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# **SPORT PILOT**

## **& LIGHT-SPORT AIRCRAFT**

**savage:**

**Zlin's Light-Sport Aircraft**

- My \$20,000 Biplane
- A Step Ahead of Gravity
- Maintenance Logs and your LSA

# Savage:

a different  
Cub-like  
taildragger

Dan Johnson

As we near the fourth anniversary of the introduction of the first special light-sport aircraft (S-LSA) in April 2004, notable successes have been achieved. With approximately 1,000 fixed-wing LSA—plus several hundred flex wings—in the national fleet, and with the entry of Cessna and Cirrus into the LSA marketplace, LSA have clearly become part of the aviation scene.

Whatever the soothsayers predict for the future of LSA, one fact has been established: Pretty yellow taildraggers generate a solid following. Combining the sales of American Legend Aircraft's Legend Cub, CubCrafters' Sport Cub, and European supplier Zlin's Savage, nearly one in five S-LSA registered in the FAA's database are yellow taildraggers.

American Legend currently leads in market share, but CubCrafters steadily rose through the ranks during 2007. Well down the list, but with mounting registrations, is the Zlin Savage. Though it more closely resembles the RANS S-7 Courier than the traditional J-3 Cub, the Zlin taildragger has much to offer.



Bonnie Kratz

### Savor the Differences

Two salient features separate the Savage from the Legend Cub or Sport Cub. First is the price. At the 2008 retail price of \$70,000, the European-built Savage costs so much less than the two American-made products that you might wonder if something major is missing. Second, the Savage comes in with an empty weight of 673 pounds before loading it up with accessories. That's a hundred pounds less than the other two. As with most light aircraft I've flown, this quality

alone suggests the Savage will perform admirably. Of course, the Rotax 912 powerplant contributes to both of these factors.

I flew a red Savage with John Mohr, proprietor of John Mohr Barnstorming. Flying a Stearman in air shows, he has logged an incredible 37,000 hours. But he's more than a highly skilled pilot; John built his first aircraft at the age of 17. That early project was a helicopter, and he obviously liked the experience. He's since built a total of four helicopters.

John's family bought a new J-3 Cub in 1947 and has owned it ever since. It has trained four generations of pilots, so it has great sentimental value to the Mohr family. Beyond that appeal, however, John says he prefers flying the Savage, saying it has more performance and better handling, plus he enjoys having flaps, with which the 1947 Cub isn't equipped. The Savage's flaps can be set to three deployed settings up to 35 degrees.

The tailplane of the Czech-designed, Italian-assembled Savage is fabric-covered, as are the fuselage and wings, though the ailerons and flaps are aluminum. The Savage has a door on only the right side, like all original Cubs. This is probably one way to save a few dollars, but it limits the wide-open flying that can be achieved with two doors open. A single door also limits your options for exiting the aircraft when flying on floats and trying to secure the airplane to a pier or dock. A left-side door is available on the Savage at a cost of about \$2,000, well worth the price if you want the versatility of getting out on either side when docking at a pier.

### Tandem Cabin

The recommended way to enter the Savage is either to back in and sit down first or swing a leg in. I chose the latter as a means to enter without having to pull my leg inside and then over the joystick, which seemed awkward. Fortunately, the welded steel interior offered a number of safe handgrips to use in achieving the somewhat trickier leg-first entry.

The Savage's only door opens and latches with a central latch, although a secondary latch is located forward, which helps secure the door at the leading edge, but it would be difficult or impossible to reach from the aft seat.

The Savage is flown solo from the front seat, dictated less by weight and balance and more by flap operation, which can only be done from the front seat. Most pilots probably prefer the front seat anyway, but flying from the rear seat is highly functional, and I performed well from this location. I had chosen to sit here to experience the Zlin model from a different perspective. Were the Savage my own, I'd want at least a tachom-

eter and an airspeed indicator in the aft seat to make the airplane more flyable from either seat.

Mohr and I flew the Savage from the ultralight/lightplane runway at EAA AirVenture Oshkosh 2007. The field proved no great challenge for the Savage, at least in John's capable hands.

When we taxied out for launch I observed that the toe brakes were very effective. Because the tail wheel is fully castoring, you can maneuver the Savage compactly. John showed me a handy technique of easing the stick forward to unload the tail wheel a bit (while running some power), allowing it to break loose more readily for extremely tight maneuverability. You can pivot the plane around a single main gear with a bit of practice. After his demonstration of the Savage's handling qualities, I was able to emulate John's techniques thanks to full dual controls in the Savage. Hydraulic toe brakes are also offered at both seats.

