

FLYING OPINION  
**Airwork**

BY TOM BENENSON



## Moving Up – or Down

THE CESSNA CARDINAL RG was sitting forlornly at the edge of Montgomery Field in San Diego with a “for sale” banner hanging from its propeller. As we came out of the parking lot after having lunch at a sushi restaurant across from the airport, Judith pointed at the Cardinal. Isn’t that one of the kinds of airplanes you’re considering? she asked.

We had been looking to upgrade from a Cessna 150 and were considering either a Cardinal RG or a fixed-gear Cessna 182. The presence of the Cardinal seemed propitious. It took only a phone call to the FBO for

and retractable gear.

Two days later, Judith and I launched on our flight home. Prudently we made a concession to my inexperience in the new airplane by limiting our trip back from southern California to upstate New York to VFR conditions and daylight hours.

The problems with transitioning to new or unfamiliar airplanes are recognized by the FAA and are addressed in a new advisory circular, AC 90-109, “Transition to Experimental or Unfamiliar Airplanes.”

In the AC, the FAA points out that many of the accidents involving pilots

performance, particularly in the transition phase to an unfamiliar airplane.”

The accident data show that the problem is not limited to pilots moving to Experimental airplanes or to higher-performance airplanes. There is as much risk for pilots moving down to low-inertia, high-drag airplanes. When light-sport airplanes first began to enter the fleet, an official with Avemco insurance told me that the first 10 claims the company received for accidents with LSAs involved experienced pilots who were “downsizing.” As a result, before a pilot could be insured on a new LSA, the company began to require at least five hours of transition training with an instructor and a completed flight review.

The hour and a half of ground briefing I had before heading out with the Cardinal obviously wasn’t really sufficient for me to know the airplane.

A transition course for a pilot moving into a new airplane should start with a complete review of the POH. The review should result in a good understanding of the systems, recommended normal procedures and emergency operations.

If available, I would enlist the help of an instructor who is very familiar with the airplane type. If there’s a type club for the airplane, I’d recommend contacting the club for information about idiosyncrasies involving the airplane type.

Whether you have the help of an instructor or a pilot familiar with the airplane, there are things that it makes sense to perform before slipping the “surlly bonds of Earth.” Some time should be spent seated in the pilot’s seat and carefully examining the position of the controls. Positions can vary from one airplane to another. For example, the throttle, propeller control and mixture are not lined up left to right in all aircraft.



>>> Flying the Cardinal meant dealing with retractable gear and a variable pitch prop.

details about the airplane and a short test flight for us to decide to buy it.

My transition training consisted of about 3.4 hours of dual (including stalls, touch-and-goes and 0.8 hour with a hood and an ILS approach) and 1.5 hours of ground instruction that was conducted during lunch at the sushi restaurant with the seller’s instructor. Prior to buying the Cardinal I had 3.7 hours in a Piper Arrow. At the time that was the extent of my experience with a constant-speed prop

transitioning occur with Experimental airplanes. According to the FAA, the data for accidents in 2009 indicated that, while Experimental airplanes flew only 3.4 percent of the general aviation fleet hours, they were involved in 27 percent of the fatal accidents in the United States. The FAA goes on to point out, “This represents a nearly 8 to 1 ratio of fatal accidents per flight hour over the mainstream GA community. The predominant factor in Experimental airplane fatal accidents is pilot

Once you're relatively familiar with the control positions and the proper starting procedure for the engine, it's time to taxi. You should never taxi faster than a person walks, but be especially conservative the first time you taxi; not all airplanes taxi the same way. Are there toe brakes or heel

brakes? How much power is needed to move the airplane from the parking spot? Is the nosewheel controlled by the rudders or is it free-castering? And you may have to get used to the poor forward visibility and the need to perform S-turns along the taxiway in a conventionally configured airplane.

It may make sense to do a couple of high-speed taxi tests to determine the handling and braking of an unfamiliar airplane. But be cautious during high-speed taxi tests that you don't inadvertently become airborne. The effect of the torque and P-factor can come as a surprise if you haven't experimented before making your first takeoff. A pilot learned his lesson the hard way recently when he was transitioning to a turboprop-powered Cessna 210 and ended up inverted off the side of the runway during the takeoff from a narrow runway.

It goes without saying that, before doing any airwork, it's important to get enough altitude so you can comfortably experience the airplane. At a safe cruising level I would experiment with level flight at various power settings and air-speeds and take some time to match the speed to an attitude (where the horizon intersects the cowl) and the position of the "airplane" on the attitude indicator in relation to the horizon.

