

| FLY OFF: STEARMAN VS. WACO |

A TALE OF

An aerial drag race between a couple of classics

TWO BIPLANES

Lined up on the runway behind the blue-and-yellow Stearman in its original Army Air Corps markings, the colorful Waco biplane seems as though it belongs in a historical black-and-white news-reel, not today's reality.

The airplane that taught America's "greatest generation" to fly rumbles forward, its tailwheel quickly rising off the pavement, followed by its main wheels after a total ground roll of about 600 feet. Our "Fly-Off" between this American aviation legend and a thoroughly modern, handcrafted 2011 Waco Classic YMF-5D biplane is under way.

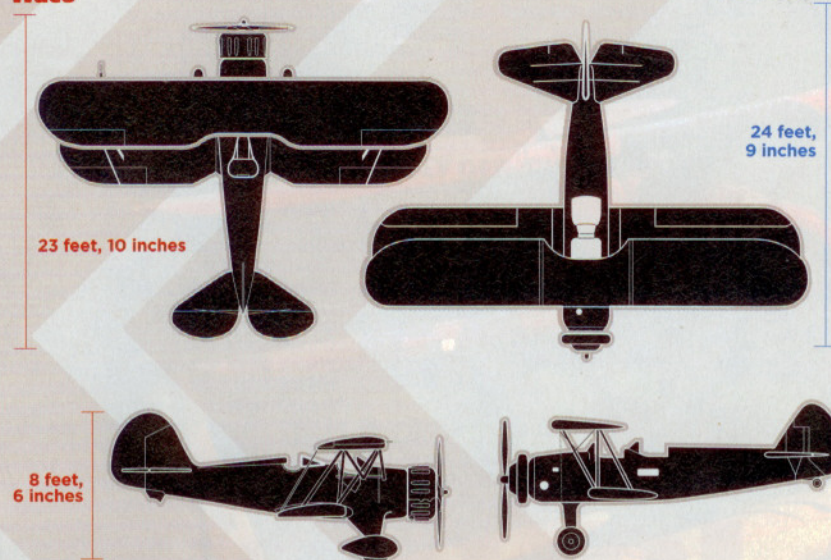


VIDEO EXTRA Fly along with us in our second "Fly Off" competition.

BY DAVE HIRSCHMAN | PHOTOGRAPHY BY CHRIS ROSE



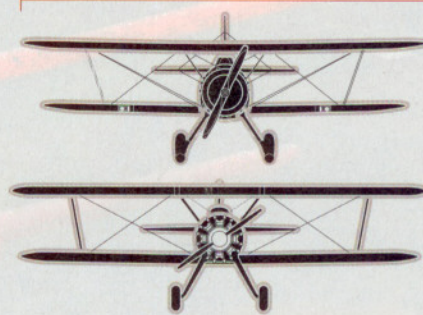
Waco



Stearman

Waco

30-foot wingspan, 234-square foot wing area



Stearman

32-foot, 2-inch wingspan, 297.4-square foot wing area

9 feet, 8 inches

Avionics

VFR minimum (Stearman)

IFR glass panel (Waco)



Aircraft manufacturers, aircraft owners, and pilots make all sorts of performance claims, but there's nothing quite like putting two comparable airplanes side by side and seeing what they can do in terms of top speed, stall speed, and other measures.

Full throttle in the Waco is accompanied by an earthquake of vibration and acceleration, and a nudge of forward stick brings the tailwheel up. I hold a tail-low pitch attitude and (aided by a six-knot headwind) the Waco with two people and nearly 70 gallons of fuel in its extended-range tanks climbs away from Frederick Municipal Airport's Runway 23 after a ground roll of about 750 feet—roughly 150 feet more than the Stearman.

Round one goes to the Stearman, I confess, a bit surprised that the stock Stearman with its newly overhauled, 220-horsepower Continental engine from Air Repair in Cleveland, Mississippi, gets off the ground shorter than the mighty Waco with its 300-horsepower Jacobs and fixed-pitch MT prop. But this contest is just beginning, and things are quickly turning in the Waco's favor.

