STEVE KROG
COMMENTARY / THE CLASSIC INSTRUCTOR

Crosswind Landings 2.0

They start with situational awareness

BY STEVE KROG

CROSSWIND LANDINGS are a fact of life. If you want to experience the pleasure of flying to the fullest, crosswind landings will need to be practiced and mastered. Otherwise, you're denying yourself the enjoyment of flight on many beautiful, sunny days. And, what if you depart your local airport at sunrise under dead calm conditions and return an hour later only to find the wind has kicked in, forcing you to deal with a crosswind landing? Practicing crosswind landings from time to time will save you from an upset stomach and sweaty palms!

Crosswind landings require three things: situational awareness, good judgment, and following through.

SITUATIONAL AWARENESS

Situational awareness is the ability to read and interpret all of the signs the existing weather conditions are telling you. While in flight and nearing your destination, have you observed both the upper and surface wind conditions? Are you having to crab in order to fly a straight line to the airport? If so, you will begin developing an understanding of the wind — both direction and velocity.

If the airport to which you are flying has either an automated surface observing system or automated weather observing system, have you listened to the ongoing report? If the airport does not provide this service, what action are you going to take to determine surface wind direction?

Here at the Hartford Municipal Airport (HXF), we do not have ASOS or AWOS. So I teach all my students to fly over the airport several hundred feet above the published traffic pattern altitude. The direction of flight should be situated so the pilot can look nearly straight down at the windsock. My reasoning for this is that the windsock can easily be misread when looking at it via a diagonal line of sight. For example, what you thought to be a direct northerly wind could actually turn out to be more northeasterly, indicating a different runway choice, if available.

Is the windsock moving or pivoting back and forth? Is the sock fully extended? Interpreting these signs properly might tell you that the surface wind is quite variable with anywhere from a 30-degree to a 60-degree directional change. A fully extended windsock indicates the surface wind is at least 20 mph.

Have you scanned for other aircraft in the air or moving on the ground at your destination airport? What runway did they use or are planning to use? Have you monitored the destination airport's common traffic advisory frequency? If so, you have another resource for gathering input. Contact pilots in those aircraft via radio and ask what runway they used and what the winds were like during the final approach.

A conscientious pilot will make every effort to gather as much information as possible before taking the next step toward a landing, especially a crosswind landing.

So I teach all my students to fly over the airport several hundred feet above the published traffic pattern altitude. The direction of flight should be situated so the pilot can look nearly straight down at the windsock. My reasoning for this is that the windsock can easily be misread when looking at it via a diagonal line of sight.

GOOD JUDGMENT

Good judgment refers to the pilot's ability to gather all of the available information, absorb it, and then make a sound decision based on that information.

Let's assume you are en route to Oshkosh (OSH). As a sound safety measure, you decided to land at Hartford (HXF, 50 miles south of OSH), top off your fuel tanks, and take a short rest before tackling the beehive arrival at OSH. Hartford doesn't have ASOS, so as a good pilot you listen to the two nearby reporting airports. The airport to the west is reporting surface winds at 290 degrees at 12 knots. The airport to the east is reporting surface winds at 070 degrees at 10 knots. HXF is centered equidistant from both.

With this information, you, the pilot, will have to make your own surface wind determination when you approach HXF. As you fly over the top of the airport to get a read on the windsock, it appears the surface winds are out of the northwest and you estimate it to be about a 45-degree crosswind. The velocity is estimated at about 15 knots.

HXF is equipped with one east/west hard surface runway 3,400 feet long and one north/south turf runway that is 2,000 feet in length. Which runway would you select for your landing? If you opted to land on Runway 27, you'll have a 45-degree crosswind from the right, and if you select turf Runway 36, you'll be dealing with a 45-degree crosswind from the left. Which are you more comfortable in handling?

What is your aircraft's maximum crosswind component? Can it handle a 45-degree by 15-knot crosswind? Can *you* handle that type of crosswind? Let good judgment be your guide.

Over the years I've been instructing, I've found that most pilots prefer landing with a crosswind from left to right. Why? It seems more natural as most traffic patterns are left hand and the pilot is comfortable turning left.

FOLLOWING THROUGH

Following through is the ability to obtain all available information via situational awareness, interpret this information to make a good decision, and then apply all the physical and mental inputs required to make a safe approach and landing.

