Kitbuilt-bush fun

GlaStar Sportsman 2+2 takes off

BY STEVEN W. ELLS

PHOTOGRAPHY BY LARRY MAYER

The fall sunlight fell on the brown dirt of the river bank as Ted Setzer eased back the power and banked left to align his final approach with the gravel bar. The fluttering of the cottonwoods' yellow and light-green leaves trailed out of our vision as our turn took us out over the Little Bighorn River. One more turn; straighten out; power all the way back; stick all the way back; touch down and roll out on the fist-size cobblestones of the wide, flat gravel bar.

As we unloaded the gear, the sounds of the chuckling river, the swish of the wind in the leaves, and the click-and-slide of our feet on the rocks made us grateful that we live in America in the twenty-first century—when dependable airplanes are commonplace, and the freedom to fly them still reigns.

The airplane we flew onto that gravel bar in October 2003 was a GlaStar Sportsman 2+2. It's a mini-SUV of an airplane that is assembled from a kit.

Sportsman specifics

The Sportsman 2+2, introduced at EAA AirVenture in 2003, looks like a smaller Cessna 180. Its construction details are a mix of old and new—the wings are conventional riveted-aluminum construction while the passenger compartment is surrounded by a sturdy cage of TIG welded chrome-moly steel tubing (4130), like the tube-and-fabric airplanes of the 1930s and 1940s. The sturdy cage plus inertia-reel shoulder harnesses improve survivability in all except the most violent unplanned landings. The tail cone, vertical stabilizer, doors, and fuselage shell are made of a fiberglass/foam sandwich that New GlaStar has molded into a smooth, drag-reducing form. In addition to the pleasing airframe shape, the fiberglass/foam material provides a more than adequate strength-to-weight ratio. The result is a strong, tough, good-looking airplane.

The front seat area is a roomy 49 inches wide. This width and the observer-style cabin door windows provide good visibility to the sides and down. The area aft of the front seats is vast enough to pack in 300 pounds, or 37 cubic feet of cargo.

There are two upholstered "jump seats" against the back wall of the cabin that are adequate for small children yet don't have to be removed to load the cavernous cargo area. The cargo and rear-seat area is accessible through a large (24 inches wide by 30 inches high) door on the left side of the airplane.

Flaps are manually activated, each pilot has a centrally located control stick, and the two-axis trim (pitch and roll) system is electrically activated by a button atop the control stick.

The fuel tanks hold 50 gallons and consist of two welded and internally baffled aluminum tanks in each wing. Each inner (main) tank has a 15-gallon capacity while each outer (auxiliary) tank holds 10 gallons. A floor-mounted three-position (left-right-off) selector valve determines which main tank is feeding fuel to the engine. Pushing panel-mounted transfer pump switches starts the flow of fuel from the aux tanks into the mains. The normal procedure is to use fuel from each main tank for an hour before turning on the transfer pumps. The transfer pumps have an auto-off function that prevents fuel-pump damage should the aux tank run dry with the pump on.

