Living the Top Gun dream, on a budget

Enlarge / When seated in a Flying Legend Tucano—a kit-built ¾-scale replica of an Embraer Tucano military trainer—a good day is imminent.
Lee H. Goldberg

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“OK, just walk along the wing root until you get to the back seat.”

I wasn’t about to ignore the pilot’s instructions. I edged up the wing to the cockpit and carefully grabbed the roll bar that sat above the aft instrument panel. After swinging one leg at a time into the narrow cockpit, I eased myself down into the co-pilot’s seat of this compact but menacing looking aircraft. My pilot for this fall 2019 flight, Jeff Frank, co-founder of Flying Legend USA, helped me secure the four-point military style safety harness around my waist and shoulders before sliding down into the front seat and preparing to show me what this Flying Legend Tucano—a kit-built ¾-scale replica of an Embraer Tucano military trainer—could do.

For the uninitiated, the Tucano 312 and 314 are Brazilian-built, turboprop-powered, two-place military trainer aircraft used by many of the world’s air forces to teach basic air combat skills to their aspiring fighter pilots. Once retired from military service, some older Tucanos have begun to find their way into the hands of well-heeled civilians. Their raw

power, aggressive handling, ability to execute high-G maneuvers, and relatively affordable prices have made them sought-after toys for warbird aficionados wishing to scratch their Walter Mitty-esque itches. In this case, “affordable” is a relative term: older, well-maintained planes retired from military duty can be bought for as “little” as $750,000, with operating costs (fuel and routine maintenance) typically running $400-$600/hour.

For the rest of us, luckily, there are services like Flying Legend, one of a growing number of replica warbird producers taking enthusiasts up in the skies. This company’s Tucano replica serves up about half the speed but most of the thrills of its namesake for as little as $70,000 and well under $50/hour to fly. And after spending some time in recent years perusing this burgeoning micro-industry, that turns out to be a fair deal—this scrappy little faux-warbird sits roughly in the middle of the price/performance spectrum occupied by at least a dozen other military-flavored kit planes you can buy and build for anywhere from $150,000 to over $250,000.

[embedded content]
Some pre-flight checks and mid-air footage of the Tucano. Video shot by Lee H. Goldberg

If Porsche built planes…

As Frank ran through the preflight checklist, he lowered the long bubble canopy and locked it in place. Once we assured ourselves that the ailerons, electric flaps, and other control surfaces were moving freely, he woke the 140 hp supercharged Rotax engine and taxied out to the runway. Since it has nearly as much power as a garden-variety Cessna or Piper four-seat aircraft (but weighs much less), our takeoff roll was short, followed by a brisk climb-out. As we cleared the runway, Frank retracted the landing gear, further increasing both our airspeed and rate of climb.

As we continued to climb on a heading that took us out of Philadelphia's controlled airspace, the suburbs below us gave way to farms, forests, and smaller towns. Frank explained that our destination was a nearby patch of quiet rural sky where he liked to show the plane off to potential customers. He apologized that, although the Tucano was rated for +6/-3 Gs, more than adequate for the rolls, hammerhead stalls, and loops he referred to as "gentlemen's aerobatics", he hadn't packed the emergency parachutes the FAA required us to wear for those types of maneuvers. He assured me however, that we'd have more than enough fun executing the stalls, steep turns and other maneuvers we were permitted to do without chutes in the plane.

Once the navigation display's traffic tracking mode showed only a handful of distant planes in the area, with no potential for collision, Frank told me to take over the controls. I slid my feet onto the rudder pedals and lightly grasped the control stick's button-studded military-style handgrip and made a couple of gentle turns to get a feel for the plane. Compared to the staid handling of the Cessna 172s and 182s I usually fly, the Tucano's response to my inputs was a delight—lively, precise, and smooth. For non-pilots, you can imagine what it might feel like if Porsche built airplanes.

Within seconds, the little ship activated every *Top Gun* fantasy I'd ever had. I imagined shaking off an imaginary opponent with a split-S turn and toggling one of the control grip's switches to activate a secret weapons system that Frank hadn't told me about. Instead, I continued to gently explore the plane's response to roll and pitch (up-down) inputs on the stick before executing a series of climbing and descending turns at increasingly steep bank angles. As Frank promised, stalls in the Tucano were gentle and predictable, with none of the unpleasant surprises that some high-performance aircraft like to spring on unwary pilots.

