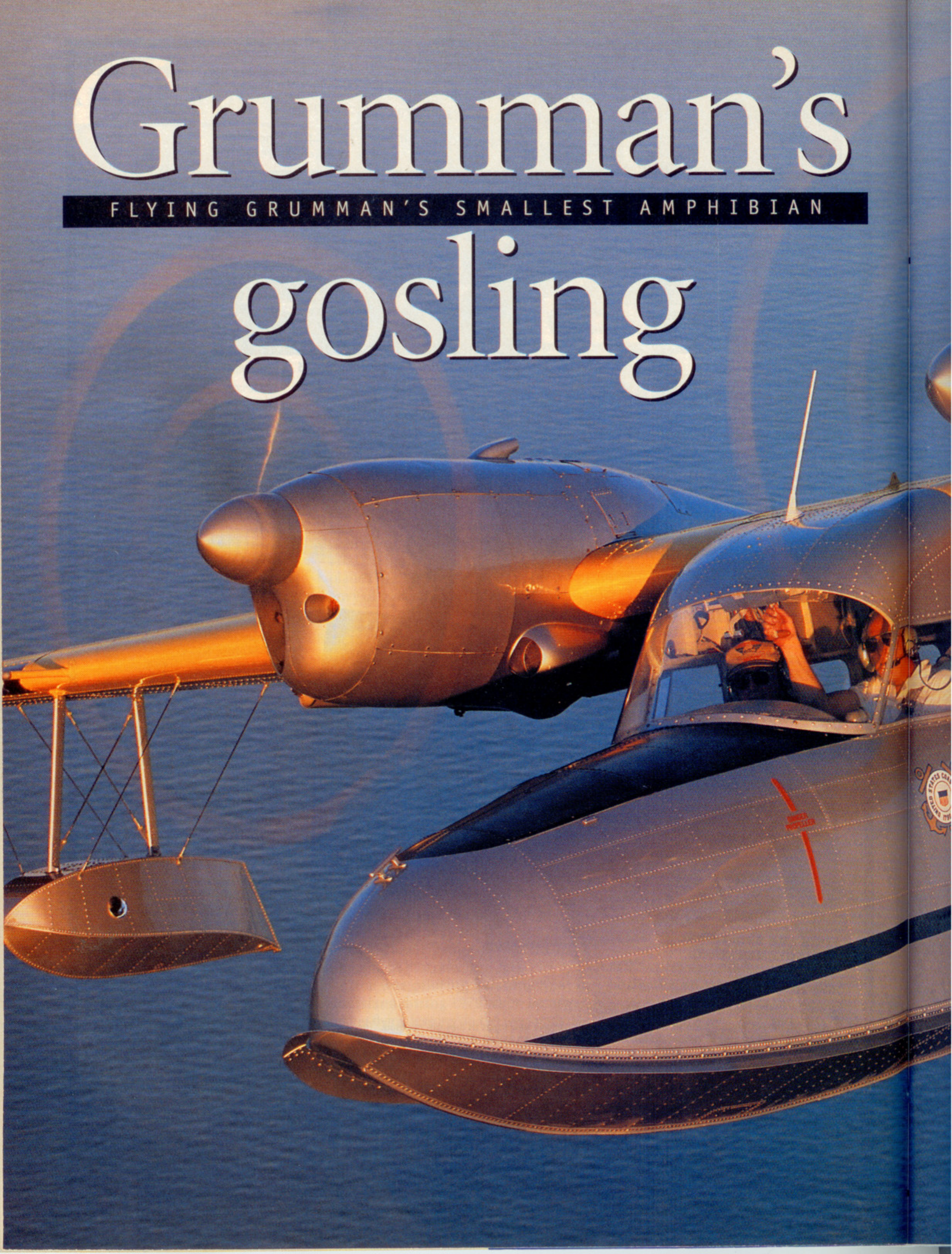
Grumman's gosling

FLYING GRUMMAN'S SMALLEST AMPHIBIAN



BY BARRY SCHIFF

A pilot inspecting a Grumman G-44 Widgeon for the first time might think that a World War II tank manufacturer had built the airplane. The fuel caps weigh two pounds each; the landing gear assembly is so rugged that it can be extended safely at any airspeed; and the master switch is a hefty lever that, when moved through its several inches of lateral travel, goes "klunk" upon reaching its On or Off position. This clearly is an airplane designed and built to last. ■ This is why the Grumman Aircraft Engineering Corporation was known during its heyday as the Grumman Iron Works. There was nothing fragile about a Grumman-built airplane. ■ The

PHOTOGRAPHY BY MIKE FIZER

The 200-horsepower inverted in-line Ranger engines are mounted high above the water's surface to prevent spray from damaging the propellers during takeoff.