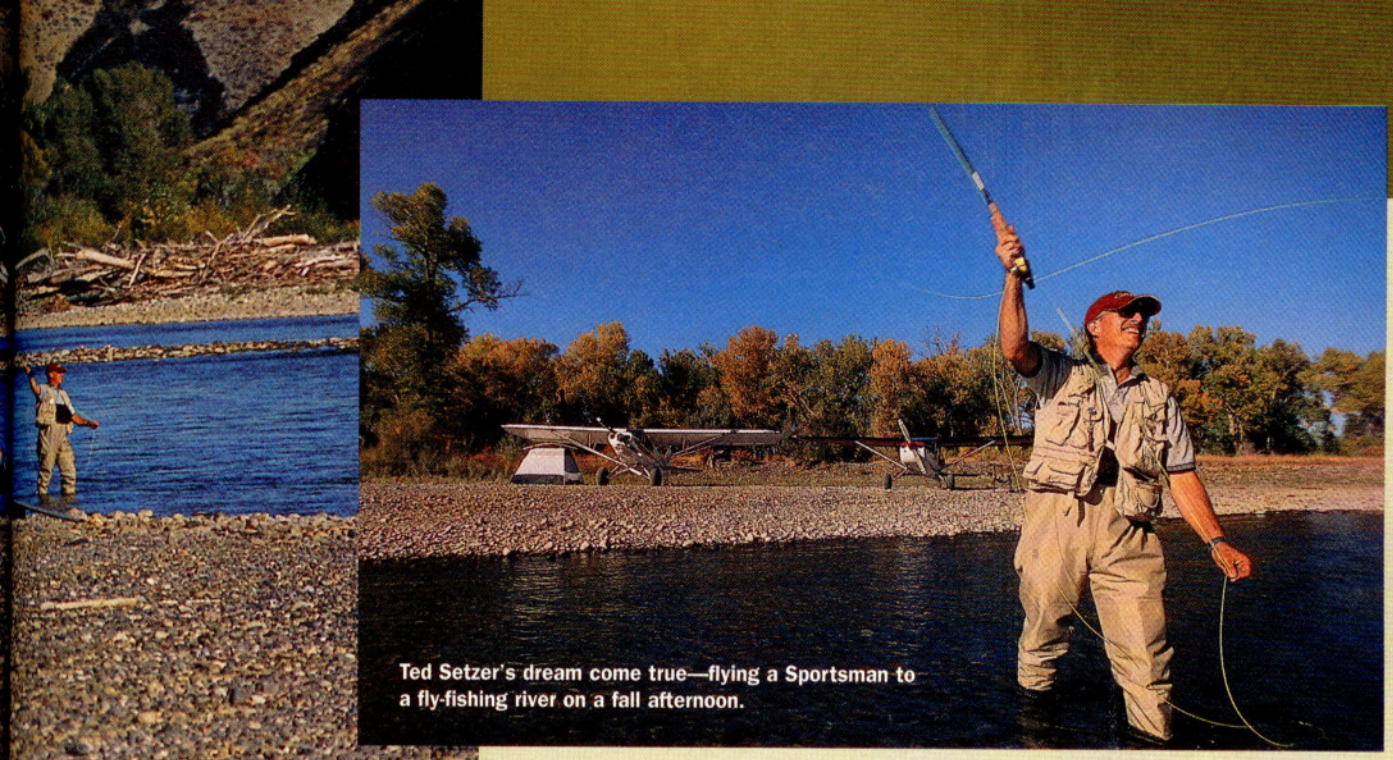
The Sportsman 2+2 doesn't look like a large airplane but it feels, loads, and hauls like one. The airplane I flew had an empty weight of 1,429 pounds and a maximum gross weight of 2,300 pounds. Before fueling, the useful load is 871 pounds—fill the tanks with 100 LL and there's still 571 pounds to play with. That's enough for two standard-size adults and two 100-pound children, or two adults and more than 200 pounds of gear. An average-size pilot can fill the tanks and still legally load more than 400 pounds of gear.

We landed the Sportsman everywhere—from a mesa-top unimproved dirt strip with a big dip on the touchdown end to riverside gravel bars.

The Sportsman 2+2 is the brainchild of Setzer, vice president of Research and Product Development at New Glasair LLC and New GlaStar LLC. Setzer joined company cofounder Tom Hamilton in 1979 when Hamilton had just started work on the Glasair TD. (Hamilton has since left the company to form Aerocet Floats.) The birthplace of the original Glasair design was a dirt strip that local pilots called the "Hog Farm." It had been a hog farm in years past. The site had obvious drawbacks, but these were more than compensated for by the lack of nosy neighbors and a dirt landing strip. After helping to develop the popular GlaStar and Glasair models for Stoddard-Hamilton—the now-defunct company that originally owned those designs—Setzer pitched his idea to develop a bush-style airplane to Tom Wathan, who now owns New Glasair and New GlaStar (and Flabob Airport in Riverside, California). Setzer has a ferocious appetite for wilderness adventures and wanted New GlaStar to build an airplane that could haul a load, fly fast enough to get out to the boonies after work on a Friday afternoon, and be sturdy enough to safely get into and out of unimproved wilderness landing strips. Wathan said to go for it.