Despite its sporty, fighter-like feel, the Tucano proved easy to fly. Frank explained that one of the craft's designers'

primary goals had been to give it predictable, forgiving flight characteristics that would allow a competent low-time private pilot to safely operate it after a relatively short training period. In addition, the plane's higher wing loading made it feel more stable and less susceptible to the buffeting one often experiences in a small aircraft traveling in unruly air. We were flying on a summer day and the updrafts caused by heating of the ground below us would normally give a pretty bumpy ride. In the Tucano, the updrafts announced their presence gently and barely disturbed our flight path.

Those pilot-friendly characteristics were also evident during our landing. We lined up with the runway, lowered the wheels, and made our final approach at 70-75 mph, similar to most general aviation craft. Once again, the plane's higher wing loading gave us a more stable ride as we glided over the threshold and set down just past the runway numbers. Due to the plane's compact design, the shock absorbers in its retractable landing gear have relatively limited travel so that all but the gentlest touchdowns produce a firm, military-style thunk.

- My guide for this treat of an experience: Flying Legend's Jeff Frank.
  Lee H. Goldberg
- These Tucano kits typically use either a Rotax 912 (100HP) or Rotax 914 (115HP) engine.
  Lee H. Goldberg
- Nature seeming to realize this experience called for some exquisite lighting.
  Lee H. Goldberg
- In retrospect, 2019 was a better year in many, many ways, but getting to soar in a replica warbird around Philadelphia is one of 'em.
  Lee H. Goldberg
- 10/10, would do again.
  Lee H. Goldberg

- Lee H. Goldberg

I gotta get me one of these!

As we taxied back to the hangar, the thought of getting back into the Cessna 172 I'd be flying over the weekend somehow seemed a little less exciting than usual. I'd miss the full-sky visibility afforded by mini-Tucano's sliding canopy, as well as its brisk, precise control response that gave me a taste of what a real fighter must feel like. Since I've already built and flown an ultralight aircraft (a Kolb Ultrastar), I began to wonder if building a Tucano, or some other military-flavored aircraft, was within my budget and skill set. Although a warbird replica is a much more ambitious undertaking than an ultralight, it certainly seemed possible—especially since the kit plane industry has made homebuilding much easier over the past 30-40 years.

Homebuilt aircraft had already become relatively common by the early 50's thanks to a growing number of plans being sold for different types of so-called "sport planes" that were fun and economical to fly, and these planes cost a fraction of what it would take to buy one from a manufacturer. In those early days, however, the sport was pretty much limited to the small fraction of the population who happened to be blessed with the requisite machining and woodworking skills. That is, builders needed those skills *on top of* a willingness to invest the 2500 to 5000 hours it takes to turn a pile of raw materials and a set of plans into an aircraft.

Things began to change in the 1970's as people like Jim Bede, Burt Rutan, and Frank Christensen began to introduce kits for airplanes composed largely of pre-fabricated fiberglass, aluminum, and steel components. Eliminating most of the cutting, forming, drilling, and welding from the build process dramatically reduced construction times (typically 1000–2500 hours).

Since then, the quality of kitplanes has continued to improve, making them easier and faster to build, as well as safer to fly. Many of these improvements are due to advances in computers that gave kit manufacturers capabilities like 3D computer aided design (CAD), Computer aided manufacturing (CAM) and the ability to produce highly-detailed documentation that rivals the quality of commercial manufacturers.

Fast-forward to today, and my brief Tucano adventure had given me a taste of a different kind of flying than I was used to—and I wanted more. Strapping into something that was so much more agile, responsive, and fun to fly than my Cessna made me wonder if I could afford a Tucano, or if there were any other warbird kits that fit into my modest budget.

Frank explained that the cost of building a Tucano (and most other aircraft kits on the market today) varies widely, based on how the builder wants to equip the aircraft and how much time they want to spend building it. While the plane's base price is around $70,000, many builders end up spending significantly more than $100,000 to give their project the performance and capabilities they desire.

Although numbers like that are way beyond my modest budget, the conversation taught me about the choices and tradeoffs I'd need to be aware of for any kit plane, including the more modestly-priced warbird replicas I soon discovered.

Listing image by Lee H. Goldberg

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