Widgeon is the smallest of four amphibious flying boats built by Grumman. The first was the indestructible, eight-seat G–21 Goose, which debuted in 1937. The popularity of the Goose created a demand for a smaller amphibian, which led to development of the Widgeon in 1940.

Except for size, the Widgeon and the Goose are similar in appearance. The most distinctive visual difference between the two aircraft is the powerplants. The diminutive Widgeon has six-cylinder, inverted in-line engines (Ranger 6-440-C5, 200 horsepower each) while the larger Goose has nine-cylinder radial engines (Pratt & Whitney R-985 Wasp Junior, 450 hp each). A number of Widgeons, however, have been reequipped with more powerful Lycoming or Continental engines and are called Super Widgeons.

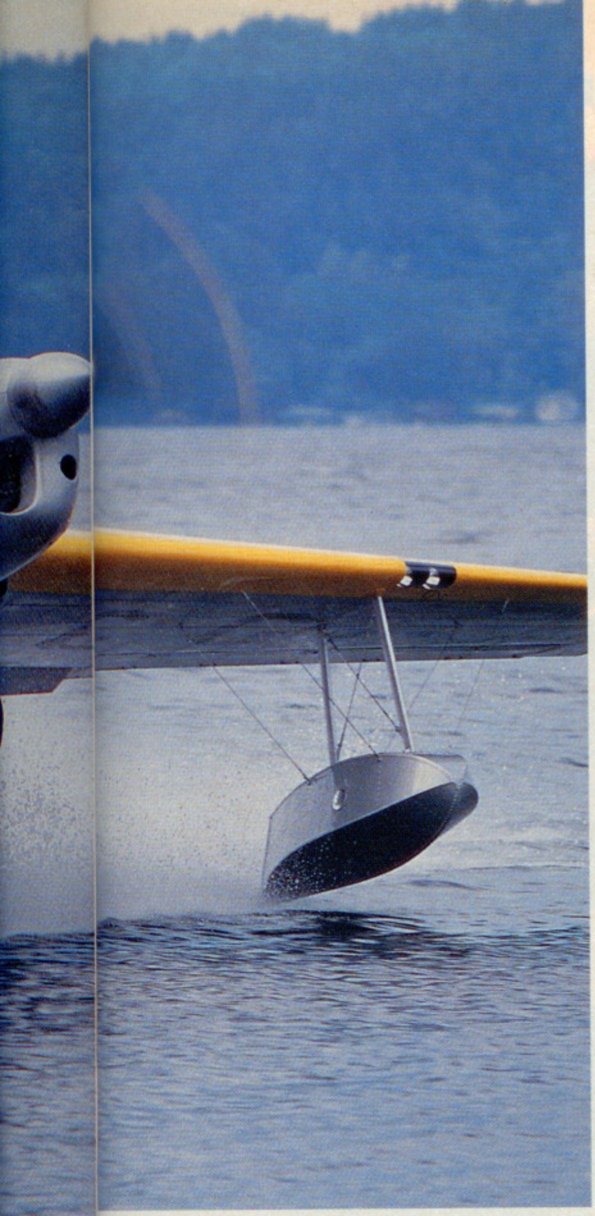
Most Widgeons built before and during World War II were snapped up for use as submarine spotters by the U.S. Coast Guard (the J4F-1), the Navy (the J4F-2), the Army Air Corps (the OA–14), and the Portugese navy. The G-44A, an improved civilian version of the Widgeon, was introduced in 1944. Production ended in 1949 after a total of 276 Widgeons had been built at Grumman's Bethpage, Long Island, plant.

Grumman built two additional amphibious flying boats. One was the G–73 Mallard "air yacht" that seated 12 and had tricycle landing gear. The other was the 27,500-pound, twin-engine HU–16 Albatross that was used primarily by the military for air-sea rescue operations (although a few are now in private hands).

