Stoddard-Hamilton

Packing the performance punch of a twin turboprop

GLASAIR H

BY RICHARD L. COLLINS

orsepower is a wondrous thing. Whereas in an airplane like a Cub, you feel like you are sailing, using the wing, with a little help from the putt-putt up front, in airplanes with low power loading, you feel like you are flying a big engine with fins on it for control. Tell me that isn't fun.

The Glasair III, with a gross weight of 2,400 pounds and a 300-horsepower Lycoming, is indeed a small airplane with a large engine. Its power loading of eight pounds per horsepower hardly qualifies it for going straight up indefinitely, but it does put it in the class of the turboprop twins. And that is exactly what you get in a Glasair III—the performance of a turboprop twin.

All this performance doesn't come without some demands. The Glasair III is no pussycat. Given its size and horsepower, it couldn't be. The takeoff is a dash down the runway. The rotation speed is about 70 knots, but the main gear rumbles on until the speed gets closer to 95 knots. Then it becomes a challenge to keep the speed below 120 knots until the electro-hydraulic system completes the gear-raising process. The best-rate-of-climb speed is 139 knots, where the vertical speed will be more than 2,000 feet per minute at maximum weight. Keeping the airplane at reasonable speeds in the pattern takes a lot of power reduction. Getting it back to the gear-operating speed of 120 knots entails enough work that Stoddard-Hamilton Aircraft (builders of Glasair kits) is now at work on a speed brake for the airplane. The extended landing gear creates a lot of drag, and, with the gear and flaps down, a substantial amount of power is required to maintain a proper approach slope. The power-off, gear and flaps down approach slope would be quite steep. On final, about 95 knots feels good, and the landing from that speed comes rather soon after the power is reduced in the flare. The stalling speed is shown as 68 knots at gross weight.

In normal flying, the Glasair's handling qualities are good. If you grab it by the stick and try to fly it with gross control movements, it will fight back, but the airplane doesn't qualify as being "twitchy." (That designation is reserved for those where you see some pilot-induced oscillation, usually in pitch, even when the pilot approaches the airplane with the thought that this one is flown with gentle control pressures.) As far as instrument flying goes, there is no question that the Glasair III would be de-







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manding but certainly not impossible. Most of the airplanes that are used IFR have autopilots that can fly perfectly, but the pilot should still develop and maintain the ability to fly the airplane from start to finish.

With headsets on, I felt the noise level of the III flown was okay, and the vibration was well damped, especially at lower power settings. The windshield on the aircraft is a half-inch thick to help with noise, as well as bird strikes, at high indicated airspeeds. Entry and exit is fine, even if a long step up. The cockpit is comfortable, though the leading edge of the wing (which carries through the fuselage) is ahead of your seat. The sitting position is "legs out," and the bottom part of your legs rest on the leading edge of the wing. Glasair pilots either say you don't notice this after a while or they build up the floor under the pedals.

The Glasair has a posted roll rate of 140 degrees per second, and the limit load factor (at reduced weight) is listed as plus six Gs. That suggests aerobatics, but don't forget all the pertinent rules covering parachutes and where aerobatics may legally be done. Add the common sense to realize that this is a very clean airplane that will use up a lot of air in a hurry. Those who take lightly the special requirements—legal and otherwise—of doing aerobatics are foolish.

A sign on the wall at Stoddard-Hamilton says that the Glasair fleet has flown a total of 90,000 hours. According to Ted Setzer, president of Stoddard-Hamilton, there have been eight fatal accidents in Glasairs. That equals one every 11,250 flying hours, which is about five times higher than the general aviation fleet average. None of the accidents has been the result of structural failure, according to Setzer, and the higher than normal rate would almost have to be laid on the fact that the airplane has very high performance and the ability to be worked out-ability that apparently exceeds that of the pilot flying, in some cases. Also, half the accidents have been in the first 25 hours of flying, according to Setzer. Glasair offers a familiarization flight program for builders to address this, and word is that the Federal Aviation Administration is preparing an advisory circular to help homebuilders through those first hours.

The Glasair III is available only as a kit. The whole kit ships in one box. The construction is hand-layup fiberglass at room temperature using a foam core. The kit workmanship appears quite



good, and careful builders turn out Glasairs that appear perfect.