Fortunately, the great forward visibility of the Savage means you don't need much ground maneuverability. Unlike most taildraggers, S-turns are rarely needed in the Savage.

Once aloft, John wanted to demonstrate the in-flight door-opening procedure. As we slowed the airplane to about 60 knots, John prepared to open the door. He released the front latch first and then the main, centrally located latch and let the door swing upward. My recorded notes captured a blast of wind in the cockpit and especially in my rear seat. But the ultralight pilot in me immediately loved the feeling.

### Wisconsin Barnstorming

John's an airshow performer and I'm a longtime ultralight pilot—seemingly distant ends of the aviation spectrum—but we both enjoyed flying low over the Wisconsin pastures. We enjoyed drifting along over the wide-open fields, flying at 55 knots and using no flaps.

As with all the Cub replicas or re-creations, slow flying is their strength. The same is true of the Savage. But not all Savage models are alike. Vortex generators were added to one Savage on display at AirVenture 2007. Can they actually help a simple airfoil such as these aircraft use?

The answer is yes. John indicated that, of the two Savages at AirVenture 2007, the one fitted with vortex generators could fly significantly slower than the other. John said it will slow so much that you can practically land it on the tail wheel. We flew the Savage without vortex generators, and John prefers to wheel-land this model. Readers interested in short-field operations or float operations would surely want such efficient vortex generators.

Following John's lead, I found landings could make good use of a bit of power; the Savage then flies down to the ground with wonderful behavior. It was hard to take note of speeds from the aft seat, but my seat-of-the-pants technique, combined with good airplane behavior, contributed to easy landings. Flying the Savage, like nearly all taildraggers, requires "happy feet." Active foot movements keep the rudder pedals in motion with lots of small corrections, after which taildraggers can seem simple to fly.

Despite proper technique, I had one landing where I dropped the Savage in a bit. John thinks I got



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a little slow and at some point, he said, the Savage without the vortex generators experiences a flow separation and this allows the plane to drop to the ground. Flying with a touch of power cures this as does the VG setup. I'd choose the latter for this reason alone.

The Savage does excellent forward or sideslips in either direction, no doubt thanks to its generous side area, all the while demonstrating great control authority.

#### Falling Leaf

I have long used Dutch rolls to discover handling qualities of a new airplane. Adding to this practice, John taught me the "falling leaf" maneuver. This is a similar but somewhat extreme form of the Dutch roll where you start to enter a spin but, before allowing the airplane to actually spin, you arrest it and reverse the direction. The Savage certainly revealed the falling leaf, in fact wafting around noticeably during the maneuver. John reports his Stearman does this maneuver more gracefully, but repeating the falling leaf maneuver allows you to more quickly recognize an incipient spin and to practice recovery. I would not recommend it to less experienced pilots, but in

the hands of an expert like John, it appears a highly useful exercise.

I noticed in steep turns, especially to the left, that I tended to run out of back-stick unless I added a touch more power. This is a common occurrence in most general aviation airplanes I've flown, but not always in the lighter-weight metal or composite LSA. To the right, this result was less apparent.

I flew the whole flight from the rear seat and did very well from this position. I also discovered that a rear-seat pilot can make great use of the overhead skylight in turns, probably more so than someone seated up front and closer to the skylight.

Cruising around the fields neighboring AirVenture at 5000 rpm, Savage showed us about 85 knots indicated. It can cruise a bit faster, but I found the power setting to deliver solid power with a bit less noise and vibration.

The yellow, vortex generator-equipped Savage is also lighter than the red Savage we flew because it has fewer accessories. John reported flying it at 4700 rpm where he observed an indicated 100 mph or 86 knots. The speeds appear similar for both versions, but you need 300 fewer

revolutions out of the 100-hp Rotax 912S engine to achieve the same low-range cruise in the vortex generator-equipped variation. For those not familiar with Rotax engines, it's important to know that 4700 is a lower power setting, perhaps equivalent to 2300 rpm on a Continental or Lycoming engine.

When I ran my stall regimen in the no-vortex generator Savage using flaps, the power-off stall came gently without a break at 38 knots indicated. Using full flaps, the airspeed indicator dropped below 30 knots with a mild stall break. John indicated that the VG-equipped model could fly all day at an indicated 20 knots and that it was possible to drop the airspeed indicator (ASI) to zero. Of course, at these nose-high attitudes, any ASI has considerable error.