The Stearman struggles to join up with our Bonanza A36 photo ship, even though the Bonanza is flying at just 80

The Waco Wins

Sure, we can wax poetic about aviation days of yore. But the fact is aviation has advanced a great deal in the past seven decades, and the Waco YMF-5D reflects those refinements.

Computer-aided design, lifetime fabric, and master craftsmanship at the Waco Classic Aircraft Factory in Battle Creek, Michigan, produce twenty-first-century biplanes that look better, fly better, and last longer than vintage models ever could. It's no insult to our ancestors to acknowledge that these flying works of art are superior in just about every measure than biplanes built in the 1930s and 1940s.

In my former weekend job as a Waco/Stearman/T-6 pilot, the ride-business owner, Steve Collins, and I happily disagreed about which biplane we'd rather fly. I chose the Waco because I could fly all day and still feel like a human being at sunset. After a dozen or so Stearman flights, I'd be wind-burned with chapped lips, a sore back, and ringing ears. (He preferred the Stearman because it "felt like a Harley.")

The Waco pilot, by contrast, is protected by a huge windscreen. There's a smooth MT wood prop out front, a heater, and brakes that work. The radio and intercom are crystal clear, and IFR avionics allow cross-country confidence.

All this says nothing of the Waco's aerobatic prowess: The graceful biplanes with four ailerons (instead of two in a stock Stearman) do loops and barrel rolls like a rollercoaster on greased rails. And the two-passenger front seat allows some memorable moments. My then-four-year-old son took his first airplane ride while sitting next to his grandfather in a Waco, and several of my passengers made marriage proposals in that same cozy space. (And every one of those asked said yes!)

Talk about the Stearman mystique all you want, but the Waco is a superior airplane.

—Dave Hirschman



Fly Off pits similar airframes against each other in wing-tip-to-wing-tip contests designed to reveal real-world performance differences—and *AOPA Pilot* editors share the findings, and their opinions about the merits of each design. Let us know which airplane matchups you'd like to see in future Fly Offs, and we'll bring you the results in *AOPA Pilot* and videos on AOPA Live This Week.

knots with its landing gear and flaps extended. The Waco easily closes the distance with the slow-moving Bonanza. In addition to higher horsepower than the Stearman, the Waco is aerodynamically cleaner with a fully enclosed engine cowling and wheel fairings—accessories the stock Stearman must do without.

In truth, this 1942 Stearman Model 75 (owned, maintained, and flown by Richard Fox) and the gleaming, candy-apple-red Waco Classic YMF-5D (owned and flown by Marc Rossi) are about as different as two radial-engine biplanes can be.

The Stearman is a Spartan throwback to a bygone era when military pilots had to quickly master this intimidating aircraft in order to progress to more complex fighters, bombers, and transports. Later, Stearmans were pressed into hard labor as crop dusters, civilian trainers, and air-show performers. During the past 25 years, the lucky ones have been painstakingly restored as vintage show airplanes that evoke their unique links to American history as the airplanes in which World War II pilots first tested themselves.

Waco biplanes played a significant role in World War II pilot training as well. But the YMF-5D is as luxurious as the Stearman is bare. Ever since the design was put back into limited production in Michigan in 1986, Wacos have become known for immaculate craftsmanship and over-the-top extras: perfect paint, leather interiors, glass-panel IFR avionics, even autopilots. New Wacos are ergonomically excellent with optional MT wood props that are almost impossibly smooth, and its pushrod ball-bearing controls are brilliantly harmonized.

The Stearman is a rowdy, two-seat, day/VFR anachronism. The Waco is a refined, three-seat, IFR tourer with impeccable manners.

