

May 30, 2002 was a beautiful morning in New England. I told my wife that I'd let her know if the first flight was a go and she left for work. I headed off to the airport with the intention of taking yet another close look at my airplane and, if everything seemed right, going flying in the early afternoon. The plane (a Van's RV-8) had passed its airworthiness inspection a few days before and this was the first nice day since.

On the drive to the airport, I reviewed my preparations for the day's events. Like many of us, I spent a lot of time prior to the first flight of my homebuilt thinking about the seemingly infinite number of things that could go wrong. I read everything I could find on the topic of flight testing homebuilt aircraft and got to the point, the last week before the flight, where I was actually dreaming my way through the test card every night. I was current in tailwheel airplanes and even traveled out to Oregon to receive transition training from Van's authorized instructor.

Consider that the RV is a very slick, clean little airplane which makes the best use of whatever power it may have. The example I flew in Oregon was equipped with an O-360 of 160 HP and a fixed pitch prop. It accelerated quickly and was off the ground in perhaps four or five hundred feet. My airplane is powered by an IO-360 of approximately 215 HP and a constant speed prop. My transition instructor cautioned me that my airplane would have considerably more get up and go than his. I filed that point away and returned home to finish my airplane.

After getting to the airport, I spent a couple of hours replacing all the inspection panels and then did the most thorough preflight of my life. I called my wife at work and told her to come on down, it looked like the first flight was going to happen. I got a friend to help me pull the airplane out of the hangar and we spent the time until my wife arrived going over the test card and generally briefing the flight. He would be talking to me over a handheld radio and taking notes, so I wouldn't have to do anything but talk and fly the airplane. My wife arrived at the airport with the video camera we'd purchased for the occasion and it looked like I was all out of excuses not to get on with it.

Now that the moment I'd worked for (for nearly 2.5 years) was finally at hand, I have to admit I was pretty nervous. I thought I was hiding it fairly well, but it's clear to see on the video that I was looking very serious, focused, and intent on the upcoming event. Let's just say that the difference between the 'before & after' images is unmistakable. That said, I felt as though I was completely prepared to make the first flight of my new airplane.

The plane was all set to go and I was as ready as I was ever going to be. I kissed my wife goodbye and tried not to think too much about the tears in her eyes. I told her that it was just another airplane and reminded her that I'd done this thousands of times before, but we both knew that wasn't exactly true. Until very recently, this particular airplane had been just a pile of parts around the house and, despite the fresh airworthiness certificate on board, we still didn't know if it would fly. It was certainly comforting, on some level, to know that it wasn't a one-off and, indeed, came from one of the finest lineages in experimental aviation, but it was still an untested member of that family. I told her that I'd be back in less than a half-hour and not to worry too much. Yeah, right.

I took one last look around the plane and mounted up. My friend with the radio helped me strap into my chute and seatbelts, then shook my hand and jumped off the wing. I put on my helmet, pulled on my gloves, slid the canopy shut and latched it. The engine started right up (thanks to the electronic ignition on one side) and I let it warm for a few minutes. With all the temperatures and pressures looking good, I waved to the video camera and taxied away.

The runup went fine as I proceeded through the checklist. The mag check was perfect, with no discernible drop with the mag switched off and only the slightest drop with the electronic ignition turned off. The prop cycled fine at 1800 rpm. The controls were free and correct. I took a deep breath, turned on the fuel pump, switched the transponder to ALT, announced my intentions on the CTAF frequency and took the runway. With a last look at the gauges, I slowly advanced the throttle. To say that the plane had more get up and go than the trainer I'd flown in Oregon would be a gross understatement. My new RV simply launched itself down the runway. For the first time in my flying life, I was actually being pressed back into my seat by an airplane's takeoff acceleration. The tail was up within a few seconds and I was actually off the ground before getting the throttle all the way in. As I pushed it home, I glanced down at the gauges. I was concerned that I was only indicating 2100 rpm. The plane was still accelerating, however, and I was able to hold 100 KIAS in the climb, so I reported it to my friend with the handheld and mentally wrote it off to a bad tachometer, either the transducer or the gauge itself.

