LITE BIPE

The Hiperlight—a no-surprises ultralight

BY THOMAS A. HORNE

Adjusting to non-standard control systems, coping with marginal engines, kite-like responses to turbulence and visits to the hospital—it's all part of the job of evaluating ultralights for *AOPA Pilot* and *Ultralight Pilot* magazines. Since 1981, the staff of the two magazines has built and tested 11 popular ultralights and casually flown 22 others.

Ordinarily, we leave ultralights to *Ultralight Pilot*, but after working on our latest ultralight project—the Sorrell SNS-8 Hiperlight—we decided to let all our members know about this airplane. It has a combination of features (speed, taildragger configuration, enclosed cockpit, staggered wings, conventional three-axis controls) that appeals to nearly all pilots.

Checking out in the Hiperlight should be no problem for any certificated pilot with recent taildragger experience. Reason: it behaves just like a real airplane.

Ready to fly?

Full choke and closed throttle, followed by three or four pulls on the starter rope starts the 28-hp Rotax engine. A few seconds after the engine starts, turn off the choke and bring up the throttle.

For taxiing, use the rudder pedals to control the steerable tailwheel. Remember that you have no brakes.

Add full power, correct for wind and torque, raise the tail at approximately 30 mph, then lift off and climb out at 40 mph.

The Hiperlight must be flown by feel. There are no instruments to speak of in the standard model—just a Hall Brothers floating disc airspeed/wind indicator. And it's way out on the wing strut, far from the pilot's forward field of view. The airplane insists on being flown precisely and will remind you if rudder pressures are inadequate.

A normal cruise setting is half-throttle. This results in an indicated airspeed of some 60 mph, and this is a

comfortable speed at which to fly. Full power in level flight will produce approximately 75 mph. (More about Hiperlight's speed later in the article.)

Control response is immediate and precise. Displacements caused by turbulence can be corrected quickly with small control inputs.

Traffic patterns are flown best at 300 to 400 feet agl, kept close to the landing strip. Enter the downwind leg, then slowly reduce power to maintain a final approach speed of 40 mph. Bleed off more airspeed until you have the three-point attitude, make sure the power is off and. . .touch down. You may notice abrupt sink as you apply full aft stick pressure. This is the action of the full-span flaperons. Flaperons combine the actions of flaps and ailerons. In the Hiperlight, the flaperons automatically extend whenever the control stick is moved aft.

But this is a minor quirk. Of the 11 AOPA staff members who flew the Hiperlight, none experienced any real difficulties. This was a far cry from the early days of our ultralight experience, when we had to learn a new flying technique for each airplane.

The manufacturer of the Hiperlight, Sorrell Aircraft Company, Limited, is not new to the kit-building business. In 1964, Hobie Sorrell and sons Timothy and Mark designed an experimental-category airplane called the Hiperbipe. This is a two-place aerobatic biplane with staggered wings and an airfoil-shaped fuselage.

The Hiperlight looks like a shrunken version of the Hiperbipe. The first Hiperlight flew in February, 1983. As of August 1984, 180 of the Hiperlight kits had been sold.

