

The Paulson-Poling-Teel Stinson Model 0



**“Okay, so a Model 0 doesn’t exist . . .
we’ll just have to build one.”**

BY BUDD DAVISSON



“After presenting the plan to Jim over lunch, he said, ‘Let’s do it! Just two things: *One*, you take care of all the paperwork, and *two*, it has to be red.’”

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Jim Teel, Brad Poling and Jeff Paulson pause for a few moments under the parasol wing of the Stinson Model O.

We've all heard the cliché that aviation isn't a pursuit or an avocation, but a disease. However, we should never lose sight of the fact that a cliché is a cliché because it's built around a truth that is so pervasive that none of us can escape it. If you don't believe it, ask Brad Poling and Jim Teel of Sacramento, California. They'll be happy to explain how once the infection sets in, there's no logical way of stopping it. There's no such thing as an

airplane-specific antibiotic.

Brad says, "I've been nuts about airplanes since 1947 and have been part of the EAA homebuilding scene since 1978. I was building my Westfall Staggerwing in 1999 when the 'O escapade' began. Like everyone else, I'm constantly looking for neat projects to build, even though I know I'll probably never build any of them. Then I saw an advertisement for a quarter-scale RC model of the Model O Stinson. I didn't

even know such a beast existed, but man, I really liked the cut of its jib, so I bought the plans. That turned out to be the most costly set of plans for a model airplane that anyone has ever bought!"

Models have been the pipeline through which many a homebuilder came into aviation, but for Brad, seeing that simple advertisement pointed him in a direction he hadn't foreseen.

Brad says, "I really got hooked on the Model O, and the more I looked, the more compulsive I became. Here was an absolutely gorgeous airplane out of aviation's golden age, and I'd only vaguely heard of it. So I began researching it every way I could. I found that in 1933, Lowell Yerex was under contract from the Honduran government to buy training aircraft for the soon-to-be formed Honduran air force. He came to Eddie Stinson and laid out his requirements. Stinson told Lowell to come back in 90 days and they would have a prototype aircraft flying for him. Bob Hall (of Gee Bee racer fame) designed the new fuselage and modified existing SR-5 parts that were in inventory to come up with the



On the right side of the panel, the small storage capability of the glove box was given up to provide a tidy spot for the transponder, comm radio, ELT control panel, and the O's circuit breakers.

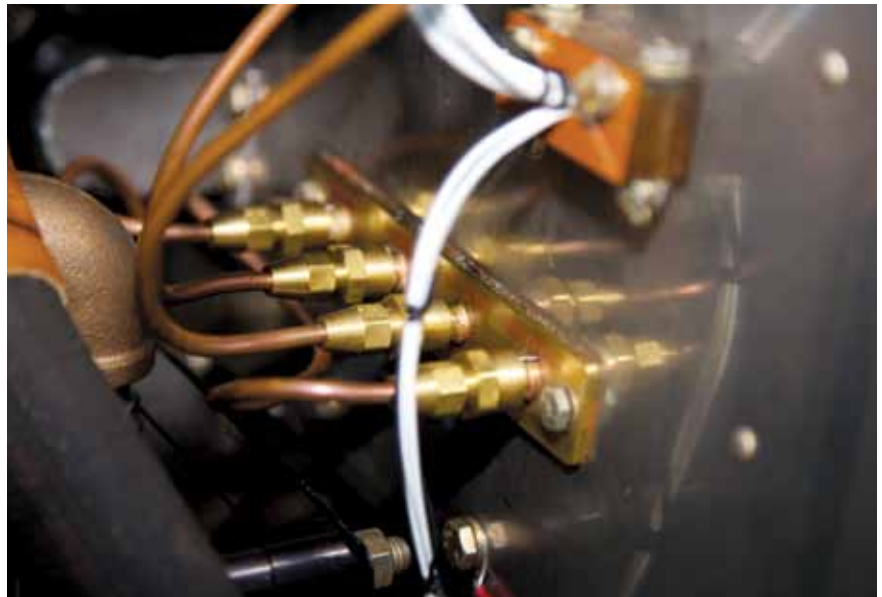


The front cockpit of the O was done with great attention to the 1930s-era style of construction. Each of the instruments was carefully chosen so the airplane would maintain its outstanding replica feel both inside and out.



The structurally beefy and complex landing gear has a series of aluminum fairings for the wing struts and bracing wires, masterfully created by Rob Wagner for Evergreen Aviation Services and Restorations.