At altitude over the airport, I set up an oval pattern and settled in to get accustomed to the airplane. After spending a few minutes at this, I gave some more thought to the rpm problem. I still believed that it was just an indication issue, though I was concerned that the plane wouldn't go much over 140 KIAS. I hadn't installed the wheel pants, gear leg fairings, or intersection fairings for this flight, but I was still anticipating an indicated airspeed in the vicinity of 160 knots. GPS groundspeed confirmed the airspeed indication, at least close enough to know that something was clearly wrong. I did one full-flap, power off stall (straight ahead with no tendency to drop a wing) to check the airspeed indication at the break (and so arrive at a target indicated airspeed for my approach and landing) and came on in. The landing wasn't my best ever, but it wasn't bad and nothing broke.

I taxied in and shut down in front of the hangar to a warm reception from my buddy and a teary one from my wife. I think we were all somewhat relieved. I know that I was. We rolled the airplane inside and removed the cowling to check for any leaks. It all looked good under the hood, so we buttoned up the hangar and went off for a celebratory lunch. I think I was still flying (on adrenaline, probably) for the rest of the day. I slept a *lot* better that evening than I had the previous night, that's for sure.

The next day, I started trouble shooting the rpm situation. Before I could fix the problem, I needed to figure out where exactly the problem lay. Toward that end, I ordered a Proptach digital tachometer and had it sent out overnight. The Proptach is a small plastic box a little bigger than a pack of cigarettes with an LCD screen on one end and two switches, an ON/OFF switch and a two-blade/three-blade selector switch. To operate it, one simply turns it on, selects the correct

number of prop blades, and places the unit on top of the glareshield with the business end facing the prop.

When I set it up, duct taped it to my glareshield and started the engine, it was immediately apparent that my tachometer was working properly. In fact, my panel tach was reading within 50 rpm of the true rpm as indicated by the Proptach at all settings up to and including runup power. I had not ground tested the plane at greater than runup power prior to the first flight for a number of reasons: everything looked fine at runup power; I didn't want to do extensive ground running of my newly overhauled engine, let alone at very high power settings; and I had no simple way of adequately tying the airplane down. Tying it down would be essential at power settings greater than runup power, as my RV's brakes won't hold over about 2000 rpm and I certainly didn't want to wind up on my nose.

I finally settled on a method of securely tying my tailspring to the jackpad of my car and proceeded to do a full power runup. The Proptach agreed with my panel tachometer that I wasn't getting more than 2100 rpm, regardless of power setting. The problem was almost certainly with either my prop (a brand new Hartzell from Van's) or my governor (a brand new McCauley from Van's). I double-checked the blade pitch settings on the prop hub, adjusted the governor spring as far as it would go and then ran another full power test. I was up to about 2250 rpm maximum. Refusing to believe that my prop itself was the culprit, I decided to replace the governor and see what happened.

McCauley's customer service was friendly enough, but refused to provide any assistance beyond recommending that I contact the vendor from which I originally acquired the unit. Van's customer service was excellent, as it almost always was throughout my project, and they sent out another new prop governor for me to test, with the proviso that I return one or the other of them directly. I spent about an hour swapping the governors and then performed another full power check. Both panel tachometer and Proptach agreed that I was now getting just under 2700 rpm; it was time to go flying again.

If the first flight's takeoff acceleration had been dramatic, the second flight's was amazing. The plane just leaped off the ground like the proverbial scalded cat and climbed (now with wheel pants and gear leg fairings installed, though still without intersection fairings) at better than 2200 fpm. When I lowered the nose at altitude and let the airplane accelerate, the indicated airspeed went right on up to 170 knots. Success!

When thinking now about the first flight of my RV-8, after having had almost two years in which to reflect, two thoughts predominate:

- The large difference in performance between my airplane and the one in which I received my transition training resulted in my belief, when confronted with the low rpm situation on takeoff, that I was dealing with only an indication problem and that the airplane was actually making full power. It wasn't and I didn't immediately recognize that fact. As it

worked out, no harm done, but I'd still prefer to be more in tune with the airplane. The best solution would have been to seek transition training in a similarly powered RV.

- It would possibly have been a better course of action to have either immediately closed the throttle on recognizing the problem and landed on the remaining runway, or simply gone around one circuit of the pattern and landed. I thought that the plane was running fine and elected to fly my test card as planned. It worked out alright, but I'd probably do it differently were I to find myself in that situation again.

In spite of my thorough preparation for the first flight of my new homebuilt, something unanticipated occurred in the first few seconds after taking the runway and advancing the throttle. While one cannot foresee every possibility, no matter how diligently one prepares and rehearses, the time put into preparation is excellent insurance that, in the event something unexpected transpires, matters will yet turn out well.