N1340V (Serial No. 1228) is a pristine example of a Grumman Widgeon that is kept by its owner, Merrill Wien, at Orcas Island Airport on Orcas Island, one of the San Juan Islands at the northern end of Washington's Puget Sound. This G–44 began life in 1941 when it was delivered to the Coast Guard. Wien purchased the airplane in 1981 for $40,000 and then, with the assistance of Pat Prociv and an investment of more than $250,000, totally rebuilt the airplane and restored it to its original Coast Guard colors. The most significant modification made to the airplane during the rebuilding process was exchanging the wooden, fixed-pitch Sensenich propellers for constant-speed, full-feathering Hartzells.

"With fixed-pitch props," Wien says, "you could only get 2,060 static rpm at full throttle, which is only about 130 to 140 hp per engine. Performance is improved dramatically with constant-speed props because you can get maximum-allowable rpm [2,450] and a full 200 hp per engine from a standing start."

Since it was rebuilt, Wien's airplane



The control surfaces on the Widgeon's cruciform tail are fabric-covered, as are the ailerons (top right). There is no such thing as a minimum safe altitude when flying over smooth, open water in a seaplane (right).

has never been exposed to salt water operations and has an estimated value of $300,000.

If the Wien name sounds familiar, it should. Merrill's father, Noel Wien, was the Alaskan bush pilot whose exploits and explorations are both legion and legendary. (Highly recommended is the book *The Story of Noel Wien,* by Ira B. Harkey Jr.)

In this case, the apple did not fall far from the tree. Merrill Wien is a remarkably accomplished pilot in his own right. He soloed a Luscombe 8A in Seattle on his sixteenth birthday in 1946 and since then has accumulated more than 30,000 accident-free and adventurous

The hatch to the right of the instrument panel leads from the cockpit into the forward cargo compartment. Note the throttles and propeller controls mounted on the ceiling (top). The Widgeon's cabin is no more decorative than the inside of an aluminum box (left).

hours doing what most of us can only dream about.

Wien's extremely diversified career includes flying an assortment of piston and turbine airliners for Pan American Airlines, Air America, and Wien Alaska Airlines. He flew in the Air Force for five years and devoted another chunk of his life to bush flying in Alaska's hinterlands. The latter included glacier operations in a Cessna 185 skiplane, flying helicopters to tag polar bears on the ice shelf north of Point Barrow, and supplying scientific stations by flying a Douglas DC–4 in and out of ice islands near the North Pole. He also flew a Fairchild

C-119 during covert operations to snag balloon-lifted surveillance cameras "somewhere" over Asia.

He has owned 10 aircraft (including a Lockheed P-38 and two North American B-25s) and is currently a command pilot with the Confederate Air Force, flying such exotic former military machines as the Boeing B-17 Flying Fortress, Consolidated B-24 Liberator, and Boeing B-29 Superfortress.

And this just scratches the surface.

A flying boat is designed from the beginning to be a seaplane, unlike floatplanes, which are landplanes modified with floats. Its boat-like hull and relatively low center of gravity enable it to operate in sea conditions that could be disastrous to a floatplane.

Like almost all flying boats, the Widgeon has a high wing that places the engines as high as possible to reduce water spray that can damage propellers. The disadvantage becomes obvious during a preflight inspection. Without a tall ladder available, the pilot must climb forward along the top of the fuselage and onto the wings to check fuel and oil quantities—a decidedly unpleasant chore during harsh weather conditions. (The 108-gallon fuel supply is divided in two 54-gallon wing tanks.)

A single hull, however, is not as laterally stable as the wider stance of a floatplane. Wing-mounted floats are used on "boats" to prevent a wing tip from striking the water.

The original Widgeon was all-metal except for the fabric that covered the primary control surfaces, flaps, and that portion of each wing aft of the spar. (Fabric saves weight and reduces the likelihood of flutter.) During the rebuilding process, the flaps and aft wing sections of Wien's Widgeon were metalized. There is one trim tab on each elevator. The left tab is conventional, but the one on the right deflects only downward and automatically when the high-lift, slotted wing flaps are extended (to partially offset the nose-down pitching moment caused by flap deployment).

Aside from draining whatever water might have seeped into watertight compartments (which is normal during water operations) and verifying that no one has absconded with the stainless-steel anchor stored in the bow, the preflight inspection is routine.

Pilots and passengers enter the Widgeon through a single hatch on the left side of the fuselage immediately aft of the left wing, an initially challenging procedure for tall people.

The instrument panel spans only the left and center sections of the available space. This leaves a vacant area where the copilot's instruments would otherwise be. This open area allows someone to crawl forward and into the bow, open the top hatch, and aid in anchoring or mooring at a buoy. It also is a great place from which to fish.

