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COMMENTARY / THE CLASSIC INSTRUCTOR

So You Want to Fly a Taildragger

Part two: Three-point landings

BY STEVE KROG

THE KEY TO A good tailwheel landing, in my opinion, begins at the midpoint of the downwind leg of the traffic pattern. If one is established at a consistent altitude, with proper horizontal separation from the runway centerline, and at constant airspeed, there will be fewer things that need fixing or adjusting on the final approach to land.

When first teaching students to perform tailwheel landings, I much prefer an uncontrolled airport with at least one grass/turf runway. Turf is very forgiving compared to asphalt, so students can first make and then correct landing mistakes without the instructor having to "assist" on the controls.

If working on tailwheel landings at a controlled airport, many of these variables can't be helped. Control tower operators will vary your traffic pattern to accommodate other traffic (i.e., left and/or right traffic patterns, extended downwind legs, etc.).

I prefer to fly my pattern at 800 feet AGL by one-quarter mile horizontal separation traffic pattern. Thus, if experiencing any engine difficulties, I can make it to the airport under normal wind conditions. I am not a proponent of the 2-mile wide, 3-mile long downwind leg traffic pattern frequently taught by many flight schools today. An engine failure would never allow a return to the airport. This type of traffic pattern not only compromises safety, but also adds significant expense to the student. Under normal wind conditions we average 12 stop-and-go landings per hour on a 2,000-foot turf runway flying the 800-foot by one-quarter mile pattern.

There are two types of tailwheel landings: the three-point or full-stall landing and the wheel landing. To acquire a tailwheel endorsement, both types of landings must be satisfactorily performed in normal as well as crosswind conditions. This article will focus on the three-point landing.

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FLYING A STANDARDIZED PATTERN AND APPROACH

For this discussion I'll use numbers and speeds common to the Piper J-3 Cub. Depending on what you will be flying, the numbers may be slightly different.

Beginning at the midpoint of the downwind leg, carburetor heat is checked. Airspeed is approximately 80 mph. When abeam the approach end of the runway, power is reduced to 1800 rpm, and slight back pressure is applied so that the nose is held in the approximate 60 mph attitude. With 1800 rpm the airspeed should stabilize at an indicated 70 mph. When at an estimated 45-degree angle from the centerline of the approach end of the runway, make the descending left turn onto the base leg. Under normal wind conditions you should have approximately 500 feet of altitude midway through your base leg. Bleed a little power to about 1500 rpm and let the airspeed settle on 65 mph.

After a traffic check to the right, evaluate your altitude and then begin making the turn to final. I personally like to start my turn to final a few seconds early using a shallow bank. This provides me the flexibility to either safely increase or decrease the bank angle to roll out on the runway centerline depending on what the wind is doing. Upon rolling out on final, establish your nose attitude for 60 mph and reduce power as needed to stay on your glide path to your aim point on the runway.

For tailwheel transition pilots who have been flying tricycle gear aircraft, visualize making a soft-field landing where you would hold the nose off the ground for as long as you can.

While coming down the stabilized glide path on final, take one or two deep breaths to relax. Wiggle your fingers and your toes so as to relax your grip on the control stick and prevent your calf muscles from tensing up. If your glide path varies slightly left or right of the centerline, correct with a combination of light rudder and aileron inputs. Do not use the rudder only as this creates a skidding motion and could affect your glide path.

At about 10 feet above the runway, gently ease the stick back to stop the descent or level the aircraft. While doing so, adjust your line of sight from over the nose to approximately 30 degrees left or right of the nose and the equivalent of 100 feet or so. Remember, this line of sight was used on the takeoff, and we use it again on landing. By looking 30 degrees to the left or right and forward 100 feet, we are able to maintain depth perception with the forward view and lateral directional control with our peripheral vision.

As the aircraft slows and begins to settle, gently apply a bit more back pressure on the stick, increasing the angle of attack and generating more lift. Lift creates drag, and this slows the airplane down a bit more. Continue with light back pressure trading lift for speed and drag, allowing all three wheels of the airplane to settle smoothly on the runway surface. The aircraft is in a full stall configuration at this point, and it is important to keep it so.

Should you relax on the stick allowing it to move forward, the tail is apt to lift a few degrees. By doing so the wings are now able to generate lift again rather than remaining in the stall attitude. The lift being generated can be enough for the airplane to again become airborne. Then the bounces or "crow hopping" begins. By keeping the stick all the way back even if you do bounce on the initial touchdown, the wings are stalled and the airplane will settle back on the runway.

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The biggest mistake for the early tailwheel student is to want to relax on the stick when a bounce occurs. It seems to be a natural reflexive action. Teach yourself not to allow this. This action only aggravates the bounce(s) and the height of same.

While all of this is happening with your diagonal line of sight and smooth, steady application of the control stick, it is also vital that you include the use of your feet in the landing if you want to use the airplane again.

As described in part one, your feet should be positioned so the upper balls of your feet make contact with the rudder pedals. The key here is to keep your feet and leg muscles relaxed. Another big mistake made by virtually all beginning tailwheel students is letting your calf muscles get really tense in anticipation of the landing. Tight or tense calf muscles lead to both feet pushing hard on the rudder pedals simultaneously. It does no good during the landing and only causes sore calf muscles and charley horses at the end of the day.

Do your best to stay relaxed by practicing the breathing exercise while on final. Left and right or lateral directional control is managed by the use of rudder inputs. Light taps on one or the other pedal may be needed to help keep the airplane straddling the runway centerline while leveling off, then flaring and touching down.

Using your peripheral vision, if you see the nose moving slightly to the left, gently tap and then release the right rudder to straighten out your ground track. Sometimes it may even take two or three light taps to get and keep the airplane moving in a straight line on the runway. Never push on a rudder pedal and hold it, as this will cause you to over correct. If the nose is moving slightly left and you push hard and hold the right rudder pedal, the airplane will now swing to the right. By the time you've released the pedal you are on a ground track headed for the tall grass. In an instant of panic, you push and hold the left rudder. The airplane then makes a near 180-degree turn, and you're now headed for the tall grass on the other side of the runway. Tapping and releasing on the rudder pedals will prevent this.

In most pilots young and old, I find that getting the leg muscles to relax on landing is probably the most difficult part of learning to land a tailwheel airplane.

As the airplane touches down on all three wheels and the control stick is kept all the way back, rudder tapping may be needed to keep the airplane aligned with the runway centerline until coming to a stop. Another common error I've found is that as the airplane slows and even if it is tracking on a straight line, the student begins tapping on the rudder pedals, oftentimes creating a problem that didn't exist. When I've asked students why they were doing so they reply, "So I don't do a ground loop." Once again the hangar fliers have been the source of bad information. Should the airplane drift left or right of the centerline, straighten your ground track and continue the rollout. Do not try to bring the airplane back to the centerline.

A good approach will greatly enhance the ability to make a good landing. Relaxing the muscles, adjusting your line of sight, smooth even back pressure on the control stick, and light tapping on the rudder pedals as needed for a straight ground track all make for a good and safe three-point tailwheel landing. EAA

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