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Each of the engine instruments is attached to this neatly executed manifold on the firewall. Period brass fittings with copper piping was used rather than the newer AN hardware.

prototype in 90 days. The first three production Model O's were purchased by Honduras.

"It was soloed from the front, not the back, so the back seat could be used for a variety of training missions, from instrument training under a hood to gunnery and bombing. They actually had it set up to mount a flexible machine gun back there,

should a customer want it.

"An instrument hood was added by Joe Prosser Aviation (in 1936 in Long Beach, California) after Prosser purchased the prototype aircraft, NC13817, from Stinson. The airplane was in Long Beach until December 7, 1941. It was then sold to a flight school at Love Field in Texas because all civilian A/C were grounded on the West Coast.



ALLEN MORGAN PHOTO/JOHN UNDERWOOD COLLECTION

Flight instructor Joe Plosser's Stinson Model O in Glendale, California, while it was being used for "under the hood" training in the Civilian Pilot Training program in 1939. Even then, it was the only one of its kind!



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This airplane is *big!* No dinky little parasol monoplane with a 125-hp engine, the Model O is as big as a Stinson SR series cabin monoplane. (Those are SR-5 wings, after all).

During its life, the O was owned by only three firms: Lycoming Motors, Prosser Aviation, and the Love Field Flight School. About a month before the first flight of our airplane, I obtained the complete FAA file on Stinson NC13817 from first flight sign-off to last record in 1944.

"We keep hearing someone saw the prototype in such and such a place, but nothing has ever come of those stories. The FAA had no construction information like plans, but every so often I'd stumble into a photograph or two and that kept me fired up and searching. It went like this for about five years."

Finally Brad decided to do something about it, and that meant reaching out and infecting another unsuspecting soul with "Model O disease." Brad knew exactly who would be a perfect host for that dis-

ease: his airport buddy, Jim Teel.

"In 2002, after the Westfall was completed and flying, I went to work in earnest on the O project," Brad says. "In July 2007, after I had pulled most all of the information on the O together and located an SR-5 project, I called Jim. After presenting the plan to Jim over lunch, he said, 'Let's do it! Just two things: *One*, you take care of all the paperwork, and *two*, it has to be red.' The deal was, and is to this day, sealed with a handshake. Jim is not one to waste words or time."

The two of them knew they were about to take off on a grand adventure, but grand adventure or not, it didn't take too many more conversations before they realized that they needed another partner, one who was more adept than they were at projects of this size. Brad



The 300-hp Lycoming, the same one used in the big Stinson SR-5, hauls the 3,500-pound airplane through the skies with a 120-mph cruise speed.

had his baby Westfall biplane and Jim his EAA biplane, both of which would be dwarfed by the big Stinson. So they began looking around for another avaholic who had good hands, had experience building big airplanes, and would be easily convinced. They found him in the person of Jeff Paulson at Evergreen Aviation Services and Restorations in Scappoose, Oregon.

Jeff explains his involvement this way: "I'm a sucker for unique old airplanes, and by that time, I'd restored a bunch of antiques for customers and had a long background building and modifying Pitts. All of that eventually morphed into co-owning a flight service operation that also builds and rebuilds airplanes. I really love round-motored airplanes. Especially unusual ones, so when Brad and Jim showed up



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with this harebrained scheme to build a Stinson no one had ever heard of and asked me if I would like to be a partner in the project, how could I refuse? Such a deal!”

Brad estimates they had a couple dozen photos of the airplane, including a few while it was under construction, which proved invaluable in solving certain internal structural arrangements. Plus, we can’t forget the original model airplane that got this whole thing started. It made a lot of informational contributions.

“When we really got serious about building it,” Jeff remembers, “we quickly realized that, when Stinson designed the airplane, they did what many aircraft companies of the times had done: They borrowed components from their other airplanes and recombined

them in different ways. Where Waco for instance made a four-place, the QDC, out of their F-2 by just adding a wide fuselage, Stinson in essence made a two-place trainer out of their four-place SR-5. This is especially obvious when you look at the Model O and the SR-5 in plain view.”

Jeff says, “Brad had already found an SR-5 project that had been stalled for years and included a 300-hp, ‘overhauled’ R-680 Lycoming, which was the exact engine we needed. From the beginning, we wanted to use the donor airplane more as a source of dimensional and structural information than parts, although we would be using the wings and part of the tail. Everything else was just used as patterns. We were as sensitive as possible to the rare nature of the project

airplane parts and didn’t want to use anymore than absolutely necessary. We still have a bare fuselage and lots of parts should anyone need them.

