

## The Possible Turn?

By Tom Johnson

People who fly light single engine aircraft have been debating for a while now, whether you should attempt a return to the runway should you experience a loss of power on departure from the airport.

They refer to this as “The Impossible Turn”.

They realize there is not much margin for error, especially at low altitude. And if not done properly, the result can be fatal. Conventional wisdom advocates landing straight ahead. But while this may be good advice for a pilot who has never considered or been trained for the situation, very few things in aviation are quite so obvious. This thinking is designed to discourage a pilot from ever trying a turnback, which is flat out wrong. Sometimes, returning to the airport is the safest option, but if you have never practiced it or thought about it there’s no way you will pull it off successfully.

Fortunately for us in the soaring community, training to anticipate and properly handle a low altitude launch failure is a prerequisite for solo. And Examiners may very well ask you to demonstrate this maneuver on a checkride. (We refer to this maneuver as a Premature Termination of the Tow (PT3).)

Of course, our sailplanes have highly efficient wings compared to a Cessna, and our community knows the impossible turn is not impossible at all. But we need to understand when it is safe to execute the maneuver and when it is not.

Whether you are doing a planned PT3 training event or preparing for any other flight, be sure to consider and brief all the factors that may impact your flight.

During a planned PT3 training event, be vigilant to avoid introducing unnecessary risk. Why?

Because unfortunately, 65% of all launch accidents happen on planned events. And most unfortunately, 20% of all soaring fatalities happen on planned PT3 training events. Pilots are failing to lower the nose to establish their desired airspeed. This results in an aggressive decrease in airspeed and the subsequent stall-spin (Loss of Control) with insufficient altitude for recovery as the pilot attempts to begin the turn back.

Low altitude Loss of Control is the primary cause of PT3 related accidents. Understanding this is key to creating an effective PT3 mitigation and training strategy.

The key to avoiding Loss of Control during the PT3 is to quickly and aggressively lower the nose, **acquire** your desired airspeed, and **maintain** the desired pitch attitude and airspeed throughout the maneuver.

But first you must have a plan. You should bring all the players (student, CFIG, towpilot, ground crew) together and discuss the plan. Finally, you go out in the real world and execute the plan.

You should formulate your plan before every flight. Consider the wind, the density altitude, the runway, obstacles, towplane, local topography, and anything you deem pertinent.

Then build yourself a set of stepping-stones with well-defined decision points. For example, from the start of the take-off roll until the towplane is airborne, I will do “X”. Then up to a defined altitude above the terrain, I will do “Y”. Only above this altitude will we begin to consider a return to the runway or airport.

“X” and “Y” are different things not precisely defined here but must be defined in your pre-take-off briefing based upon local conditions for each time and day.

Have a plan for what you will do if the PT3 happens before the towplane is airborne. Which way, if required, will I turn? Are there any obstacles to consider? How will I use the spoilers and wheel brake?

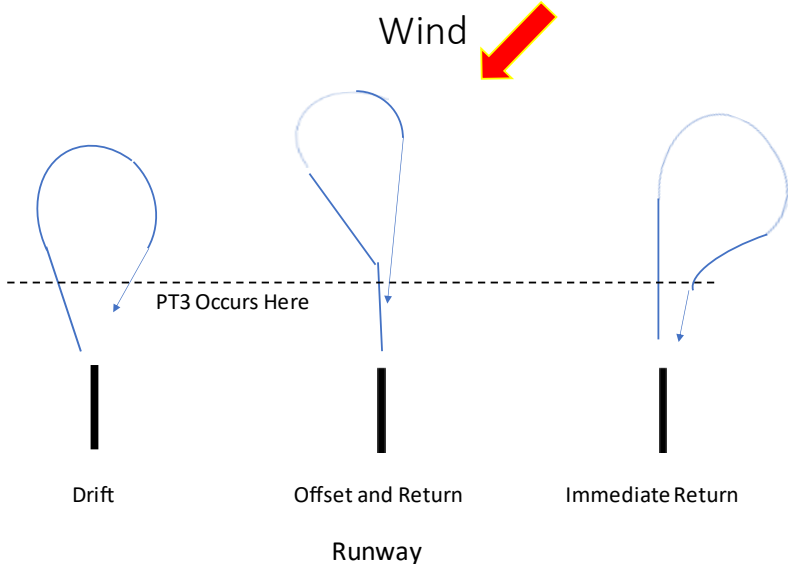
Next, you are airborne but not up to your pre-defined turn-around altitude. Are there obstacles to consider and how will you avoid them? Will shallow turns be required?

Once you are above your turn-around altitude for the day in question, what are you going to do?

First off, does the towplane at your operation maintain the runway extended centerline, or do you drift downwind while maintaining runway heading or a slight turn away from the wind?

Once you have factored this in, what do you do now that the PT3 has happened?

In **ALL** scenarios, once you realize the PT3 has happened, you **MUST** lower the nose to re-establish a pitch attitude that will acquire and maintain your desired pattern airspeed.



In the “Drift” and “Immediate Return” scenarios, once the pitch attitude is established, take a second to orient yourself and quickly review your pre-briefed plan. Plan to smoothly roll into a coordinated 45-degree angle of bank turn. Maintain your pitch attitude and angle of bank and allow the sailplane to turn.

In the Offset and Return scenario, after orienting yourself, turn 30 degrees away from the wind. Slowly count to three and smoothly roll into a coordinated 45-degree angle of bank turn. Again, maintain your pitch attitude and angle of bank, and allow the sailplane to turn.

Remember that the runway will be where you left it. As soon as you visually acquire the runway, manage your angle of bank and course reversal if required, to align yourself with the runway centerline.

From here on in, the PT3 portion of the maneuver is over, now you accomplish the downwind landing.

Maintaining pitch attitude and airspeed all the way down to the flare is paramount to safely doing all of this. Remember to let the wing turn the sailplane and use the rudder to keep the yaw string straight. Be aware of the illusion of excess speed as you fly downwind close to the ground.

Regardless of your experience, you should formulate and review your PT3 prior to every launch. (We do it in the big airplane world every flight. An engine failure coming out of Roanoke is very different from it happening in DFW.)

Brief this plan to the person you are flying with or verbalize it to yourself. You should be disappointed if you get up to 1000ft AGL, and do not have to execute your plan.

The SSF Safety column a couple of months ago has generated a great deal of discussion about what the "right" way to handle a PT3 is. There is no "right" way to handle a PT3. Treat every launch as a unique event with unique factors requiring a tailored plan for the PT3. Like the Cessna pilots, you realize there is not much margin for error, especially at low altitude. And if not done properly, the result can be fatal.

Have a plan. Establish the desired pitch attitude. Orient yourself. Execute your pre-briefed plan.

This thinking is intentionally designed to discourage a sailplane pilot from being conditioned to always attempt a turnback. Being "spring-loaded" to always return is flat out wrong. Sometimes, returning to the departure runway is the safest option, and sometimes it is not. And if you have multiple runways, a different runway may be the best option. Your options change as you climb up on tow. You must continually be aware of where you are and what your options are.

But if you do not practice analyzing and briefing each launch, and practice being aware of where you are on tow, you greatly reduce the chance you will pull it off successfully.

Be the pilot who has considered, trained, and practiced for the Possible Turn if the situation warrants.