

THIS KR IS A *Keeper*

THE CONTINUING SAGA OF A 1928 FAIRCHILD KR-34B2

BY SPARKY BARNES

DAVE CARPENTER of Berea, Kentucky, is the humble and joyful caretaker of one especially rare flying machine. It's not just that his 1928 Fairchild KR-34B2 is a golden age survivor, or that it's one of only two known to be flying these days. Its remarkable rarity stems from two rather unusual historical aspects. NC205E is endowed with its very own type certificate (2-505), and is powered by the only known airworthy Continental A-70.



CHECK OUT THE DIGITAL EDITION of *Vintage*
for a photo gallery on the 1928 Fairchild KR-34B2.



FASCINATION WITH FLYING

Dave is an instrument-rated private pilot and has owned the KR-34B2 for about five years now. He's owned his Swift for more than 40 years. Although he didn't grow up in an aviation-minded family, Dave was drawn to flight at an early age.

"I started flying when I was about 4," he said. "I tied a string around a June bug's leg, and I'd fly it every day during the summer! I was fascinated by flight from that point on, and I was building and flying model airplanes by 7 and teaching all the kids in the neighborhood to fly the old Testor's plastic 049 control line airplanes."

Then he enthusiastically transitioned to the ultralight world. "I was the ultralight rescue pilot; back in those days a Weedhopper had an 18-hp Chotia engine, and I taught myself how to fly in it. It was so underpowered, it would regularly put whoever was flying it down in a field somewhere," Dave said. "Well, rather than take it apart, they would call me, and I'd go rescue it, because I only weighed 135 pounds. One of the guys gave me the nickname 'Flying Flea,' and most of the Swifters still know me as Flea."

Dave clearly recalls his very first airplane ride at age 30. "I was with Johnny Lackey in a 145-hp Swift, and we did a roll on takeoff! Exactly one week later, I had my second airplane ride and I owned half the airplane. It was a Cessna 150 that a co-worker and I bought — he was already a pilot, and I wanted to get my license."

Obviously a self-starter, Dave also taught himself about mechanical engineering and was a chief engineer for a pressure gauge manufacturing company until he ended up running the facility. His aptitude for all things mechanical naturally inspired him to obtain his A&P/IA as well. Through the years, he's restored seven Swifts. "I would restore or repair somebody else's Swift and bartered with them for something for my own Swift — that's the way I got my engines, my canopy, it's the way I got basically everything on the airplane." The knowledge he acquired through those experiences facilitated his restoration work on the KR-34.

KREIDER-REISNER HISTORY

In the early to mid-1920s, Lewis E. Reisner and Ammon H. "Amos" Kreider started out with "an airplane repair and flying service out of a former wooden shoe repair shed" and formed the Kreider-Reisner Aircraft Co. in 1926 at Hagerstown, Maryland. The fledgling company built more than 100 Challenger biplanes, powered by various engines, in 1927 and 1928. Devoted to their craft, they worked indoors and outdoors; wood wings were constructed inside "narrow, low-lying buildings and doped on saw horses outside of the shed." [Historic-Structures.com/md]

On December 7, 1928, NC205E started life as a Challenger C-4, serial No. 180, powered by an Aircraft Engine Co. 150-hp seven-cylinder Comet engine, with a Micarta propeller (under type certificate 88). One company ad proclaimed: "Loop her and roll her — get all the fun that flying provides. Then put her down slowly, surely into the smallest field. Trim of line, graceful as a bird, easily controlled, strong, sturdy, safe — the ship of ships for commerce or sport — Challenger!"

Another ad touted the construction features of the biplane, describing its "Welded steel tube fuselage with its sturdy terminals and fittings. Welded steel tail unit with its stabilizer adjustable from the pilot's seat. The sturdy full swiveling tail skid and removable shoe. The rugged time-proven landing gear. Unusually rigid wing structure with streamlined wire and seamless streamline steel tube interplane struts. Ailerons differentially controlled. All control wires enclosed, operating without pulleys."

In April 1929, Kreider-Reisner was amicably acquired by Fairchild Airplane Manufacturing Corp. "At a dinner announcing the merger at the Detroit Air Show, Sherman Fairchild exclaimed, 'the most important thing ... is not the plant, but the fact that we are connecting with the Kreider-Reisner organization, one of the most efficient airplane manufacturing organizations in the United States.'" [Historic-Structures.com/md]

Sadly, Kreider didn't live to see the business continue flourishing. He died in a midair collision just a few days after the merger. As Fairchild continued production, the aircraft designations were changed accordingly. For example, the Kreider-Reisner designation of "C-4" stood for the fourth commercial model. The Fairchild designation of "KR-34" stood for Kreider-Reisner, fourth model, three-place, and so on. A suffix letter indicated a slight modification to the model, such as a different engine.

