

Rationalizing retracts

Which feels right for you?

BY DAVE HIRSCHMAN



WE ARE SEDUCED by the sound the landing gear makes as the wheels retract and thump against the uplocks. We delight in the transition that takes place as the airplane accelerates and the controls become lighter and crisper. And we appreciate the aerodynamic efficiency of having the landing gear tucked neatly away in cruise, and the flexibility it grants pilots in emergencies such as the ability to glide further, or land gear-up in an off-field scenario, or ditch with less danger of overturning.

But in the vast majority of piston singles, retractable landing gear is impossible to justify given the added weight, complexity, and costs—both in maintenance and higher insurance premiums.

Take a Cessna Cardinal as a case in point.

A Cessna 177B with a 180-horsepower Lycoming O-360 has a useful load of 857 pounds and cruises at 139 KTAS, all pretty respectable numbers. A 450-nm flight from the Mid-Atlantic to a vacation in Maine will take about 3.2 flight hours and consume about 32 gallons of avgas.

Upgrading to a retractable Cessna 177RG seems like a great idea because of the higher speed (max cruise of 156 KTAS) and the joys of moving that gear handle up and down. But the trip results in a time savings of just 21 minutes over the fixed-gear model, and the thirstier 200-hp engine pulling a heavier airplane (the retractable gear and associated hydraulics weigh about 145 pounds) results in higher total fuel burn (34.6 gallons), despite the shorter elapsed time. (The RG takes 2.88 hours at 12 gph

compared to the Cessna 177B's 3.23 hours at 10 gph).

The RG looks great on paper. It's got more useful load, a higher ceiling, longer range, and a better rate of climb. But all that is attributable to the bigger engine and the larger fuel tanks required to feed it. And if you own an RG, the costs don't stop there. Servicing the landing gear typically accounts for about 20 percent of total maintenance costs, and retractable landing gear adds a whopping 50 percent to insurance bills.

Let's compare the insurance costs for an \$80,000 Cessna 182 and an RG model of the same value. For a 400-hour private pilot with an instrument rating, insurance is \$1,086 a year for the fixed-gear model and \$1,705 for the RG—

an additional \$619, or 57 percent, for the RG.

For pilots with lots of retract time the insurance cost delta is less, but it never goes away. A 1,500-hour instrument-rated private pilot with 500 hours in retracts could expect to pay \$908 a year in insurance for a fixed-gear 182 and \$1,346 for a retract, a 48-percent premium for the RG model.

Similar differences in performance and cost are found across the spectrum of single-engine piston airplanes. A 200-horsepower Piper PA-28 Arrow is about 15 knots faster in high cruise than a fixed-gear Archer. In six-cylinder airplanes, a Cessna 210 is about 20 knots faster than a fixed-gear Cessna 206.

But we're talking about decades-old airframes. What about new ones? Well, the marketplace has spoken, and the fixed-gear versus retract argument is largely moot

because so few manufacturers are producing new retractable singles.

Cirrus discovered that it can get Bonanza speed out of a fixed-gear airplane so it doesn't even offer retractable piston airplanes. And neither does Cessna, once the biggest builder of them. Its Corvalis goes faster with the wheels down and welded than a Cessna 210.

Retractable gear is cool, but it doesn't begin to pay for itself in most piston singles. (And the longstanding FAA requirement that pilots log 10 hours in complex airplanes with retractable landing gear for commercial ratings seems increasingly anachronistic.)

The best arguments I've ever heard for retractable gear have nothing to do with efficiency or safety, and are purely and honestly subjective. My brother Harry owns and flies a Russian Yak 50 aerobatic airplane with retractable main landing gear. Putting the wheels in the wells adds a paltry 12 knots to that airplane's cruise speed. And even with the wheels up, the Yak 50 is slower than its successor in aerobatic competition, the fixed-gear Sukhoi 26.

But when I press Harry about why he clings to that Yak 50 with its maintenance-intensive, costly to insure, and leaky pneumatic gear, he just smirks. (And I **know** he's smirking, even though we're talking on the phone.)

"It just feels right to raise the gear after takeoff and lower it before landing," he says. "I like the hissing sound the gear makes in transit, and I like the feel of the airplane as it accelerates and decelerates. Having wheels that go up and down is just part of the fun of flying. I don't question it because—whatever it costs—it's worth it."

Here at AOPA headquarters, David Kenny, statistician for the Air Safety Institute (who measures all conceivable aviation metrics), says he owns a retractable-gear airplane (a Piper Arrow) for one compelling but unquantifiable reason: It looks better than a fixed-gear Archer.

"Aesthetics matter," he said. "If you're going to pay for an airplane, you should like what you're buying. And since gear-up landings seldom result in physical injuries, I don't see the harm."

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