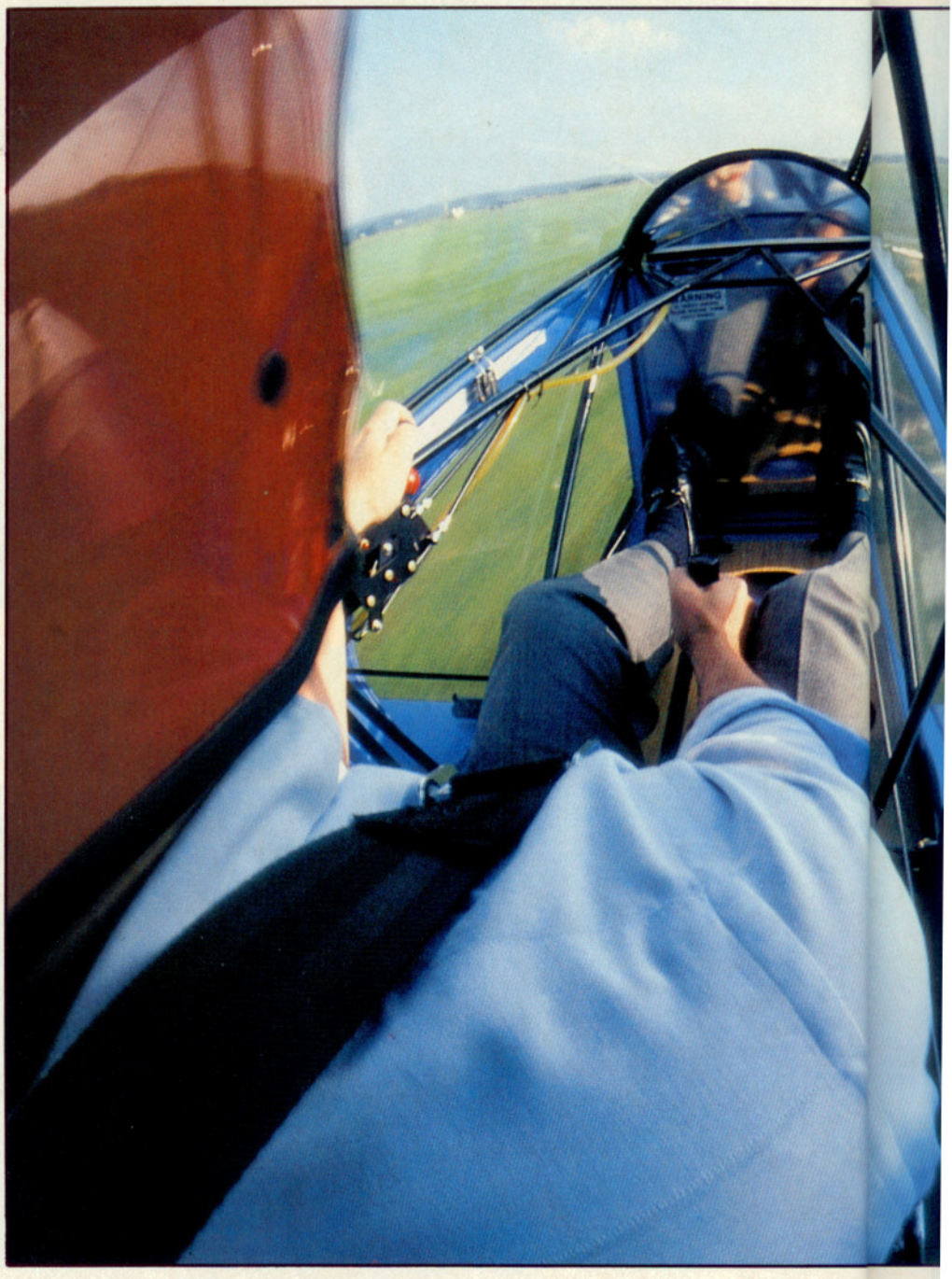
The airplane uses traditional tube-and-fabric fuselage construction. The wings have aluminum spars and a leading edge reinforced with sheet aluminum. All components are of aircraft-grade materials, and the airframe has been static load-tested to +9 Gs without deformation.

Unlike most other ultralights, the Hiperlight uses unstabilized ripstop Nylon for its fabric covering. This material is thinner and less stiff than the Dacrons that have become commonplace in the ultralight world. The Nylon is shrunk with a heat gun to make a taut wing covering. The covering wears quickly where subjected to stress or friction.

We rate the Hiperlight as one of the easiest construction jobs we have ever tackled. Our kit was the partially assembled version, which came with finished wings.

It took us 48 hours to build our Hiperlight. Sorrell claims it takes 25 to 50 hours to finish the partially assembled kit and an average of 125 hours to complete the no-frills kit.

Whether you buy the partially assembled ($8,950) or standard ($7,350) kit, the Hiperlight is an expensive ride. The steep price is not unique. Other high-quality ultralights also have pushed the far side of $8,000. For this reason, some observers feel that ultralights are pricing themselves out of existence, driving potential customers toward used certificated lightplanes with comparable prices.