“One of the most valuable photos Brad had discovered,” Jeff says, “was a view of the fuselage uncovered. It was a poor-quality, grainy photo, but it gave us a tremendous amount of information about structural layout, fittings, and seats. We had that digitized on CAD [computer-aided design]. Since we had the dimension between the landing gear mounts from the SR and the two airplanes shared the same gear, it automatically gave us the rest of the dimensions for the fuselage frame.

“We then looked at the SR-5 that had a similar layout in terms of lengths, etc., and used that as



Unlike most tandem open-cockpit airplanes, the Stinson Model O is flown solo from the front seat, with the center section having a deep V section to provide easier access to the front cockpit.

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a guide to the size of tubing to be used in the different locations. Plus, we used 4130 rather than the original 1025, so we picked up a lot of strength there.

“The landing gear was almost totally reverse-engineered around the SR-5 gear. It’s mounted out on a healthy tubing stub that protrudes from the fuselage, providing a pivot point.

“With the exception of Stearman control stick yokes, the control system is completely scratchbuilt. The control stick, for instance, is laminated spruce and mahogany with a conduit for PTT wiring running down the middle. We steam-bent it to the configuration we wanted, then laminated and shaped it by hand. We really like the way it came out.”

Brad and Jim came to Jeff with images of the original Model O burned in their brains. They wanted it to look as antique as possible but still be a fun airplane to fly. That meant it had to have just enough of the modern conveniences to make flying cross-country easy, but they definitely didn’t want that to detract from the airplane’s look, something that Jeff totally agreed with.

“The airplane is flown from the front,” Jeff says, “which is a little unusual for a tandem airplane of this vintage, and we tried everything we could to hide radios and other modern stuff. We believe the original airplanes had a glove box up front, so we built that into this one and used

it as a place to hide the radios and circuit breakers. The antennas are all behind the backseat with the GPS in the rear turtledeck under the fabric. We can’t detect any loss of signal for any of them.”

Brad says, “Besides being a good-looking airplane, it has some interesting features, one of which is the crank in the front seat that folks sometimes ask about. It runs a screw jack that’s just behind the firewall and is attached to—and I’m not kidding when I say this—the oil cooler. It is retractable! The crank lets the pilot run the radiator out into the wind to cool the engine off or bring it back in. I don’t think I’ve ever seen anything similar.

“All three of us agreed that there could be no modern instruments in either panel. That would ruin the look. Jeff, of course, knew what rocks to look under and came up with all Pioneer or U.S. Gauge instruments that we sent off to Instrument Pro in Hayward, California, for rebuild. We’re really pleased with the look.

“Try as we may, we couldn’t find a photo of the throttle and couldn’t find one that we thought had the right look, so we just designed and built one that we thought looked like it was from the period.”

When it came time to hang the supposedly overhauled engine, things unfortunately went south in a hurry.

Jeff says, “We were told the engine was overhauled, but as soon as

I inspected it, I found some cracked cylinders. After talking to Brad and Jim, it was decided to send it out for a teardown and inspection. We sent it to Radial Engines Inc. in Tulsa, Oklahoma. When they tore it down, they found the rings were not only automotive rings, but they were on upside down. The valves had been rusty, and someone just took a wire brush to them. They were awful. When they broke the engine down they found that even the crankshaft was bad. The entire engine was junk! Garbage! So we bit the bullet and had them do a complete overhaul. And they built us a terrific engine and have given us outstanding support. We just couldn’t ask for a better-running engine.

“We didn’t build the entire cowl, but started off with one from a UC-78 Bamboo Bomber purchased from Radial Engines Inc. Being designed for a Jacobs, it was just a little too small, but the cowl bumps took care of that. On the original airplane, the cowling was basically one piece and didn’t give good access to the engine, so we built piano hinges into the top so the sides can be opened.

“At the other end we used the SR-5 tail and subtly reshaped the outlines. It trims via an SR-9 screw jack on the front spar, which is operated by cable and pulley from the cockpit. It works extremely well.”

The fuselage was an entirely scratchbuilt puzzle with lots of en-

gineering and head scratching. The wings, modified SR-5 panels, promised to be much easier because they had something to start with. However, building a center section to attach those wings to was another puzzle.

