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COMMENTARY / THE CLASSIC INSTRUCTOR

Landing Incidents

Can they be avoided?

BY STEVE KROG

ALTHOUGH WE AS PILOTS may think the sun rises and sets around our fantastic capabilities and egos, face it, we're human and humans make mistakes. It's a fact of life! We've all made bad landings in our lifetime, usually when a large crowd is on hand to observe. As good conscientious pilots, we're always striving to make the best landing we can each time we turn onto final approach.

One of the topics discussed at a recent FAA Safety Team (FAASTeam) seminar was landing incidents in the past 12 months. I did a bit of research afterward and reviewed the various incident reports, trying to determine if there could possibly be a common thread leading to each event.

Interestingly, landing incidents/accidents account for approximately 35 percent of all aircraft accidents nationally. Breaking this figure down further, 16 percent of the landing incidents were wind related, 17 percent were due to loss of control (not wind related), and 27 percent were attributed to attitude and airspeed control. Approximately two-thirds of all landing incidents can be directly ascribed to the pilot.

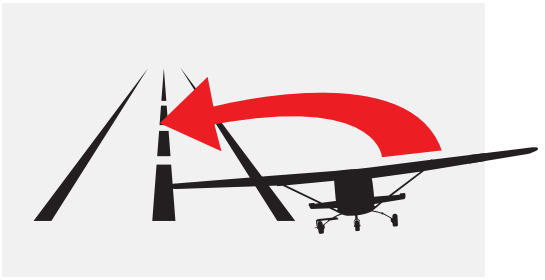
During the past two weeks, I've flown with a half-dozen individuals who all have a private certificate but wanted to earn tailwheel endorsements. This provided the opportunity to closely study each individual and observe weaknesses or actions needing improvement to consistently make safe approaches and landings. Following are my observations.

WIND AS A FACTOR

When approaching an airport for landing, wind and the effect it may have on the approach, ground track, and landing are frequently underestimated. What I've observed is that one will glance at the windsock, determine the preferred landing runway, and then proceed by entering the pattern on the downwind leg. If there is any type of crosswind the airplane may have drifted considerably off the desired flight path by the time the downwind midpoint is reached.

Then, following procedure, the pilot applies carb heat just after reaching the midpoint and begins looking for the runway end for the purpose of reducing power. Power is reduced at that point, and when reaching a point at an approximate 45-degree angle from the runway end, a left turn onto the base leg is initiated.

Using an example of a 30 degree by 12 knot crosswind, the wind further pushes the aircraft away from the desired ground track. Rather than making any adjustments for either the wind or groundspeed, the pilot continues until it's time to make the turn from base to final.



Runway alignment on final approach is vital to making a smooth, safe landing.

So, what's wrong with this picture? Runway alignment, altitude, and groundspeed are not stable! Power is adjusted to compensate for altitude, usually changing airspeed. Runway alignment has escaped the pilot leading to a very unstable approach to land. Speed, altitude, and runway alignment are all over the spectrum.

When working with student pilots, I'll have them explain to me how the wind will affect each leg of the traffic pattern after determining the wind direction, estimated velocity, and desired landing runway. I firmly believe this practice will help instill a thought process aiding the student in establishing a stable pattern, approach, and landing.

Centerline alignment with the runway on final approach is an area I've also found where many pilots are lax. Rather than attempting to land on the centerline each time, I find that many are satisfied with just hitting the runway, never correcting for drift! To reinforce the importance of landing on the centerline, I like to take students to an airport where the runway is only 35 feet wide. After one or two takeoffs and landings on said runway, striving for hitting the centerline is no longer a problem.

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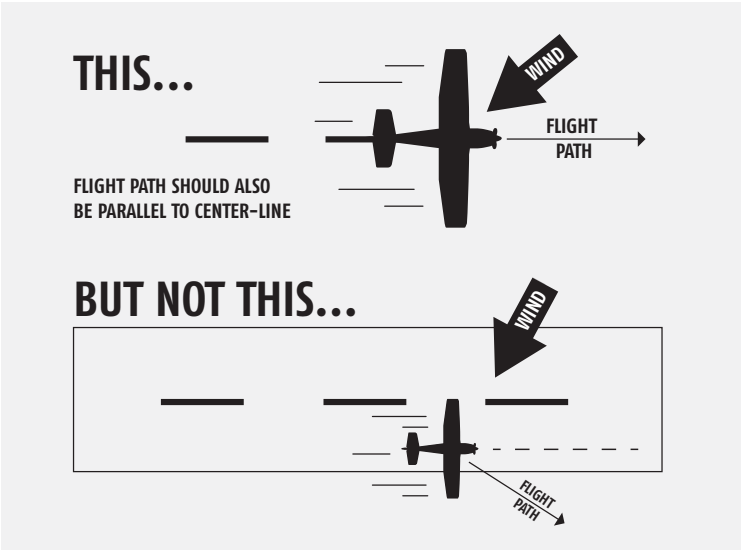
ATTITUDE AND AIRSPEED FACTORS

Approximately 27 percent of the landing incidents are attributed to attitude and airspeed. Without repeating myself too much, a stable approach will significantly improve both, ultimately leading to a good landing.



Never be satisfied with "good enough." Strive to touch down on the centerline every landing.

Flying with students, and in some cases tailwheel transition students, I've experienced just about every attitude and airspeed approach known to instructors. I try to point out mistakes and use them as a learning experience.

