

Transitioning to a Tailwheel

Part 2

BY STEVE KROG



WHEN TRANSITIONING FROM A tricycle to a tailwheel aircraft, the crosswind takeoff and landing procedures are somewhat different. For this comparison, let's assume we are using Runway 27 and have a crosswind from 300 degrees at 10-12 knots.

TAKING OFF

Taxiing the Cessna 172 into position, we roll the yoke fully into the direction from which the wind is coming. The elevator is set in neutral. Power is smoothly applied to begin the takeoff roll. As the speed increases, pressure on the ailerons can be felt as they become effective. Slowly decrease the amount of aileron correction but never bring it all the way back to the neutral position. This will depend on the crosswind velocity. Right rudder pressure is needed, but less than when making a normal no-wind takeoff. The push of the crosswind against the vertical fin and rudder is partially offsetting the torque and P-factor pulling the aircraft to the left.

If the surface wind is gusty, continue holding the 172 on the ground until approximately 5-10 mph above the usual liftoff speed before rotating. After lifting off, I like to climb to about 100 feet, level off, position the ailerons in neutral, and take my feet off the rudder pedals. Depending on the wind velocity, the aircraft will weathervane, establishing its own crab angle. Then continue the climb while maintaining the crab angle.

The takeoff in a tailwheel aircraft such as a J-3 Cub requires different control inputs for a safe, uneventful crosswind takeoff. Taxi into position for the takeoff. While doing so, continually change the aileron positions as the aircraft turns on the ground. Always position the ailerons into the wind when the surface wind is coming at you and away from the wind when it is coming from behind you.

Once in the takeoff position on the runway, deflect the windward aileron fully into the direction of the wind. Then move the stick fully aft so the elevator is in the full-up position. Take a few seconds and visualize what the wind will do to the airplane when you apply power and begin the takeoff roll. Without positioning the controls as described, a gust could easily lift the windward wing in the air, and the wind striking the fuselage broadside and tail will also try to turn the airplane into the wind. Without the elevator in the full-up position, the gust could also lift the tail off the ground. It is a helpless feeling when experiencing something like this.

Preparing for takeoff, the windward aileron is fully deployed into the wind, and the stick is positioned fully aft, holding the tail wheel firmly on the ground. Under normal wind conditions, one would expect the aircraft to track to the left due to torque and P-factor. In this scenario, very little right rudder, if any, is needed because the

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crosswind is offsetting the leftward track. Be aware of this situation if crosswind experience is limited.

As the takeoff roll progresses, I like to allow the tail to lift off the ground once I have felt the relative wind and prop wash pushing on the tail. In a strong crosswind situation, I like to raise the tail high enough so the wing is in a neutral angle of attack, preventing premature liftoff due to a strong gust. Rudder application may vary in gusty wind conditions. In a gust lull, right rudder may be needed, but when the gust occurs, a touch of left rudder might be needed.

Depending on the wind velocity and gust factor, I will hold the wing in the neutral angle of attack until reaching an indicated airspeed of normal plus half of the gust velocity before applying light back-pressure and lifting off. Once in the air and reaching approximately 100 feet, I level the aircraft and relax any rudder pressure. Like the 172, the Cub will weathervane to establish its own crab angle. Once it has done so, continue with a normal climb while maintaining that crab angle until reaching your desired altitude.