Jeff says, "We had a good photo of the center section, and without that, we wouldn't have come even close because it's so much different than most center sections. For one thing, it has no fuel tank in it. Those are out in the wing panels and hold 35 gallons each. They couldn't be in the center section because it is a jungle gym of steel tubing. The main carry-through is a piece of tubing the size of your wrist. Two and three-quarter inches to be exact. And it's 0.058! It looks like gas pipe. The curved cockpit clearance cut in the back of it goes so far forward that the trailing edge that is in the middle of it is over a foot forward of the rear spar. The trailing edge, that is usually a laminated wood structure, is a piece of half-inch steel and two healthy pieces of tubing cut across the whole thing, corner to corner. Then everything is hidden within built-up truss ribs made of 5/16 steel tubing. No way we would have arrived at that without the photo!"

The SR-5 wing panels were totally disassembled because they needed complete rebuilding. Then they were shortened 2 feet and the flaps removed and the struts moved inboard by 19 inches. In the process they tried to stay as true to the photos as possible while also using 1930s techniques.

Jeff says, "In the photos it's obvious that all the cables and fuel lines run through the struts. This is one of the things that makes the airplane look so clean, but at the same time added a whole other level of complexity. At the same time, however, we used copper line and built up fittings from brass and sheet, silver soldering them together. It was a lot more work, but using the normal aluminum fuel line and AN fittings would have looked out of place.

"This is also why there is no fiberglass used anywhere on the airplane. We wanted to keep it as

authentic as possible, so the wheel-pants are original aluminum units and all the complex fairings were formed in aluminum.

"We covered the airplane using the Air-Tech system, which worked well. Then it was time for paint."

Jim says, "When we caucused on the paint, we decided to go with the original scheme. I liked red, and everyone went along with that. We used claret red. Jeff didn't like using pure white, so we went with manila beige and he talked us out of using a third color. Looking back at it, he was absolutely right."

"We wanted to use the original N number," Brad says, "but it was already on an airplane. But the owner said he'd give us the number. He only had one condition: We had to buy his airplane. So we applied for 13817, which was only one digit off from the original. That came back as being reserved by the FAA for use on their own airplanes. However, it took only one letter from us, explaining our situation, and they gladly gave it to us."

As of this writing, the trio and their anachronistic creation have logged more than 150 hours, including flights to Oshkosh and up and down the West Coast to numerous fly-ins. Of course, the big question is, "How does it fly?"

Jeff says, "It is a very stable airplane but heavy on the controls. The elevator trim is essential, but it does trim out really nice. Front seat visibility is limited even in level flight because of the center section. When flying in formation for photo flights, I have to be the lead aircraft because most of the time I can't see the photo plane. On flights like that, I take a back seat pilot as an observer.

"The airplane will cruise at over 100 knots. For landing I fly the approach at 80 mph and come over the fence at 70. In the flare, the speed bleeds off in a hurry and it stalls at about 50 mph. Like most airplanes of the time, when you pull the power back, you are going down immediately. I fly pattern altitude until final, then slip to get the nose out of the way. I have no problem getting it

down close to the threshold. In general, it's really a lot of fun to fly."

With the project finished, Brad says, "I would like to thank my old friend, the late Jack Cox, for his advice and encouragement that helped start this project and kept it moving forward. Thanks to Bob and Brent Taylor of the Antique Aircraft Association for their networking help. My thanks also to Remo Galeazzi, Jim Smith, George Attman, Rex Hume, and the Sac. exec of the DGA group for sharing their aviation history and restoration skills with us.

"Over the past 25 years I have scratchbuilt two experimental aircraft. A Keleher Lark and a Westfall Staggerwing biplane. Serial number 2. The O was my first foray into the vintage world. I knew from the beginning that I was way out of my element, but I thought I could pull it off if I took the time to research the aircraft, develop a game plan, and find the right people to pull together and make it work. Thankfully, for once in my baby life, I got it right on all three counts. The O has been a very satisfying and fun experience. I was particularly gratified at Oshkosh this year by the number of serious vintage restorers who thanked us for re-creating the beautiful O. Our O is, after all, not a restoration. To receive compliments from top-flight aircraft restorers was, I felt, an honor in itself. Jim and I look forward to a few more years of O flight. When the time comes for us to turn in our wings, we plan to donate the O to some worthy museum. Hopefully one that will keep it flying."

Jim's final comment: "I have to give credit where credit is due. This project was Brad's dream from the beginning. He had already done all the research required when he offered me the opportunity to participate. And, I have to say that Brad and Jeff did most of the work, and I get to fly the plane. What a great partnership!"

So, three minds come together, each bringing its own different skills and goals, and an aviation icon from another era is the result. A great partnership, indeed!