The Sportsman 2+2 grew off the drawing board that spawned the company's efficient and easy-to-build GlaStar. (See the New GlaStar Web site at www.newglastar.com for company history and more information.) Changes to the wings and fuselage resulted in a longer, wider airplane—this helped push up the maximum gross takeoff weight by 340 pounds to 2,300. The steel cage has hard points that allow easy landing-gear configuration changes. Switching from floats to a nosewheel or a tailwheel configuration is quick—Setzer says the nosewheel to tailwheel change can be completed in as little as an hour.

The Sportsman flies well. A rudder overhang forward of the rudder hinge line lowers rudder forces. The rudder is large enough to provide a demonstrated crosswind capacity of 22 knots. The aileron forces are lightened by a servo tab on the left aileron. I prefer higher stick forces in pitch than I felt in the



Ted Setzer's dream come true—flying a Sportsman to a fly-fishing river on a fall afternoon.

The pilot's lounge—not your typical bush plane (right). The jump seats (above) are child-sized and nestled against the back of the cabin.

Sportsman, but that didn't slow down our adventure. All of the Glasair/GlaStar designs are at least as strong as the minimum load limit factors (plus 3.8 G/minus 1.5 G) that the FAA requires for production airplanes certified in the Normal category.

Last but certainly not least, both wings can be folded back to a storage position alongside the fuselage. This feature could protect the airplane if a Sportsman and its pilot were stuck on the ground during a violent storm. Wing folding also allows the Sportsman to be stored in a space measuring 10 by 25 feet. "Wild" Jim Londo spends his summers near the New GlaStar factory in Washington state. When fall brings rain and cold temperatures he folds the wings of his GlaStar, rolls it up on a flatbed trailer, and tows the whole shebang behind his motor home to his winter residence near the Salton Sea in California.

The flight east across the mountains

Setzer and I flew the factory-demonstrator Sportsman from Arlington, Washington, across two mountain ranges to the high plains of the Billings, Montana, area for a combination evaluation-fun flight.

We planned a four-day fishing, camping, and flying trip. With full tanks and a liberal crew weight of 420 pounds, we still had more than 150 pounds that we used for fishing poles, tents, food, cameras, clothes, and survival gear. Setzer often loads two mountain bikes in the cargo area.

We launched from Arlington Municipal Airport's Runway 16 just as the sun came up and touched down on Runway 11 at Missoula, Montana, at 9:45 a.m. It's 335 nm from point to point and we had covered it in just a little more than three hours. My dormant tailwheel flying skills added some time to the total because of pattern work, one go-around, and a marginally serviceable landing. Cruise numbers of 123 to 125 KTAS with fuel burns of 9.7 to 10 gallons per hour (when leaned in accordance with Lycoming recommendations) were the rule at cruise altitudes of between 9,500 and 11,500 feet msl. Owing to the oversized 26-inch balloon tires, we were a few knots shy of the advertised 130-knot cruise.

The 180-horsepower Lycoming O-360-A1F6 engine and the 80-inch Hartzell compact hub two-blade propeller worked well throughout the en-


N345GS


N345GS

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tire 17 flight hours we put on the Sportsman. This Lycoming engine model has a counterweight-equipped crankshaft that eliminates the rpm-restricted range that applies to some Hartzell/Lycoming four-cylinder engine combinations. It also seemed to be very smooth.

The Billings band of brothers (and the sister)

Our visit to Billings was hosted by Steve Vold and Martin Elshire of Aerotronics. In addition to a thriving certified avionics repair and installation business, Aerotronics builds instrument panels for all the models in the New Glasair/New GlaStar fleet, and creates plug-and-play avionics installations and instrument panels for home- and kitbuilt designs. The Billings area proved to be a perfect proving ground for our evaluation flying.

We landed the Sportsman everywhere—from a mesa-top unimproved dirt strip with a big dip on the touchdown end (in Billings-pilot lingo the dip is called a *coulee*) to riverside gravel bars to 150-by-10,000-foot runways. By far the most fun was bushwhacking around the boonies, and the Sportsman had no trouble fitting right in with the Cessna 180s, Piper Super Cubs, and other bush toys flown by the Billings boys.

