

Training Corner

The Cross-Wind Made Easy

The third in a series
of articles by:
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In my last article I discussed the gyroplane's tricky flight controls. As we begin the take-off roll, the flight controls get very sensitive. As you master flight control coordination you are ready for some wind. The crosswind take-off and landing is as routine as the no wind take-off provided you really understand and have mastered the flight controls. If you have not done this, you have no business flying and are headed for disaster.

The basic skill of flying the crosswind is the sideslip and the basic discipline is staying on the centerline. Many fixed wing pilots are very lax on crosswind landings, and if they stay between the runway edge lines, they think they did an okay job. Shame on them!

Let's look at what happens when an airplane touches down in a crosswind. Assume a typical Cessna 152 with an 8 kt crosswind component. The 152's V_{so} , stall speed at full flaps, is 40 kts, the bottom of the white arc. The ratio of crosswind to forward speed is 1:8. When the plane stalls the weight of the plane comes down on the three large tires providing a fair amount of friction holding the plane in position.

Our little gyro comes down in the same crosswind and can touch down at 8 kts. This is a 1:1 ratio of crosswind to airspeed. Just before touch down you can blow off the centerline down wind

an easy rotor diameter.

This is where centerline discipline comes into play. You must have a centerline, a crack, or some reference line in order to sense your drift. Using minor pressure on the flight controls with proper coordination, your nose wheel should come down on the white line. What you really should be doing is flying your gyro onto the centerline with minimum ground roll not touching the tail wheel, until you decay rotor speed for gust protection.

What this all means is that you literally fly off and fly on. You are not done flying until the rotor speed decays. Many of my students think they are down and done when the wheels touch and the throttle is closed. This can be a costly error.

The major error that most students make in the slip is slipping too much and applying rudder to fast. Fly down the runway over the centerline. Lead with the stick and follow with the rudder using just enough to keep pointed straight. You only need to move five to ten feet going very slowly and under full control.

Assuming you can do a slide slip, the take-off is different than in the airplane. An airplane holds itself on the runway accelerating to V_r+10 and abruptly pops itself off. The entire propeller thrust goes for translation. The

gyro can not do that because it has to both translate and build rotor speed at the same time.

A gyro crosswind take-off is analogous to an airplane crosswind landing. Where you fly an airplane on to the runway, you fly a gyro off of the runway. A gyro must have sufficient energy stored in both the rotation of the blades and in the translation of the machine to remain solidly in the air without risk of sinking back to runway contact. The blade speed must carry the weight of the machine and the airspeed accelerating you to green line airspeed and minimum drag where V_y awaits you; then up you go like a home sick angel!

CAUTION: This all may sound easy, but it is not. Do not try any of this on your own.

In my next article, THE MANAGEMENT OF ROTATIONAL AND TRANSLATIONAL MOMENTUM, I will tell you how to manage your energy to make gyros the safest machine that leaves the ground or a disaster waiting to happen.

Remember, "the air, even more so than the sea, is most unforgiving for the slightest mistake." Get qualified flight instruction before getting into a gyro. Skillful pilots make it look easy, but it is not. **R**