

SILHOUETTE

A snap-together single-seater with motorglider pretensions

The Silhouette is a fair-weather flyer, a Saturday sportplane with soaring capability. In performance and utility it falls somewhere between an ultralight and a Grob G-109 motorglider. It costs about the same as a used Cessna 150 but is less expensive to operate and can be maintained by the owner. It can even be hangared in the family garage.

A single-seater, the Silhouette is powered by a two-cylinder, two-stroke, 44-horsepower Rotax 447 engine with a 2.58:1 helical-gear reduction drive. The kit sells for \$9,995 including engine and wooden propeller, plus \$250 for packaging, and is designed for speedy assembly.

Silhouette builders do not toil with sanding and gluing wood, bending and riveting metal or stitching and doping fabric. The aircraft is made of fiberglass and foam, and many of the airframe components are molded or shaped by the manufacturer and shipped to the



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builder for final assembly. The fuselage, from the engine cooling inlet to the vertical fin, is molded in two large pieces: left- and right-hand halves, each with an overlapping joggle marked with alignment dimples.

The builder bonds the two fuselage halves with epoxy-impregnated fiberglass tape and then inserts bulkheads. The wing comprises precut rigid polystyrene foam blocks, a preformed fiberglass spar and fiberglass skins applied by the builder. Silhouette Aircraft, Incorporated, in Santa Paula, California, claims the kit can be assembled in fewer than 500 hours.

Task Research, a fiberglass components specialty shop and the parent company of Silhouette Aircraft, had been fabricating molded fiberglass parts for several Rutan Aircraft Factory (RAF) designs. Task was the sole-source supplier of prefabricated airframe components for RAF's Solitaire, a motorglider that features a retractable engine. When Task decided to offer its own design—the Silhouette—it borrowed heavily from the Solitaire design and method of construction. In fact, the prototype Silhouette was built in 68 days from Solitaire plans and components.

(RAF subsequently withdrew its endorsement of Task as the supplier of Solitaire molded parts.)

There are significant differences between the two aircraft. The Solitaire has a canard and is designed to be a self-launched sailplane. The Silhouette has a conventional empennage and was designed around the Rotax engine as an inexpensive, easily built, powered aircraft that can be modified to offer respectable soaring performance.

In standard configuration, the Silhouette has a wingspan of 32 feet. Bolt-on wingtip extensions that add nine feet to the span are offered as an option. With the extensions, the Silhouette has a glide ratio of about 25:1, according to the company. The wing incorporates a three-degree twist at the tips to ensure aileron authority at low speeds. Hangaring a Silhouette could be a major problem because of the long wings, but they can be removed in minutes by extracting four pins and two bolts.

The Silhouette has an empty weight of 490 pounds and a gross weight of 775 pounds. The fuselage fuel tank holds 10 gallons, which, according to the company, provides about three hours 45 minutes endurance. Sea

level rate of climb is 800 feet per minute, and the aircraft cruises at about 105 knots, according to Silhouette Aircraft. The wings have been tested with static loads to six Gs positive and three Gs negative. Limited aerobatic maneuvers have been performed, but the Silhouette has not been spin-tested.

The requirement to keep airframe weight low because of limited horsepower has operational implications for the Silhouette pilot. There are no flaps, and speed and attitude control during an approach must be precise to avoid prolonged floating. The nosewheel swivels freely; differential braking is used for steering. Finally, there is no electric starter. The pilot must grasp a handle that protrudes from the instrument panel and pull on the attached rope. If the hinged canopy is closed, there is not enough elbow room in the snug cockpit to yank on the cord.

Long, narrow wings, a two-stroke engine that is started like a lawn mower and the lack of space for a passenger or luggage limits the Silhouette's appeal. But if the criteria is economical fun and an occasional turn at chasing thermals, the Silhouette is one to consider.

—Mark R. Twombly