The outside air is smooth and still as the two biplanes—first individually, then together—move into position beside the Bonanza photo ship. I feel kind of sorry for AOPA Editor in Chief Tom Haines as he gingerly maneuvers the Bonanza for an hour of what, for him, must be tortuous slow-flight practice. My sympathy isn't great enough to make me want to trade places, however, as the rear cockpit of the Waco provides a sensory feast.

Flying wing tip to wing tip, the Stearman opens the throttle all the way. I do the same, and the Waco easily pulls away. The new airplane is indicating 122 miles an hour at an altitude of 2,500 feet, and the Stearman tops out at about 100 miles an hour. Advantage Waco.

We rejoin, and slow down all the way to the power-off stall speed. That comes at about 60 miles an hour for the Waco as a slight buffet precedes a shallow right-wing drop. The Stearman continues flying steadily. Advantage Stearman (which stalls straight ahead at 55 mph).

We forgo the rate of climb contest—which, because of the Waco's more powerful engine, is no contest at all,

and the Waco's ability to more quickly catch up to the Bonanza on our initial climb has already illustrated the point. (Pairing the Stearman against a 220-horsepower UPF-7 would have been a fairer contest.)

We return to the airport and make a series of low passes, then land on Runway 23. The Waco approaches at 80 mph compared to 75 for the Stearman. With its higher weight and greater approach speed, the Waco has more energy to dissipate on rollout than the Stearman. But the Waco's double-puck Cleveland hydraulic brakes provide plenty of stopping power. Using normal techniques, the two airplanes need about the same runway distance for landing.

Pilots seeking a tactile connection to the gritty roots of American military aviation and the all-too-mortal youngsters who faced their fears, overcame their doubts, and sacrificed so much in pursuit of aerial accomplishment and national preservation, are naturally drawn to the Stearman. Those who appreciate superior craftsmanship, attention to detail, comfort, style, and state-of-the-art avionics gravitate to the Waco. And those of us who admire both, admire both.

AOPA

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WINNERS

Speed: Waco

Range: Waco

Stall: Stearman

Climb Rate: Waco

Short Takeoff: Stearman

Fuel Burn: Stearman

Get a Stearman

This is potentially a silly exercise. How could you possibly vote for one classic biplane design over another? When the choice is either the Waco—with its big ramp presence, fancy avionics, and comfy seats—or the Stearman—with its undeniable history, stout legs, and nostalgic feel—it seems impossible that one is better.

The difference is easy to spot once you take away the love-at-first-sight “wow factor” that is inevitable with both. The Waco is pretty, and therein lies its downfall.

Biplanes fit one mission and one mission only—fun. I don't want to go somewhere in a biplane. I want to sit down, strap in, and feel like the king of the sky for an hour or two. Why do I need three radios and a glass panel to do that?

The radio in this particular Stearman is garbage, which is just as it should be. It doesn't work because the airplane is meant to be flown off grass strips far from anything that even resembles air traffic control. The Waco, on the other hand, is intended for guys who buy Range Rovers and \$800 fly rods for once-a-year fishing trips.

Do you want a pretty airplane? Of course not. You know how to change the oil in your car without looking up directions to Jiffy Lube. Your favorite airport chair is broken and battered because you spend so much time in it. You know the entire point of having an open-cockpit biplane is to feel the wind in your abundant hair. You have a moustache. You want a Stearman.

—lan J. Twombly

SPEC SHEET

Waco

APPROXIMATE PRICE: \$325,000

Seats | 3

Ailerons | 4

Empty weight | 1,985 lbs

Loaded weight | 2,950 lbs

V_{NE} | 214 mph

Cruise speed | 120 mph

Stall speed | 59 mph

Initial climb | 1,100 ft per min

Engine | Jacobs R-755 300 hp

Stearman

APPROXIMATE PRICE: \$100,000

Seats | 2

Ailerons | 2

Empty weight | 1,931 lbs

Loaded weight | 2,635 lbs

V_{NE} | 186 mph

Cruise speed | 106 mph

Stall speed | 55 mph

Initial climb | 840 ft per min

Engine | Continental R-670-5 220 hp