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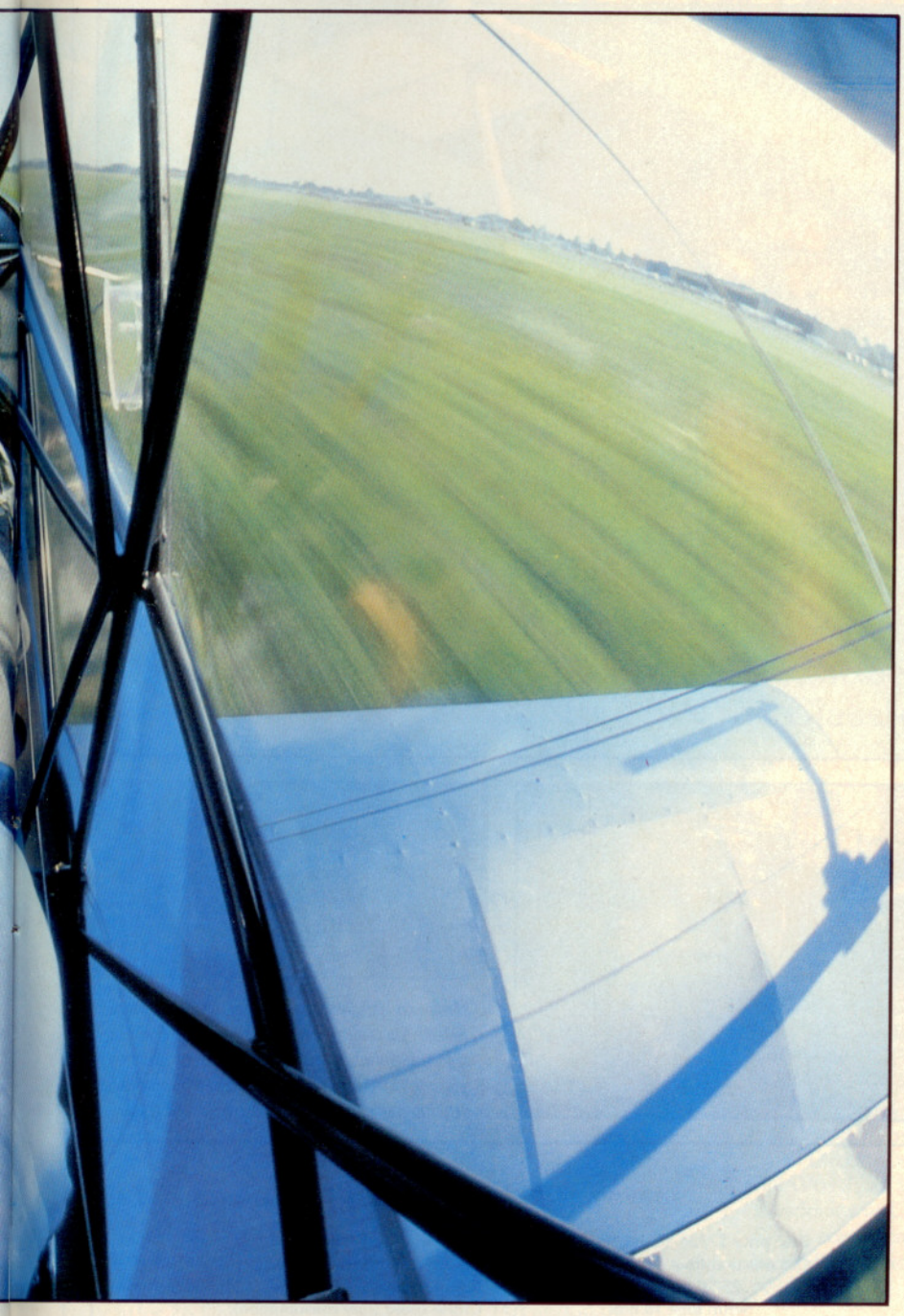
Takeoffs are conventional taildragger—full power, raise the tail and lift off.



If you buy a Hiperlight, you could be faced with an FAA enforcement hassle. There is confusion over the Hiperlight's conformity with FAR Part 103, the rules governing ultralights. According to the regulations, pilots, not manufacturers, are responsible for an ultralight's compliance with the law. You may have a lot of explaining to do if inspectors go on the offensive.

Is the Hiperlight too fast to be legal? This is the central question. There is no debate. The Sorrells, the FAA and pilots all agree: the Hiperlight is capable of a Vh (maximum speed in level flight with full power—the top speed limit set down by Part 103) of approximately 75 mph. Part 103 declares that ultralights must have a Vh no higher than 63 mph (55 knots).

The FAA ignores this infringement because of an agreement secured by the Sorrells. They designed the Hiperlight to the limits first enunciated in a draft Advisory Circular. The purpose of the final form of this AC is to provide a method for determining an ultralight's compliance with FAR Part 103. The draft AC allowed drag factors for exposed struts and wires no shorter than three feet. The final, official version of the Advisory Circular (AC 103-7) raised the limit to four feet, denying the Hiperlite valuable drag points and pushing it out of the acceptable flight envelope.

Though AC 103-7 permits the use of certain devices (throttle stops, changes to carburetion and higher-pitch propellers, for example) to slow an ultralight's Vh, Sorrell felt that the change in the final Advisory Circular's wording was unfair.

The Sorrells lobbied, and the result was a letter from William M. Sacrey, manager of the FAA's general aviation operations branch, that said: ". . .if the instructions contained in Notice 8440.28 [the draft AC] were used to make the determination that a Hiperlight meets the criteria contained in Section 103.1 of the FAR, we would consider that acceptable."