Fairchild continued the marketing campaign, emphasizing that "Every Fairchild includes the features that millions of miles of flying under every conceivable condition have shown to be essential to real airplane value. Dependability ... Assured Performance ... Superior Flying Characteristics ... Low Maintenance ... Beauty and Luxury."



Aviation February 1931 ad.

“EVER SINCE I CAN REMEMBER, I’VE WANTED AN AIRPLANE WITH FOUR WINGS AND A ROUND ENGINE.”

— Dave Carpenter



NOT A FLYING START

NC205E was first sold to Harold C. Hannay of Detroit, Michigan, in January 1929. In March, a structural failure in the engine mount ring was discovered and was repaired at the factory. The aircraft records reveal that, although a letter from Reisner declared the repair was minor because it was handily completed in about two hours, the requisite diagrams and paperwork (or lack thereof) caused a considerable snafu with the Department of Commerce. The biplane was grounded for a few months until the issue was resolved.

FACTORY MODS

NC205E was certainly not a hangar queen; it was flown and repaired numerous times throughout its long life. It suffered its first accident in April 1931 near Ontario, which may have precipitated its visit back to Hagerstown, albeit a couple of years later. By June 1933, the biplane had a total time of 319 hours and 25 minutes, and Fairchild proceeded to modify the Challenger C-4 — perhaps at then-owner Robert Kauffman's behest. Various repairs were performed, and most notably, the wings were modified by the removal of the false nose ribs and the installation of plywood instead. A tail wheel was installed in place of the old skid, and a battery box was installed under the baggage compartment. Additionally, Bendix brakes, Aircraft Products oil-draulic shock struts, and navigation lights were installed. After the repairs and modifications, the biplane was designated a Fairchild KR-34B.

In April 1935, Kauffman had a 165-hp Continental A-70-2 engine installed in place of the Comet. The biplane was then licensed as an experimental KR-34B2 and restricted for experimental and demonstration purposes. Just two months later, Kauffman requested a commercial license for it since it had been flight tested, and approval for such was recommended. The total flight time was 459 hours and 24 minutes.

TC 2-505

At that point, the Fairchild KR-34B2 was given its own type certificate. Serial No. 180 was the only airplane eligible under 2-505 (specification basis Aero Bulletin 7A, Section 3). The sparsely worded type certificate referenced the 165-hp Continental A-70-2, a 54-gallon fuel capacity, and 4 gallons of oil. The Class I equipment included landing lights, battery, starter, 8.50-10 wheels, and a tail wheel. The type certificate further stated that the leading edge of all wings and center section were covered with plywood.

By May 1936, A&E mechanic Joseph W. Martin of Somerset, Pennsylvania, owned NC205E. He developed a rather long-term relationship with it — and it's probable that this KR-34's longevity is due in large part to him. At that time, the biplane had 519 hours and 25 minutes of flight time, and he refinished all the wings, installed new bolts in the landing gear, and overhauled the engine.

By June 1946, William Armagost of Hooversville, Pennsylvania, owned the airplane, and he kept it based at the Somerset Airport — where Joseph W. Martin continued caring for it. With 1,264 hours logged by then, Martin made some wing repairs to keep the KR flying. In May 1948, Martin was again doing maintenance work on the KR-34, performing necessary chores and repairs, such as cleaning and zinc chromating the fuselage, installing some new wing spars, and lubricated the elevator and rudder cables with Lion oil. At that time, the complete aircraft (except the rudder and fin) was re-covered with Grade A cotton.



By September 1954, the biplane had 1,755 hours of total time. Evidently, Armagost enjoyed flying it, and no doubt he had also developed a friendship with Martin — for in 1965, Armagost allowed the KR-34 to fly right back into Martin's ownership. Once again, Martin breathed new life into the KR-34 by re-covering both top wings and the center section, the ailerons, horizontal stabilizers, and elevators. He inspected and Lion-oiled all the wood, cleaned and primed the steel tubing with zinc chromate as necessary, and finally re-covered the airframe with Irish linen and finished it in Tennessee red nitrate dope.

In 1970, Martin sold the airplane to William E. Clark Jr. of State College, Pennsylvania. In 1984, Clark sold it to Henry, Charles, and John Pittman of Gainesville, Georgia. The Pittmans did a labor-intensive restoration of the KR-34 in April 1988 and finished it with the Stits Poly-Fiber process. They kept it until 2011, when they sold it to David Mars and Paul Barnett of Mississippi.