A good landing begins on the downwind leg of the traffic pattern. This is especially true when making a crosswind landing. Flying a parallel ground track to the selected runway will give an alert pilot a good feel for the wind direction. Does the downwind leg require a crab angle to the left or the right? Not recognizing this can cause an unsafe situation when on final approach. Interpreting the wind direction and velocity here provides you with data that affects the remainder of the traffic pattern, approach, and landing. Also, how rough or bumpy is the air? Is there a lot of thermal activity bouncing your airplane around? If so, you'll want to note that rather than ignoring it. The bumps may increase as you get closer to the ground due to the wind gusts and lulls between gusts.

variable velocity crosswind. As we make the turn onto base, we'll want to turn several more degrees beyond 90 degrees to offset the wind that is trying to blow us away from the runway.

Start the turn onto final a few seconds early using a shallow bank. Doing so allows us to gently increase or decrease the bank angle to align the aircraft with the centerline of the runway.

There are two accepted methods for compensating for a crosswind while on final approach — crab angle or cross-control, wing low. If the crosswind is gusting and the airplane is bouncing around in the rough air, I prefer using the crab angle approach method. After rolling out of the turn onto final, use a combination of aileron and rudder to establish a crab angle pointing the nose of the aircraft into the wind. In the example we're using, a 15- or 20-degree crab angle would be used to keep the aircraft aligned with the runway centerline.

If using the cross-control method, lower the windward (right, in this case) wing to offset the wind trying to push the aircraft to

Over the years I've been instructing, I've found that most pilots prefer landing with a crosswind from left to right. Why? It seems more natural as most traffic patterns are left hand and the pilot is comfortable turning left.

Let's assume you've decided to land on Runway 27, meaning that you'll be dealing with a 45-degree crosswind at a variable 15 knots from the right. A crab angle to the left will then be required to maintain a parallel ground track on downwind. Groundspeed will be somewhat faster than what is shown on the airspeed indicator.

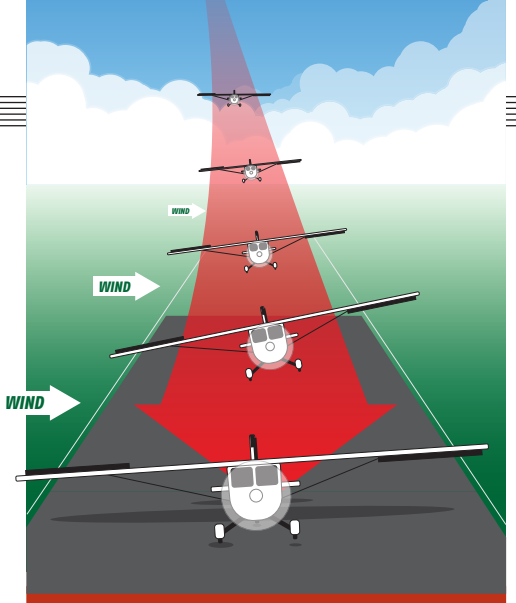
The somewhat rough air we've encountered tells us the final approach may be unstable, so we'll want to make some changes in how we normally fly the final leg to maintain as much stability as possible.

Before making the turn onto the base leg, we'll extend our downwind leg by an extra 10-15 seconds. This will provide us with a slightly longer final approach, giving us more time to set up and/or adjust for the

the left. The aircraft will want to turn into the wind as well, so opposite, or left rudder, needs to be applied to keep the aircraft aligned with the runway.

I prefer the crab angle method as it will give me a more stable approach or descent angle in the turbulent air. The cross-control method positions the aircraft on the feather edge of a side slip. Thus, the approach descent angle can be quite varied. Both methods are acceptable, however. It just depends on which method you are most comfortable performing.

It is also a good idea to carry a bit of extra airspeed while on final approach when dealing with a gusty or variable crosswind. A general rule of thumb is carrying about 5-7 mph extra.



LOOKING FOR MORE ON CROSSWIND LANDINGS?

For more from Steve on this topic see Classic Instructor in the April and July 2018 issues of *EAA Sport Aviation*.

The crab angle approach requires realigning the aircraft on the centerline by stopping the crab, lowering the windward wing, and applying opposite rudder. You will be constantly increasing and decreasing both in gusty conditions, so don't be satisfied with establishing this configuration and then waiting for the aircraft to touch down.

If the crosswind is stiff, as in our example, the right main wheel and tail wheel should touch down first with the left main touching down 3-5 seconds later. Here is where I've seen many problems occur. Once on the runway, the pilot will relax and forget to continue flying the airplane. Instantly things begin to happen as the plane weathervanes into the wind. If the aircraft is moving, it must be flown with continued aileron, rudder, and elevator inputs. Do not stop flying the airplane until the prop stops in front of the hangar!

As stated in the first few paragraphs, crosswind landings require three things: situational awareness, good judgment, and following through. Become a better pilot by becoming more situationally aware. Then use good judgment to determine the best method for making the approach and landing, and, finally, follow through by performing the approach, landing, and rollout. 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.