Stoddard-Hamilton recognizes that the III will not be the airplane for all people and offers a wide range of options. Upward, a turbocharged version will soon be available, offering spectacular performance at altitude. For a small step in the other direction, wing-tip extensions (that add 10.2 square feet of area) are available for the III to lower all the operating speeds and improve the gliding ability of the airplane. Or you can build a II-S with retractable, fixed trike, or conventional gear, with 160 to 200 hp that, among other things, stalls about 13 knots slower. When the III was developed, the fuselage was stretched to get the tail surfaces farther back for better controllability, and the "S" designation for the Glasair II designates a stretch for the fuselage of that aircraft as well. This would be reflected in better handling qualities as well as less yaw response to turbulence.

The selling of aircraft kits is still a cottage industry, which is how general aviation got started, and it is refreshing to see so much development in this area. Stoddard-Hamilton has, since its inception 13 years ago, sold 1,100 Glasair kits. Of those, 1,050 have been delivered and 300 completed. Current production is about 100 kits a year, with a production capacity of 140 in their Arlington, Washington, facility. Currently, about 65 percent of the kits sold are Glasair III models, showing that if you offer a lot of performance or a little less performance, the former is always the more popular. It would take a builder/technician to say for sure, but the way the kit is packaged and arranged appears to be top quality.

If there is a hitch to kit airplanes, it is in having to build them. Certainly this is no impulse purchase, as witness the time that John Levy (see "The Homebuilder's Commitment," p. 64) put into building his Glasair. To those who find the building a big portion of the fun, great. But for the nonbuilders, airplanes like the Glasair are currently off-limits unless you get someone else to build it for you. There are ways to do that, which is stretching the "experimental" rule to the limit, and what is needed is a new rule that would allow the professional building of a certain number of kits a year. It only makes sense. If you are going to paint a 291-knot redline on an airspeed indicator, it stands to reason that you don't want a true amateur building the airplane. The original intent



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of the experimental rule was to allow people to use basic skills building relatively simple airplanes. High wing loading, low power loading, and relatively high-speed aerodynamics are an entirely different matter.

Setzer said that, if certified, an IFR Glasair III would have to sell for about \$200,000, which illustrates that the laws of aviation economics can't be repealed. The III kit is \$33,500, to which must be added an engine, propeller, instruments,



and avionics, so if you build it yourself, you can have fancy performance for a lot less. The retractable II-S kit is \$21,950 and the fixed-gear trike or conventional, \$15,950. The smaller-engine airplanes would be eligible for certification in the proposed Primary aircraft category, but no decision has been made on whether or not to follow that path.

A pilot who has spent a lifetime crisscrossing the country at 180 knots or less can only look at an airplane like the Glasair III with some degree of burning desire. Anything negative that you might conjure up melts when you gaze at the airspeed indicator with the needle near 200 knots. There would be special requirements for flying the airplane, but once those were met, the deal should be reasonable. Couple all that with the fact that the airplane is quite pretty and well proportioned, and it is tempting to back the old Chevy out of the garage and turn the place into an airplane factory.



John Levy, a proud Glasair builder/owner, invested the better part of three years in his award-winning 180-horsepower retractable.

THE HOMEBUILDER'S COMMITMENT

So what does it take to build your own airplane, and what do you get when you finish? John Levy of Carlsbad, California, devoted a substantial portion of his life to his retractable-gear Glasair over three and a half years and is supremely happy with the final product. He worked Monday through Thursday from 3 p.m. until 8 p.m., Friday from three until six, all day Saturday, and half a day Sunday for three years. Then, for the last six months, he worked seven days a week, eight hours a day, preparing the aircraft for the final finish and applying that finish.

This was Levy's first airplane-building project. He watched someone else build a Glasair first, was impressed with the quality of the kit, and made the decision to go ahead. He was determined from the beginning that it would be perfect. Others agree: Levy's airplane was grand champion (experimental, kit-built) at both Oshkosh and Sun 'n Fun.

Levy's Glasair has a 180-hp, fuel-injected Lycoming, as used on each side of a Beechcraft Duchess. He bought a new engine-"good insurance" he said-and allnew King avionics, including an HSI. A Northstar M1 loran is in the panel, plus an S-TEC two-axis autopilot. Levy finished the airplane a year and a half ago, and while it looks like it has been carefully stored and preserved, he has flown the airplane 430 hours. "To have it, and to also have it practical, is just great." He grins ear to ear when he says it. Levy, who bases at Carlsbad, reported that his longest nonstop has been 775 nautical miles, his longest trip to Florida for Sun 'n Fun, and he makes frequent trips to Baja California in the airplane, which trues 180 knots on 8.5 gallons per hour.

Would he build another, perhaps a Glasair III? "Absolutely. There is always something better." — RLC