A NEW KR CARETAKER

Dave Carpenter was enchanted the very first time he saw the KR-34 in fellow Swifter Paul Barnett's hangar at Brookhaven, Mississippi. Longtime friends, Dave was ambling through the hangar, looking at Paul's collection of more than a dozen airplanes, when the KR caught his eye. "Ever since I can remember, I've wanted an airplane with four wings and a round engine," Dave said. "I guess it's every kid's dream, but I never did let mine go!"

He told Paul he was totally in love with the biplane. A bit smaller in stature than a Stearman, the KR-34 is similar in size and shape to a Waco 10. Dave walked over to the KR and quickly discovered he could easily ground handle it by himself. "I asked Paul if he'd sell it to me, and he was reluctant, so I told him if he ever decided to sell it, I wanted it," Dave said. "Every time I'd see Paul at Swift fly-ins, I'd always ask him about the KR. I never flew in it, and I never saw it fly — but I wanted that airplane from the first moment I saw it."

Then at Oshkosh 2016, Dave and Paul were at a Swift dinner, where Paul brought up the subject of selling an airplane or two from his collection. Dave pounced on the opportunity and said, "Paul, if you're really serious, you can sell an airplane tonight! I want the KR; price it." So we went back and forth several times on a napkin at dinner and came up with a price. Paul then called David Mars, another friend of mine who was Paul's partner in the KR, and I ended up buying the KR that evening."

Since the KR-34 hadn't been flown very much (apparently less than 50 hours from the time it was rebuilt in 1988 until 2016), Dave made several trips down to Mississippi to do an annual inspection on it. Then it was time to fly some local familiarization flights, which went well. But with close to a dozen such flights under his belt, Dave experienced an incident on takeoff that ultimately served as the impetus for restoring the biplane.





TOP: The photo shows the complexity of the project and the detailed work that was done in only four months' time.

MIDDLE: Using a digital protractor to help set the gear alignment.

BOTTOM: Debbie Carpenter lends a helping hand with the rib stitching.

RESTORATION

Like-minded friends are the biggest gift that aviation has given Dave, and a few of his talented friends in the vintage community stepped up to help move the KR project along. Jim Wilson of South Carolina took Dave by surprise when he offered to work on the landing gear, even though he was in the midst of restoring his own Travel Air 4000 at the time. "In about four months, Jim put the front end of that airplane together. Then I finished it from there; I rebuilt the old Warner mechanical brakes, and I had the oleo struts done here at a machine shop," Dave said. "The tail wheel is now a Scott 3200, and we changed the position of the rudder and brake pedals so now they're very similar to a KR-21 and are user friendly."

Jim, who owns a 1930 Fairchild KR-21, shared his motivation to help Dave with the project: "I knew the complexity of that landing gear and the amount of machine work, welding, and rigging it was going to take. Dave was in a jam and this looked like good fun, so I told him to bring 'er down here! What I didn't know when I went into this was how hard a worker Dave is. The amount of 'stuff' he got done internal to my work was astounding. He is very highly motivated and focused, and he loves this airplane."

Dave also spent a good deal of time rebuilding the wings as necessary and said, "I also redid the fuselage, and re-covered and painted it. I patched a couple of wings; the nice thing about Poly-Fiber is that it's easy to repair. The sheet metal, struts, and flying wires were all in good shape."

The original fuel tank was made of steel and was rusty, so instead of repairing it, Dave bought a new aluminum tank that Ted Davis of Wisconsin made. The cockpit upholstery was still in good shape, as were most of the original instruments, including the 1917 World War I military surplus Waltham clock.

The windscreens for the cockpits were replaced. "Rob Lock of Florida made those; they're for a Travel Air 4000, which are very similar in shape to the originals that were on the KR-34," Dave said. "I bought them from Rob when he was making some for his project."

CONTINENTAL A-70

The other major facet of the restoration was overhauling the 165-hp Continental A-70. "I rebuilt it to zero time. The unusual thing about it is that the Bendix early series magnetos didn't have any oil seals on them — there are holes to drain oil back into the case. The technology has changed a lot over the years," Dave said. "The good thing about an A-70 is the crankshaft gears and rods are the same as the 220-hp Continental 670, which is the Stearman engine, so those parts are easy to find. What's hard to find are the pistons and cylinders; the A-70 is 540 cubic inches. It has the original, heavy steel front exhaust collector ring, which is different from any others I've seen. The A-70 was the first Continental aircraft engine, and it's a 'greaser,' meaning you grease the rocker arms every 15 hours. I think they made around 100 of these engines, which were mostly used on Wacos."