John demonstrated a hammer-head stall, pulling up to nearly vertical and then pivoting over on one wing. The pullout from this aerobatic maneuver hardly exceeded 80 knots with a slight g-load in pullout. The slower speed of the Savage illustrates one of the benefits of flying a slower, high-lift wing: You are far less likely to overstress the structure in high-speed maneuvers.


#### Taming the Savage

Keith and Julie Hartlaub replaced Bob West of North American Sport Aviation as the distributor of the Savage, operating under the business name Savage Aircraft Sales based at the Manitowoc County (Wisconsin) Airport (KMTW). Though West deserves some credit for introducing the Savage to Americans, the Hartlaubs have increased the airplane's exposure. The Hartlaubs are also part owners of Lakeshore Aviation. With their combined enterprises, they can offer flight training, insurance checkouts, delivery services, and maintenance. Lakeshore is also an authorized Rotax engine repair center.

Given the euro's strong rise against the dollar in recent years, I'm amazed that Savage Aircraft Sales can sell a euro-denominated import for tens of thousands less than other LSA after shipping the airplane to the U.S. The price did rise 17 percent from \$60,000 in the last year, yet it remains in the lower range of ready-to-fly LSA you can purchase.

The Savage Classic at the 2008 price of \$70,000 includes the following equipment: a 100-hp Rotax 912S engine with a two-blade, wooden propeller, single-color paint scheme, airspeed indicator, altimeter, compass, slip indicator, engine tachometer, hour meter, cylinder head temperature gauge, oil temperature gauge, oil pressure gauge, dual controls, four-point seat belt system, overhead skylight, storage compartment, standard upholstery, 600-by-6 wheels and tires, and hydraulic toe brakes. Savage Aircraft Sales also offers a list of options.

With a \$70,000 base price, the Zlin design competes superbly with the American Legend Cub or the CubCrafters Sport Cub, which retail for tens of thousands more. RANS' S-7 Courier is more price-competitive at about \$75,000 ready to fly. Given the euro's current strong run against the dollar, the \$70,000 U.S. selling price is truly a remarkable achievement. Should the dollar strengthen, Zlin may sell all the airplanes it can produce.

With great flight qualities and solid new U.S. representation, the Savage's price alone suggests you ought to closely examine the Zlin Savage if you're an LSA enthusiast who likes pretty yellow taildragers—or even red ones, for that matter. 

## PERFORMANCE

Never exceed speed ( $V_{NE}$ ): 110 knots/127 mph  
 Maximum level speed: 102 knots/117 mph  
 Cruise speed (75 percent): 90 knots/104 mph  
 Stall speed: 36 knots/41 mph • Max rate of climb: 864 fpm  
 Takeoff distance: 360 feet • Landing distance: 295 feet  
 Cruise duration (economical): 4.25 hours (no reserve)  
 Cruise range (economical): 380 miles (no reserve)  
 Fuel consumption (economical): About 4.0 gph



## DIMENSIONS

Wingspan: 30.5 feet  
 Wing area: 153.0 square feet  
 Length: 21 feet • Height: 6.7 feet  
 Seating: 2, tandem  
 Cabin width: 30 inches  
 Empty weight: 673 pounds  
 Gross weight: 1,235 pounds  
 Fuel (all): 18.0 gallons  
 Wing loading: 8.1 pounds/square foot  
 Power loading: 13.2 pounds/hp  
 Powerplant: Rotax 912 UL2/ULS2  
 Power output: 80-100 hp  
 Propeller: Two-blade wood  
 Baggage area: Aft of seats, max 43 pounds

(Note: All specifications and performance provided by the factory. Figures are unverified except as otherwise stated in article.)

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- 1.** Want flaps? The Savage has 'em, unlike original J-3 Cubs. Savage demo pilot John Mohr appreciates the addition of the flaps in slowing the aircraft down.
- 2.** Keith and Julie Hartlaub of Savage Aircraft Sales are now the distributors of this Zlin design in the United States. Keith recently earned a light-sport repairman maintenance rating to provide maintenance assistance to their customers.
- 3.** With a generous skylight overhead, visibility from the Savage is expansive. Because the airplane can be flown solo from the front seat, S-turns aren't needed to maneuver this taildragger on the ground.
- 4.** The low-slung door on the right side makes getting in and out of the airplane easy. A door on the left side is an option (\$2,000 extra) and something float-plane fliers would likely find quite desirable.
- 5.** As stated before, the Savage can be flown solo from the front seat so that's where the main instrument panel is located. However, there's a small instrument pod in the back seat with a turn-and-bank indicator, air speed indicator, and altimeter inset.

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