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ON THE COVER: Jeff Cain's beautiful "antique homebuilt," a Hatz CB-1 named *Eve*, gleams against a rocky mountainside in Colorado.





# FLYING THE Thatcher

CX4  
AND CX5

The best kept secrets  
in sport aviation

BY PATRICK PANZERA



Patrick Panzera in the Thatcher CX4 prototype.



CX4 prototype cockpit.



Patrick flying the Thatcher CX4 prototype.

I RECENTLY HAD THE distinct pleasure of flying not one but two different prototype aircraft—the single-seat Thatcher CX4 and the new two-place Thatcher CX5.

I've been a longtime fan of the Thatcher CX4, a low-wing, all-aluminum, VW-powered, plans-built sport plane that meets the requirements of the light-sport aircraft (LSA) category, which can be flown by sport pilots and private pilots alike. The lines of the plane are extremely appealing, the huge cockpit is very comfortable, the view out the windscreen and sliding canopy are nearly unmatched, and the simplicity to build is just genius. And all of these attributes come from the fertile mind of David Thatcher of Pensacola, Florida.

#### FLYING THE THATCHER CX4

Getting prepared to fly the CX4, I needed to get not only my flight review logged but also a tailwheel refresher as I was told I'd be flying a tailwheel version when I arrived in Pensacola for the flight review of these two planes. One of the instructors at the glider flying club I'm affiliated with offered to get me current in his Citabria, so that's how we did my flight review. I was good to go!

At around noon I was briefed for my flight. As I understand it, the tailwheel plane I was slated to fly was one that didn't make it to the gathering, so I was offered the chance to fly the CX4 prototype that had been converted to tricycle gear years earlier, during the development of the nosewheel option that followed as a result of builder requests. Having logged several hundred hours in castoring nosewheel aircraft, I was perfectly comfortable with this last-minute change.

The briefing I received was reminiscent of the one I received from my flight instructor when I was a teen, transitioning from the two-place Schweizer 2-33 sailplane to the single-seat Schweizer 1-26. I've logged time in well more than 55 different models of powered aircraft, and only once did I fly solo without first getting a thorough checkride from a CFI or the owner. But this was different. This was a homebuilt aircraft with a VW engine, at an international airport I've never seen before, in a city I've never been to. In fact, prior to prepping for flight, I honestly didn't even know which way was north! So to say I wasn't nervous would be a lie.

Prior to making the trip from California to fly the Thatcher "fleet," I was warned that the roll response was sluggish and that it was a bit pitch sensitive, so that was in the back of my mind as I gently rolled in the power at the departure end of Runway 35. The taxi to the departure end had me a little concerned as it took nearly full left rudder and a little left brake to keep it on the centerline. I didn't know what to expect from adding power, so I added it gently so I could easily bail if need be. Maybe it was a wheel/tire/brake issue or something else like a bit of a crosswind I didn't notice, but as I added power and built speed, I could relax on that rudder and the aircraft rolled straight down the runway.

Long before I had full power applied, the little CX4 was ready to fly, so I let it—but stayed in ground effect as I added the rest of the power. Once I committed to the climb I had to add back some of that left rudder since the VW rotates opposite of a certified engine and has right turning tendencies. What a rush! Everything was new to me! New plane, new airport, new visual cues, new sensations, but I was staying in the pattern so I wasn't too concerned with being able to keep my situational awareness at 100 percent—just had to keep an eye on the tower.

I was at pattern altitude before the end of the runway so I throttled back and relaxed as I continued around the circuit. Since this is an international airport I had to be sequenced with the heavies, so the downwind leg was long enough to get comfortable with the plane. One thing for sure, the person who warned me about the control “issues” was dead wrong. The roll and pitch were very intuitive. No over-controlling in pitch, roll was very comfortable, and the two seemed to be in harmony. Now I’m not an aerobatic pilot, and my experience with such is limited to the Citabria, Super Decathlon, Beech T-34 Mentor, RV-4 (and the Harmon Rocket), Lancairs 235 and 320, the V-6-powered Titan T-51, V-8-powered Glasair II, and the six-cylinder Jabiru-powered Sonex. So in my opinion, the CX4 was no better nor any worse than any of those when it comes to the use of the stick and rudder. The little Thatcher just felt right.