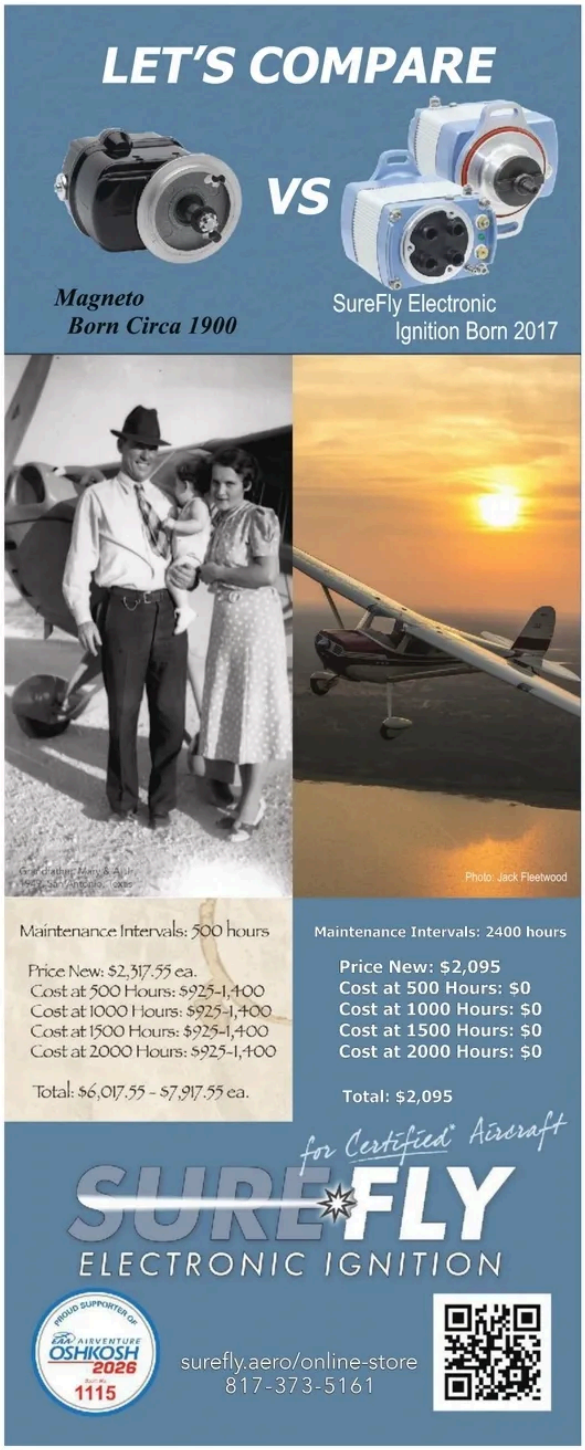
LANDING

Landing a 172 in a crosswind takes a bit of finesse. Establish a stable approach using either a crab angle or cross-control configuration. Either setup is both safe and acceptable. At approximately 200 feet AGL, configure the airplane in the cross-control configuration. Roll the windward wing into the wind using just enough aileron deflection to keep the aircraft from moving to the left of the approaching centerline. Opposite rudder is then applied to align the longitudinal axis with the centerline. In a steady crosswind, continue holding these control inputs throughout the level-off, flare, and touchdown.

The biggest mistake I see pilots making when landing a tricycle-gear aircraft in a crosswind is relaxing the control inputs once the touchdown has been made. Much of the time one can get away with this unless dealing with a gusty crosswind. I prefer teaching the use of continued control inputs until arriving at the parking and shutdown site.

Landing a tailwheel airplane in a crosswind requires considerably more attention to control inputs throughout the approach, landing, and while taxiing to the hangar. The approach is nearly identical to the 172. It should be stabilized, employing either the crab angle or wing-down opposite rudder

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method. I prefer the crab angle until reaching about 200 feet AGL, and then I roll the windward wing down into the wind while applying opposite rudder for forward directional control.

In a steady crosswind, continue holding the aileron and rudder inputs while leveling off, flaring, and then touching down using the three-point or full-stall landing method. If the crosswind is robust, the touchdown will often see the windward main landing gear wheel and the tail wheel touching first.

As energy is dissipated, the main gear away from the wind will touch down usually two to three seconds later. Here is where transitioning pilots get into trouble by relaxing the control inputs immediately after touching down. The tailwheel airplane is in the three-point attitude, so the wing is in a positive angle of attack and subject to generating lift while moving. If the aileron deflection is relaxed, the wing is subject to creating lift and drag, causing the airplane to turn into the wind.

Additionally, if the elevator deflection is also relaxed, the tail is subject to lifting off the runway surface or, at a minimum, creating little download on the steerable tail wheel, which reduces directional control. Relaxing on the rudder pedals just adds to the potential for losing control of the aircraft. While rolling out and slowing the airplane, continue applying full aileron deflection, applying rudder pressure as needed to maintain directional control and full-aft control stick to keep the elevator in the up position, causing a positive download on the tail.

Transitioning from a tricycle to a tailwheel aircraft is not difficult. It does require the use of your feet and heightened awareness of the wind and its effect on the aircraft while on the ground.

When taxiing from the runway to the tie-down area, the direction will change with every turn. This is a critical time, and a lot can happen if proper control inputs are not used. If the surface wind is coming at you, the control stick should be held fully aft so the elevator is in the up position, creating a download on the steerable tail wheel.

Using the nose of the aircraft as the "12 o'clock" position, the right wingtip is at 3 o'clock and the left wingtip is at 9 o'clock. If the surface wind is coming at you from 9 to 3, the stick is also held in the full-aft position. If the wind is from 9 to 12, the stick is moved fully to the left, keeping the aileron deflected upward to offset the surface crosswind. And from 12 to 3 the right aileron is deflected fully upward.

If the surface wind is coming from 3 to 9 behind you, position the control stick forward with the elevator down to prevent the wind from getting under it and lifting the tail. Keeping the elevator down, position the aileron closest to the tailwind direction in the down position, again deflecting the wind from under the wing. Follow the old adage: Climb into the wind, and dive away from the wind.

When making turns on the ground, be especially aware of the surface wind direction and the need to make control input adjustments with every change in direction.

Transitioning from a tricycle to a tailwheel aircraft is not difficult. It does require the use of your feet and heightened awareness of the wind and its effect on the aircraft while on the ground. Getting it off the ground and back down again safely and proficiently requires additional training and practice. Once in the air, it is no more than a basic flying airplane.

Author's Note: I did not cover the crosswind wheel landing for the sake of brevity. EAA

Steve Krog, EAA 173799, has been flying for more than five 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.

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