Early on in any new airplane it's very useful to do slow flight. It's an excellent way to learn the feel of an airplane as it mushes along just above the stall. Perform turns during the slow flight and make an effort to maintain your initial altitude as you return to normal cruise. Don't neglect to perform the slow flight with different flap and gear settings, if available. And don't forget to do clearing turns.

Some of the maneuvers that you practiced for your private or commercial rating can be useful in getting familiar with the feel of a strange airplane. Turns around a point, steep turns while maintaining altitude, steep spirals, chandelles, lazy eights and eights around (and on) pylons are much more beneficial during the transition to a new airplane than the overpriced \$100 cross-country hamburger flight.

At altitude, do some descents at various airspeeds (power off and approach) and again consider the sight picture. How far below the horizon is the top of the cowl during a power-off glide at your best glide speed? How does the use of flaps and gear change the gliding and descent characteristics of the airplane?

I've always found what I call

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“vertical S’s” to be a great exercise for airspeed control and for recognizing the attitudes for a normal climb and power-off descent. The way it works: Start at some altitude, such as 3,000 feet, slow down to your best rate of climb speed, say 70 knots, and then hold that speed as you add power and

ball should never leave the traces of the turn-and-bank indicator. To make it more interesting, you can introduce turns to the right or left as you climb and in the opposite direction as you descend. The goal is to keep the airspeed constant and the ball in the center of the turn coordinator.

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climb up to 4,000 feet. As you reach 4,000 feet, reduce the power to idle and roll over into a descent at the same 70 knots. Descend to 3,100 and then climb to 3,900, down to 3,200 and up to 3,800, down to 3,300 and up to 3,700, down to 3,400 and up to 3,600, and finally down to 3,500. You should be able to keep the airspeed within 10 knots at all times, and the

A couple of other exercises that will help you get the feel of an airplane include Dutch rolls and what I call “drawing boxes.” A Dutch roll is a coordination exercise in which the airplane is rolled left and right while the rudder is used to keep the nose of the airplane aimed at a point on the horizon. The technique is also referred to as “rolling on a heading,” during

which the pilot rolls the airplane left and right but maintains a heading without the nose moving from side to side. The term *Dutch roll* apparently comes from the way a skater leans alternately to the left and right while skating in a straight line.

Drawing boxes is an exercise in which the nose of the airplane describes a vertical “box” in the sky. Anyone who has done any glider flying will recognize the similarity to “boxing the wake” of the tow plane. Basically, the idea is to fly a square pattern by climbing vertically, tracking horizontally with the rudder, descending vertically and again tracking horizontally back to the starting point.

It should go without saying that it’s important to be familiar with an airplane’s stall characteristics, both power on and power off with various configurations of gear and flaps.

Even if a pilot isn’t instrument rated, hood work during a transition “course” should include level flight,

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One of the major issues in transitioning to an unfamiliar airplane is relatively new and has nothing to do with operating the airplane. It's about coming to grips with the technology that's been encroaching on instrument panel space during the last decade or two. It's vitally important to know how to use the equipment that's installed, particularly in instrument conditions, before you have to use it for real.

Most avionics manufacturers provide simulator programs, either online or on DVDs. And a number of programs and books published by individuals help with the technical transition. It's incumbent on pilots to know much more than how to use the equipment to "go direct." Pilots should know how to load a flight plan, load an approach, amend or cancel a flight plan or programmed approach, and "escape" when they get lost in menu pages.

It's important for someone transitioning to an airplane to know the systems. The more sophisticated the airplane, the more important a thorough knowledge of the systems becomes. Too many accidents have been caused by fuel mismanagement as opposed to fuel exhaustion because the pilots didn't understand the complexity of their fuel system. And more than one gear-up landing has occurred because the pilot wasn't familiar with the emergency gear extension procedure.

Before even considering a new-to-you airplane, you'll want to contact your insurance company to determine if there are any special requirements dictated, not by the FAA but by the insurance carrier. For example, depending on the airplane, a mentor pilot may be required to ride along with you for a specified number of flight hours before you'll be allowed to solo the airplane.

Transitioning, moving either up or down, shouldn't be taken lightly. The line "start the engine and I can fly anything," attributed to bold but not old pilots, doesn't pertain, and, unfortunately, the accident statistics attest to it. ✈