### **If the CX4 is an inexpensive sports car (say a Karmann Ghia, Porsche 914, or even a Mazda Miata), then the CX5 is a Ford Taurus SHO.**

The CX4 is, however, not an aerobatic airplane; it’s a light-sport aircraft and a real cross-country machine. It can be trimmed hands-off, but I didn’t want to be a passenger, I wanted to fly the plane! It’s not an Extra 300 or a Pitts biplane so, yeah, the roll rate isn’t up to those standards. However, during my three touch-and-goes but before my one full-stop landing, I was sequenced out of the pattern by ATC and asked to hold in a general area northwest of the tower. So I asked if I could “play,” and ATC agreed. In addition to a few steep turns that ended with hitting the prop wash, I did a few chandelles that morphed into wingovers. Slow flight was very controllable, but I didn’t have enough altitude (for my comfort level) to intentionally stall. However, I did slow it enough to feel the buffet right where I was told it would be, and there was ample rudder to keep the wings level during slow flight.

The landings may as well have been on autopilot. Once the approach angle was dialed in and the speed was stable, there wasn’t anything to do but slow it down as I neared the runway and hold it off. It landed itself with nothing unexpected. A quick GUMPS (gas, undercarriage, mixture, propeller, seat belts) check and I greased the power back in and was off for another circuit; it was that easy. But all good things have to come to an end, so when I made my last call, I requested a full stop.

#### **FLYING THE THATCHER CX5**

At zero dark thirty the next morning we arrived at the field and began the preflight and briefing. Glen Bradly, the owner of the CX5 prototype, is a CFI so I felt comfortable flying by his judgement even though we were at the limits of the plane in both gross weight and aft CG loading. Since Glen weighed more than me, it wasn’t possible for him to check me out from the back seat; I had to sit in the rear, which was probably better since I could watch what he was doing. Since we were loaded so far aft, Glen and I agreed that during initial takeoff roll, if it felt too tail heavy for his comfort level, we’d abort and call it a day, but as we rolled, Glen told me that it felt fine.

We were a flight of two with the photo ship, but unlike with the CX4 during the photo mission the day before, the photo ship didn’t have to slow down for us to catch up; we had to slow down to keep from overtaking it! While flying formation, neither Glen nor I took the time to check the performance instruments. I was tasked with keeping an eye on the engine instruments, but after we were done and broke away to do some airwork including some touch-and-goes, I noted that on climb we were banging on 800 fpm at 90 mph, and we could get 1,000 fpm if we slowed to 70! That’s at full gross minus about 3-4 gallons that were burned earlier in the flight, and it took two huge guys to load the plane that heavy. With a 600-pound useful load and 120 pounds of that reserved for a full 20-gallon tank, that leaves 480 pounds for us “typical Americans.” On that morning, we weighed in at 220 for me and 260 for Glen, so as previously stated, we were at gross.

The CX5 handles like a dream. In fact, I’d equate it very much to the Piper Warrior or the Cessna 172. Very solid and predictable, almost to the point of being boring—and I mean that in a good way. Or put another way, if the CX4 is an inexpensive sports car (say a Karmann Ghia, Porsche 914, or even a Mazda Miata), then the CX5 is a Ford Taurus SHO. Maybe that’s too obscure of a reference, but my point is, I feel that in each case David Thatcher (the designer of both planes) hit the mark spot-on. The CX4 is not intended to be flown in aerobatic competition; it is intended to be fun to fly while also being safe and predictable. With the bigger, heavier CX5 compromise had to be made. It certainly meets the requirement of being fun to fly while being safe and predictable, but being able to share that with someone else will have an impact on the sportiness feel. Roll is underwhelming but still responsive enough to be enjoyable. Pitch, however, is spot-on—not sluggish at all, and not overly sensitive. So while I didn’t find the warning I received about the ailerons being heavy in the CX4, I suppose it’s fairly accurate to say that about the CX5—but so what? It’s still fun to fly, and there’s only so much designers can do within the constraints of the light sport category. I suppose if Thatcher wasn’t worried about the 1,320 pound weight limit and the 51 mph stall speed required to qualify in the light sport category, then he would have just built an RV-8, but that’s not what this is.