This turn of events gives us the only ultralight that violates the law with the acquiescence of the Federal Aviation Administration.

The Sorrells—and many other ultralight manufacturers—are mavericks vis a vis ultralight airworthiness standards, too. They shun the FAA-approved voluntary airworthiness standards of the Powered Ultralight Manufacturers Association (PUMA). Of PUMA, Mark Sorrell comments: "It is an honorable undertaking, but it doesn't offer that much. As long as you are quality-oriented, PUMA can't do much for you."

The Sorrells indeed are quality-oriented. Many informed observers would say that their indictment of PUMA is less a case of irresponsibility than a manifestation of a growing awareness of PUMA's uninspired and inflexible administration. Many experts feel that this awareness is one of the factors behind the FAA's recent decision to reexamine the adequacy of ultralight self-regulation.

If the Sorrells' opinion reflects the current political thinking in the ultralight industry, then the Hiperlight exemplifies current ultralight design trends as well. The Hiperlight is more airplane than ultralight. It promises an uncomplicated alternative to certificated recreational flying, without sacrificing such simple pleasures as predictable control response and a reliable engine. Four years ago, this was too much to ask. Today, it is taken for granted. □

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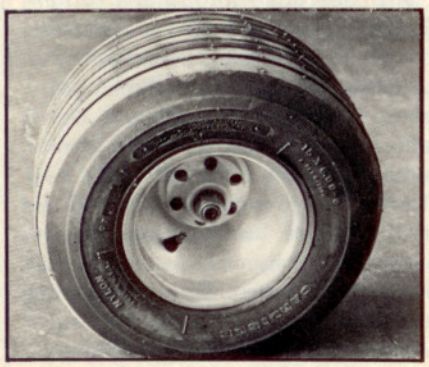
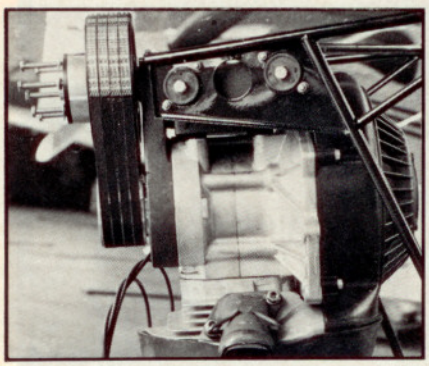
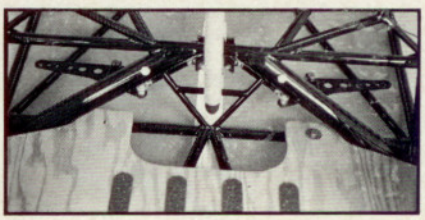
Vh is 75 mph, faster than the ultralight speed limit.







Nine-psi balloon tires (far left) soften rough fields. Austrian 28-hp Rotax engine (center, left) is reliable and quiet. Control mixer (above) combines inputs so that flaperons (below,left) act as both ailerons and flaps.

Sorrell Aircraft Company SNS-8 Hiperlight

Base price $7350 kit; 8950 prefab
Construction time 100-150 hr kit; 25-50 hr prefab
Setup time 10 min

Specifications

Powerplant(s)	Rotax 277 single-cylinder, 28 hp
Drive system	2.5:1
Propeller(s)	60 x 28 wood
Length	15 ft 6 in
Height	5 ft 3 in
Wingspan	22 ft
Wing area	140 sq ft
Wing loading	3.57 lb/sq ft
Power loading	17.85 lb/hp
Empty weight	247 lb
Max gross weight	500 lb
Useful load	253 lb
Max pilot weight	230 lb
Fuel capacity, std	5 gal
Static airframe load test results	+7 Gs (rated)

Performance

Takeoff distance	150 ft
Rate of climb	700 fpm
Cruise speed (fuel consumption)	
60% power	62 mph/55 kt (1.5 gph)
Max endurance/max range	
60% power	3 hr/165 sm
Power-off glide ratio	12:1
Sink rate	250 ft/min
Max recommended crosswind component	20 mph/17 kts

Limiting and Recommended Airspeeds

Power-off stall	27 mph/23 kts
Vy (Best rate of climb)	40 mph/35 kts
Vx (Best angle of climb)	85 mph/74 kts
Vne (Never exceed)	95 mph/83 kts

All specifications are based on manufacturer's calculations. Data calculated on a 170-lb pilot and standard atmospheric conditions. For more information, contact: Sorrell Aircraft Company, 16525 Tilley Road, Tenino, Washington 98589; 206/264-2866.