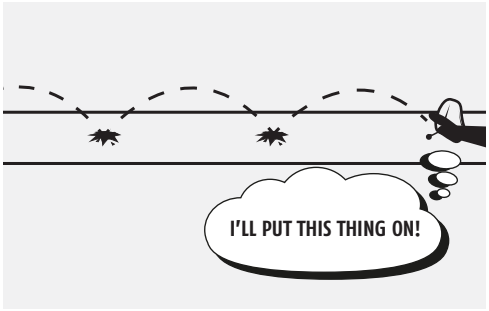
"Notice our nose attitude and airspeed in relation to the runway? Didn't we practice power-off stalls? Allow this to go further without fixing it and we'll be experiencing a power-off stall short of the runway!" The student will give power a big boost correcting for the attitude and lack of airspeed, but now creates a secondary problem — excess airspeed.

Power can be your friend on final approach.

Though many pilots might think that a "little extra" airspeed can't hurt, it does, in fact, have a significant impact on the landing distance and safety. For example, if an airplane that has a recommended landing speed of 50 knots touches down at 60 knots, the touchdown and rollout distance increases by at least 21 percent.

On a 5,000-foot runway it isn't a problem, but try this on a 1,200-foot runway and things get a bit exciting as the approaching fence line begins to fill your windshield!

Increased airspeed on the approach and touchdown can also lead to a problem described as porpoising. As the airplane approaches the runway with too much airspeed, a pilot will sometimes try to force the airplane onto the runway by lightly pushing the control yoke forward causing the nose wheel to contact the runway, yet the airplane is still flying and the main gear hasn't yet touched down. The immediate reaction is to apply back pressure, again becoming airborne. This action is repeated until the nose wheel separates from the airplane, unless the pilot recognizes the perilous situation and makes a go-around! Whether it be in a tricycle or tailwheel configured airplane, a porpoise has been initiated and is about to get much worse unless a go-around is immediately initiated.



Unless a go-around is executed, a porpoise landing can lead to bent tin and bruised egos!

The other fix is that of adding just enough power to barely make the runway, then chopping the power, making a spectacular arrival from 10-15 feet above the runway. The spring steel landing gear reaches full extension before returning to normal. I've observed hard landings that lead to a loss of directional control.

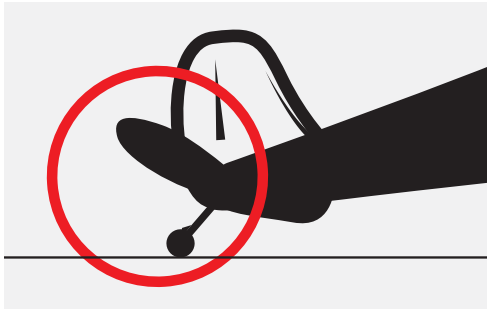
I always play the 'gut check' game with students when working in the traffic pattern, especially when on base leg. How does this approach look to you? Are we high? Low? Right on the desired glide path? After some practice the student will be correctly visualizing the proper flight path a vast majority of the time. This practice is nothing more than a building block in visualizing and then establishing a stable approach.

LOSS OF CONTROL AS A FACTOR

One might think, how do you encounter a landing incident or accident after landing? According to the FAA report, 17 percent of the landing incidents/accidents are a result of loss of control after touching down — without surface wind being a factor!

Tricycle gear pilots will often relax on the control yoke after the main gear has touched down, allowing the nose wheel to touch almost simultaneously. Directional control is maintained using the rudder pedals and steerable nose wheel. Seldom does this create a problem unless the landing speed is significantly greater than recommended and the pilot tries to force the aircraft onto the runway leading to the porpoise described previously.

Loss of control on landing is much more frequent for the tailwheel pilot. The habit of relaxing on the control yoke or stick is a habit of pilots transitioning from a tricycle to a tailwheel aircraft.

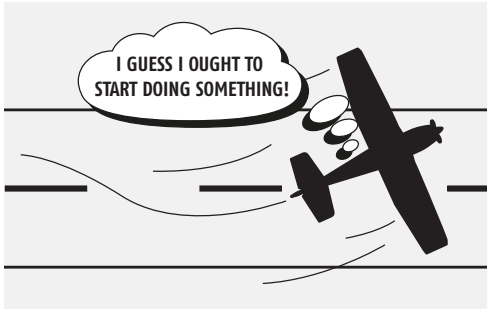


Keep the control stick/yoke back and the elevator in the up position during the landing rollout.

Immediately upon touchdown the control back pressure is relaxed allowing the tail to lift off the runway. The wings are again generating some lift while directional control via the steerable tail wheel is lost and the rudder rapidly becomes ineffective. The airplane rolls out with a mind of its own, unless the pilot is extremely sharp on brake application. More often than not, brake application launches an ever-increasing series of S-turns leading to a rapid runway exit and sometimes a nose over. Whether it is a transitioning pilot or a trained tailwheel pilot, this situation, relaxing on the control yoke or stick, is perhaps the greatest cause of loss of directional control on the ground when wind is of no influence.

There is an old saying in which I firmly believe, especially pertaining to tailwheel aircraft, and it states, "The flight is never over until the prop stops and chocks are placed around the wheels."

Another situation I've observed in pilots after touching down and during the rollout is that of taking their eyes off the runway as they adjust their iPad or begin searching for their cellphone checking for messages before the aircraft is fully under control. Breaking concentration, even for an instant



Stay focused until coming to a stop.

during the rollout, can lead to interesting and embarrassing circumstances. One must stay focused on the task at hand and not become preoccupied with peripheral items in the cockpit. Remaining constantly focused may save some embarrassment at the least or a possible significant repair expense.

There is an old saying in which I firmly believe, especially pertaining to tailwheel aircraft, and it states, "The flight is never over until the prop stops and chocks are placed around the wheels." Remember that each time you enjoy a flight! 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.

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