The CX5 is even more intuitive than the CX4. Even though the view from the back seat is somewhat obscured by the front seat occupant, I was still more comfortable and at ease flying the CX5 than the CX4. All I had to do was look in the direction I wanted to go and the plane graciously obliged. Even pitching for a particular airspeed and setting the rate of descent with throttle was seat-of-the-pants so my touch-and-goes were greasers. All forward visibility is lost from the back seat while rotating for landing, but the wings are located perfectly to allow the rear seat occupant to see all that’s needed to hold the wheels inches off the runway. This is one reason that the CX5 would be a great training platform, and anyone willing to give transition training to a fellow builder should feel just as at home in the back seat as in the front. From the front seat the view is even better as the wings are set back far enough that they aren’t even in your peripheral view. Of course the front seat is where the plane is flown from when solo, and it has a maximum weight limit, with minimum fuel (2 U.S. gallons) of 250 pounds and a minimum weight limit of 180 pounds



**The planes are designed to be built at home in your garage with only a custom workbench to build to get started. Normal hand tools and a few specialty items are all it takes to build either plane.**

when full of fuel. The rear seat has a maximum weight of 240 pounds when the baggage compartment has 20 pounds in it (its maximum) and the plane's fuel tanks are full with 10 gallons in each wing. In that same configuration, a solo pilot must be more than 180 pounds.

**THE REVMASER R-2300**

As previously stated, I've flown my share of different aircraft over the years, most of which are experimental and light-sport aircraft. I've flown with a lot of different engines, including a bunch of automobile engine conversions, but had I not known in advance that it was a 2,331 cc Revmaster Volkswagen conversion under the cowl of the CX5 I would have sworn it was a Continental O-200 or a Lycoming O-235. The sound, the vibration, and most of all, the power that comes from the little VW engine just says "airplane engine."

The fine folks at Revmaster have done a remarkable job of perfecting this engine over the past few decades. Thatcher made the right decision when he elected to design the CX5 around the Revmaster R-2300. To date, Glen has more than 350 trouble-free hours on this engine, and he's perhaps the biggest champion of it—and for good reason.

**CHOICES, CHOICES**

In a perfect world, I'd have to recommend that we own both the CX4 and CX5 to have the best of both worlds, but if I had to choose, I'd say the CX5 is my favorite simply because I love to share the joy of flight with others. But for selfish reasons, it would have to be the CX4, hands down.

**WRAPPING IT UP**

At time of this writing, plans for the CX5 cost \$475 and for the CX4 they are \$360. Each can be bought directly from the designer, David Thatcher. Visit [www.EAA.org/sportaviation](http://www.EAA.org/sportaviation) and click on This Month's Extras for more info or feel free to call if you don't have web access, 850-712-4539. The plans have been meticulously hand drawn by David, and the planes are designed to be built at home in your garage with only a custom workbench to build to get started. Normal hand tools and a few specialty items are all it takes to build either plane. And plenty of online support is available, including the obligatory e-mail group, in addition to the official website. *EAA*

**Patrick Panzera**, EAA 555743, is the founding editor of EAA's Experimenter e-newsletter, the current editor and publisher of CONTACT! Magazine, and a regular contributor to KIT-PLANES magazine. Patrick is an experienced homebuilder, an AirVenture forums presenter, and an instrument-rated private pilot.



Glen and Pat in front of the CX5 – These guys are pretty large but the cockpit was plenty roomy.



Revmaster 85-hp, 2,331 cc Revmaster engine.



No problem with the roll rate in the CX5.