be occurring. This is an incident waiting to happen. The line of sight pilots should employ is no different in a crosswind configuration than in a no-wind landing. Establish the diagonal line of sight as the aircraft is leveled from the approach descent, and continue that line of sight through the flare and touchdown, and until you have safely exited the runway. Do not attempt to carry out cockpit tasks while rolling out on the landing.

Crosswind landings are not inherently dangerous. They can be a challenge, but practicing from time to time helps establish and maintain a level of proficiency. That way, the next time you arrive at the airport for a pleasure flight, you cannot talk yourself out of flying because of the light crosswind. 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.

ILLUSTRATION COURTESY OF STEVE KROG