



Stemme Soaring

A motorglider without the compromises



BY THOMAS A. HORNE

Motorgliders are the boutique hybrids of the general aviation fleet. Exotic-looking, usually foreign-made, and with systems alien to both airplane and glider, these *rara aves* appeal to pilots who want it both ways. The trouble with traditional motorgliders, however, is that they involve great design compromises. Something bad happens when you try to combine the attributes of both sailplane and power plane in the same package. The extra drag of a feathered propeller, together with the weight of the engine, diminish the sailplane aspect. Motorglider engines are kept light and fuel tanks small to

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minimize this drag, but that means less power and curtailed range, so in powered mode motorgliders usually make for slow, short-legged cruisers. There's little in the way of baggage space, either.

Then along comes the Stemme S10-VT, a motorglider built in Strausberg, Germany (near Berlin), and marketed in the United States by Stemme USA in St. Louis. The Stemme has a unique propulsion system that eliminates the worry of propeller drag in soaring flight, and has a turbocharged engine and a fuel capacity that permit faster cruise speeds over long ranges. It's probably the only motorglider that works equally

well in both flight regimes.

At the heart of the Stemme's design solution is its retractable, stowable propeller—the brainchild of Dr. Rainer Stemme, the company's founder.

When in sailplane mode, the two-blade propeller is folded back into a compact disc, held against the prop hub by springs, and enclosed within the Stemme's extendable nose cone. When it's time to transition to powered flight, the pilot cracks open the nose bowl and extends it forward, primes the 115-hp Rotax four-stroke engine, and turns the ignition key. As propeller rpm builds, the prop blades extend by centrifugal

force. Now you're ready to fly out of that sinking air, or fly cross-country at speeds as high as 140 knots. Or take off without a tow plane.

Stemme USA has been showing off the S10-VT for the past few years at airshows and in private demonstration flights. My turn at the controls came last fall, when "Glider Bob" Saunders, Stemme's field sales representative, brought N5021 (as in 50-to-1, the Stemme's glide ratio in sailplane mode, get it?) to AOPA headquarters in Frederick, Maryland. Saunders is based in Telluride, Colorado, where he racked up hundreds of hours soaring the S10-VT



The Stemme's pop-open nose cone lets a spring-loaded folding propeller extend for powered flight. Hinged wing panels swing back for easy storage. The cockpit is snug, but comfortable, and sports a nonstandard panel, control stick-mounted brake levers, and two variometers.

before taking it on the road. He shares a telephone listing at the Telluride airport with a charter operator—also named Bob. So when people call, they have to specify whether they want to talk to “Glider Bob” or “Charter Bob.” I knew you were asking yourself about that.

Spot a Stemme on the ramp, and you notice the wings first. The span is an airliner-size 75.5 feet, although the wings can be folded back for storage in a hangar or trailering. You do this by removing a couple of pins at the spar joints, pulling the outer wing panels out, then swinging them to their stowage spots on the empennage.

To enter the cockpit, you sit on the wing root and swing first your legs, then your hind end, over the canopy sill. The seating position seems too reclined at first, but you acclimatize after you close the canopy and settle in.

Starting the Rotax is fairly conventional, which is more than can be said about the panel layout and instrumentation—at least from a power pilot's point of view. N5021 is a day-VFR airplane, so the front-and-center position on the panel is devoted to a couple of variometers—instruments that record rates of climb and descent with far greater accuracy than those found in

the prosaic, powered spam-cans most of us fly. One of the variometers is electrically powered, and gives off distinct tones that signal lift or sink. More on this shortly.

That huge wingspan means that you have to be extra vigilant while taxiing, and give plenty of room between you and other airplanes, buildings, etc. Years of taxiing light singles will make you want to taxi the same way you always do—which could make for an expensive ding on the Stemme's ultra-smooth fiberglass wings.

Takeoff is a graceful, slow-speed affair. Raise the tail at 40 kt, then lift

off a few knots later. Accelerate to 60 kt, then begin climbing at the V_Y of 62 kt. Our rate of climb turned out to be about 700 fpm. This was with the propeller set at low pitch; for cruise, you can set the variable-pitch (that's the V in VT ; the T is for turbo-charged) propeller for lower rpm and faster air-speeds.

West of Frederick and over the valley between the mighty Catoctins and majestic South Mountain, Bob and I scan the sky for signs of lift. It is a 4,000-foot-scattered, gusty kind of day, so the best markers would be the clouds themselves. It is turbulent in the climb to 3,000 feet, so we knew that there ought to be some kind of lift, somewhere.

Sure enough, here comes a bump and a squeal from the variometer. In rising air, the electric variometer gives out a "beep, beep" sound that increases in frequency with an increase in lift. Hit a good patch of lift, and it's "beep-beep-beep-beep" in rapid succession. Sinking air brings on a discouraging "boop, boop" falling tone.

So it's beeping like mad, and we feel secure enough to shut down the engine

and do some soaring. To do this, you shut off the engine using the key switch, then pull on a centrally mounted propeller brake. This stops the propeller, and the springs draw the blades to the center of the hub. Then you pull on another handle to center the prop in the horizontal position. This is necessary because the nose has an ovoid cross-section, and the prop must be stowed horizontally if the nose bowl is to be retracted. A tug on a third lever is the final procedure in the shutdown. This

closes the nose bowl, bringing it flush against the rest of the fuselage.

Now it's eerily quiet. The headphones come off, normal conversation begins, and the game of finding, and keeping, lift begins in earnest.

A few beeps later we were in a good 55-degree bank at an airspeed hovering around the Stemme's 54-kt best L/D (lift over drag—the speed that will yield the best glide performance).

There, 400 fpm up. No, it's up to 500 fpm. "Boop, boop," and it's—uh, oh—a



Strausberg and spend a few days attending a factory-conducted course.

Spoilers can be used to slow the Stemme in preparation for landing, flaps can start coming down at 97 kt, and the electrically-powered landing gear can be extended at or below the ship's V_{LE} of 76 kt. Make your final

With a service ceiling of 33,000 feet, the Stemme would be the steed for motorglider altitude records.

approach at 60 kt, and try for a flat touchdown attitude; the nose doesn't sit very high on the ground, so there's no need for an aggressively nose-high attitude to make a three-point landing.

How much, you say? How does \$176,000 grab you? N5021 came with a load of options—all but the solar cells

(which charge the Stemme's main and auxiliary batteries; the latter provide electrical power in soaring flight). These included winglets, extended rudder pedals, tinted canopy, a night-flying instrument panel lighting system, wide-track tires, and strobes. Of course, you can order an oxygen system for those altitude records you plan to set. With a service ceiling of 33,000 feet, the Stemme would be *the steed* for motorglider altitude records.



So sure, the Stemme is pricey. But where else can you find a no-compromises motorglider that outperforms the rest, makes you the center of attention wherever you go, and lets you bump up against the tropopause? If you want unique, and have a glider certificate (the S10-VT is certified as a glider) or rating, then the Stemme is the way to go. □

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