DOING THE DANCE

Now that his childhood dream is tangible reality, Dave has become a devoted caretaker for the KR-34B2. As long as the outside air temperature is at least 60 degrees, he's flying the biplane every week. So far, he's logged about 50 hours in it and has enjoyed every minute of listening to the percussive song of the A-70 and having his worldview framed by the KR's lustrous International Orange colored wings.

"We're still doing the dance and learning each other, and probably will as long as I fly it. It's extremely easy on grass in the wind, but anything other than that it's a handful. As you slow down, the ailerons cause quite a bit of adverse yaw, so you have to be aware of that and use the rudder," Dave said. "It's all fine and dandy when you're landing; it's like a flying box kite. Your landing speed is probably down to 45 mph, and it doesn't take much for a wing to come up on you! When it does, you slam the aileron to its full deflection, trying to get that wing back down. Otherwise, you get to go for a wild ride — you can drag a wingtip in a heartbeat!"



Specs

Aircraft Make and Model:
Fairchild KR-34B2

Type Certificate 2-505
Not eligible to be flown by a sport pilot.

WINGSPAN UPPER:	30 feet, 1 inch
WINGSPAN LOWER:	29 feet, 2 inches
LENGTH:	23 feet, 2 inches
HEIGHT:	9 feet, 3 inches
EMPTY WEIGHT:	1,430 pounds
GROSS WEIGHT:	2,400 pounds
USEFUL LOAD:	970 pounds
SEATS:	1 pilot, 2 passengers
ENGINE:	165-hp Continental A-70
FUEL:	52 gallons
OIL:	4 gallons
MAX SPEED:	115 mph
CRUISING SPEED:	98 mph
LANDING SPEED:	45 mph
RATE OF CLIMB:	615 fpm
SERVICE CEILING:	14,500 feet
CRUISING RANGE:	500 miles

TOP: Close-up view of the prop hub on the rare Continental A-70.

MIDDLE: The landing gear was rebuilt, and has Warner mechanical brakes.

BOTTOM: The KR's rudder has a large, distinctive shape.

The KR has a realistic cruise speed of 90 mph, and any kind of maneuvering speed is basically 80 mph. Its takeoff speed might be around 40 mph; Dave doesn't know for certain because he's looking outside trying to keep it on the runway until it levitates off the ground. He typically flies about 70 mph in the pattern until short final, when he slows it down to 60 mph. "From there on until I land, I have not a clue what my airspeed is — it's all by feel. You can do a full-stall landing with it from 10 feet, and it just sort of parachutes in. It's real nice; it just sort of squishes to the ground. No bounce to it whatsoever," Dave said. "I always count on burning 10 gph, and it's got a five-hour range. My longest flight so far was about two and a half hours up to Springfield, Ohio, to Dewey Davenport's annual Barnstorming Carnival."

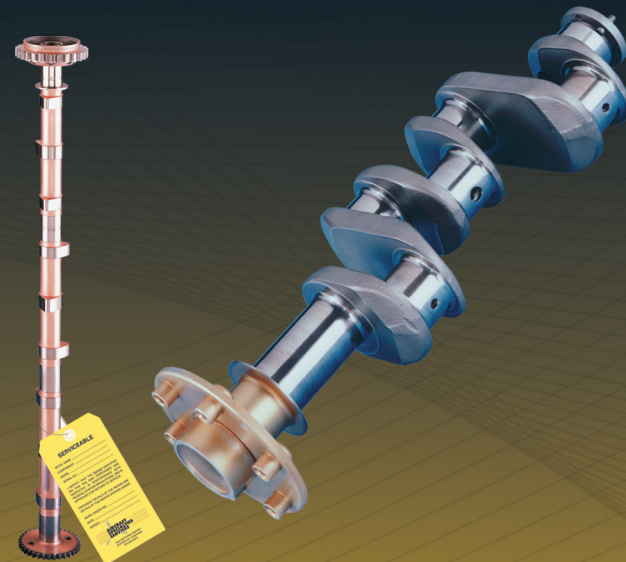
THE KR IS A KEEPER

It took Dave close to 1,000 hours to go through the KR airframe and engine, which he accomplished in less than two years. It was an edifying experience, yielding the sweet reward of open-cockpit flying. Naturally, it didn't take long for NC205E to evolve into a member of the family — a sibling, of sorts, for his Swift.

"I didn't buy this airplane because it was a Kreider-Reisner; I bought it because it was a biplane with a round engine. But now that I've learned how unique it is, I do feel like a caretaker at this point," Dave said. "I love this old airplane, and my wife, Debbie, loves to fly in it. When I do this much work on something, it really does become part of the family, so I'm keeping it!"

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