The Billings pilots, at least the low-and-slow crowd we flew with, seem to know when one of their covey is up flying. While four or five local pilots test-flew the Sportsman and photographer Larry Mayer shot some still photos on a private airstrip southwest of Billings, a Cessna 180 touched down and taxied up. The pilot, retired airline captain Art Daniels, dismounted before strolling over and saying, "You guys should know that Janet's cinnamon rolls are out of the oven." This stirred up the crowd—conversation stopped in mid-sentence, every pilot immediately jumped in an airplane and took off to Janet and Ray Potter's Rock-Tackle and Gift Shop in Fishtail, Montana.

To get a hot cinnamon roll we had to take the Sportsman into Art Daniels' ranch strip. That required a sideslip on final to quickly lose altitude after passing over a copse of high trees on the approach end. That big rudder came in handy and once again the Sportsman held its own. With a stall speed of 42 knots and a cruise speed of 130 knots the Sportsman has a wide operating envelope. Installing fairings on the wing lift struts and landing gear legs should widen the envelope even more.

Later that day we made the landing that I described in the opening paragraph of this story. Setzer was casting dry flies onto the Little Bighorn within minutes after we touched down.

After spending 17 hours in the Sportsman I didn't have much to complain about. I did think that the rudder pedals were too close together—I saw problems for winter fliers wearing insulated boots. A couple of weeks after I returned home Setzer called to say the company had increased the distance between pedals. Although 90 percent of kit buyers select the Sportsman's electric pitch trim option, I'm glad that New GlaStar offers an optional manual pitch trim system. A good bush airplane makes it on its dependability, and manual trim systems have a reputation for being bulletproof.

The Sportsman sits lower to the ground than most airplanes—my senses told me that I was going faster than the airspeed gauge indicated, and I tended to flatten out my approach as I neared the ground, resulting in long landings.

Alan Kasemodel, the most experienced and most current Super Cub pilot in the Billings gang, had no problem landing and taking off in the Sportsman in a paced-off distance of 575 feet on Dave and Bobbi Powers' backyard strip. The elevation at the strip is about 3,500 feet msl. Kasemodel believes that the key to good landings is to trim to a nose-up attitude down to the ground with a blip of throttle before touchdown to arrest the sink.

Not long ago, most pilots didn't consider kitbuilt airplanes an alternative to one of the Wichita or Vero Beach production airplanes. But the industry has advanced, its airplanes are safer, and more buyers are exploring the kitbuilt market as an alternative to buying a 30- or 40-year-old production airplane.

Kitplane magazine recently listed 329 kitplane builders—perhaps 10 percent of

The 180-horsepower Lycoming O-360 and the 80-inch Hartzell constant-speed prop combination provides excellent short-field performance—while the sleek shape cuts drag, resulting in 125- to 130-knot cruise speeds.

these can compete with production airplanes in the load-carrying and performance arena, while another 10 percent far surpass current production offerings. Fully 15 percent of the airplanes registered in the United States at the end of 2002 were home- or kitbuilt. And the numbers are growing.

JumpStart your Sportsman

For $31,950 the team at the New GlaStar factory will start putting together your airplane kit. Before long (delivery times vary according to demand) a truck will unload a couple of large boxes at your doorstep or hangar. According to Setzer, a new builder should be able to build a flying airplane in 1,500 to 1,800 hours. A builder who buys the standard kit and dedicates two hours three times a week and six hours on three Saturdays of each month should have a completed airplane in a little more than three years. Construction time can be reduced by 40 to 50 percent by adding JumpStart options to the kit. There's one for the wing, one for the tail, and one for the fuselage. Each can be purchased individually or all together. All three cost an additional $15,895.

Sounds like a big project, but there is plenty of help available online and a factory-assisted accelerated building plan is in the works. The two active Glasair/GlaStar owners groups are online (www.glasair.org and www.glastar.org).

As planned, the factory build-assist program would allow the owner to purchase all three JumpStart kits, and then join the factory experts at the 200,000-square-foot New GlaStar factory in Arlington to start building the airframe of his Sportsman. At the end of two weeks the airframe would be complete, with windows, undercarriage, doors, seats, controls, and other elements finished. A second program is planned to include firewall forward, avionics, electrical, and instrument panel completion.

New GlaStar offers discount prices for builders on components such as engines, propellers, and avionics. A list of some equipment that has proven to be dependable in other owner-built New GlaStar airplanes is shown on the company Web site.

Pricing out a new counterweighted Lycoming engine, a new Hartzell 80-inch constant-speed propeller and governor, the accessories needed to complete the firewall forward installation, and adding a MicroVision VM-1000 engine management system, a single-axis autopilot, and the instrument panel and switches, increases the buy-in price by another $50,000. These numbers can be daunting unless they're put in perspective. The owner will be flying a new airplane that's equipped the way he wants it—new avionics, a new powerplant and propeller—with new-equipment warranties.

Suppose the owner wants to install technically advanced equipment such as an electronic flight information system (EFIS). There's no need to wait for FAA installation approval—owners of homebuilt airplanes are not restricted to FAA-certified components or installation approval through the supplemental type certificate (STC) process. It's no wonder that the number of kit- and homebuilt airplanes is rising. New Glasair/New GlaStar offers the Sportsman and GlaStar under the New GlaStar name, and the Glasair III, Glasair Super II–RG, and Glasair Super II–FT under the New Glasair name—somewhere in this lineup is an airplane to fit most any pilot's needs. Among the collection, the GlaStar Sportsman 2+2 is the choice for those who want a new airplane that flies safely into the backcountry with dispatch and comfort. AOPA

i Links to additional information about kitbuilt airplanes may be found on AOPA Online (www.aopa.org/pilot/links.shtml). Keyword search: kitbuilt.

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SPECSHEET

GlaStar Sportsman 2+2

Base price: $31,950 for complete airframe kit

Specifications

Powerplant	Lycoming O-360-A1F6
Recommended TBO	2,000 hr
Propeller	Hartzell 80-in dia
Length	23 ft
With wings folded	24 ft 8 in
Height	6 ft 11 in
Tricycle-landing gear configuration	9 ft 4 in
Wingspan	35 ft
With wings folded, horizontal stabilizer removed	8 ft
Wing area	131 sq ft
Wing loading	17.5 lb/sq ft
Power loading	12.8 lb/hp
Seats	2 + 2
Cabin width, hip	3 ft 8 in
Shoulder	3 ft 10 in
Empty weight	1,350 to 1,400 lb
Empty weight (as tested w/26-inch balloon tires)	1,429 lb
Max ramp weight	2,300 lb
Max gross weight	2,300 lb
Max useful load	900 to 950 lb
Max useful load, as tested	871 lb
Payload w/full fuel	600 to 650 lb
Payload w/full fuel, as tested	571 lb
Max takeoff weight	2,300 lb
Max landing weight	2,300 lb
Fuel capacity, w/opt tanks	50 gal 300 lb
Oil capacity	8 qt
Baggage capacity or rear-seat passengers	300 lb, 37 cu ft

Performance

Takeoff distance, ground roll	350 ft
Max demonstrated crosswind component	22 kt
Rate of climb, sea level	1,000 fpm
Max level speed, sea level	140 kt
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption), 8,000 ft	
@ 75% power, best economy	135 kt/4.2 hr (60 pph/10 gph)
@ 65% power, best economy	130 kt/5.1 hr (51 pph/8.5 gph)
Service ceiling (estimated)	20,000 ft
Landing distance, ground roll	260 ft

Limiting and Recommended Airspeeds

V_X (best angle of climb)	75 KIAS
V_Y (best rate of climb)	85 KIAS
V_{NO} (max structural cruising)	144 KIAS
V_{NE} (never exceed)	162 KIAS
V_{S1} (stall, clean)	51 KIAS
V_{SO} (stall, in landing configuration)	42 KIAS

For more information, contact New GlaStar LLC, 18810 58th Avenue North East, Arlington, Washington 98223; telephone 360/435-8533; fax 360/435-9525; www.newglastar.com

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.