The arrangement and distribution of controls, switches, levers, and instruments takes getting used to. The upper control panel above the windshield contains the throttles, trim-tab controls, tailwheel lock, landing-gear lever and latches, flap control, ignition, and various other switches and instruments. The upper rear panel is on the ceiling aft of the upper control panel and contains fuel-system, mixture, and carburetor-heat controls. This also is where the oversized master switch is located. Because these controls are not logically or ergonomically placed, it behooves a new Widgeon pilot to spend ground time in the cockpit becoming familiar with the locations of critical controls.

The single vertical control column to which the control yokes are attached is between the pilots' seats. Before being modified, Wien's Widgeon had a single throw-over control wheel, as do many Beech Bonanzas. Although the left-seat pilot is provided with rudder/brake pedals, the right-seat pilot has a rudder bar (like the steering handles of a snow sled) and no brakes.

The fully castering, retractable tailwheel is not steerable. Directional control is maintained using differential braking. There is no problem seeing over the low nose of this taildragger, and it is well-mannered on the ground. But if a pilot is concerned about the Widgeon expressing a directional will of its own while taxiing, taking off, or landing on land, he can use a lever on the overhead panel to engage the tailwheel lock. Having to reach up to manipulate the throttles is different, but even a new "boat" pilot becomes quickly acclimatized to it.

Takeoffs and landings on land are unremarkable for a taildragger. It is when being operated on water that the Widgeon becomes challenging. Wien checked me out in water operations at eight-mile-long Lake Whatcom near Bellingham on the Washington mainland.

As the throttles are advanced for takeoff, the sprite little boat yaws left before the rudder has sufficient airspeed to arrest the turn. (Unlike floatplanes, the Widgeon does not have a water rudder; directional control while taxiing is maintained with differential thrust.) The same yawing moment is created by the engines of conventional twins but is largely negated by the nosewheel tire.

Taking off from water in a Widgeon requires advancing the left throttle ahead of the right to maintain a constant heading. An alternate method is to start the takeoff run at a heading that is 30 degrees right of the desired takeoff run. I found it preferable to use differential thrust, while others prefer to use an offset heading.

The only takeoff data available for a Widgeon on water is cited in the meager pilot's handbook as "25 seconds." With constant-speed propellers, this reportedly is reduced to 12 seconds.

When taking off with miles of water visible through the windshield, the notion of an engine failure immediately

The rugged landing gear allows a Widgeon to be safely taxied up an unimproved lakeside ramp and into the owner's backyard.

after liftoff is not as daunting as when flying a light twin from land. Simply land straight ahead and worry later about how difficult or impossible it can be to steer the boat on water with asymmetric thrust.

Once airborne, the Widgeon is just another light twin, but you still cannot escape the exciting notion that you are flying a boat that belongs as much on water as in the air. And although we went through the full regimen of aerial maneuvers, I was eager to return to the lake. One noteworthy observation is that the constant-speed, full-feathering propellers on Wien's Widgeon provide acceptable engine-out performance. The single-engine rate of climb and service ceiling with fixed-pitch propellers (that do not feather) are regarded as nil.

Also, the high thrust line of the engines causes a slight nose-down pitching moment when adding power and a nose-up moment when reducing power.

As we returned to Lake Whatcom, I went through the required mental litany over and over again. This will be a water landing; the landing gear will not be extended.

Although each pilot has a small sliding-glass window that may be opened in flight, I learned the wet way that they should be closed before landing. Otherwise, a bath towel should be included on the minimum-equipment list.

The 65-kt approach and 50-kt touchdown are relatively conventional. There are no surprises until the Widgeon is firmly on the water. This is when a new Widgeon pilot discovers that the most demanding aspect of operating a Widgeon on water is controlling its headstrong penchant for porpoising, especially during downwind step turns. It takes considerable practice and humility to learn the skills and develop the timing necessary to keep the porpoising under control. If allowed to become sufficiently divergent, it is possible to lose the airplane. (One owner has understandably named his Widgeon *The Petulant Porpoise.*) Wien controls this tricky characteristic almost effortlessly; it is like watching a maestro at work.

The wing floats prevent pulling alongside a dock and parking unless someone is on the dock ready to grab a wing tip or float strut. Ramping is much easier. While very slowly approaching a ramp, lower the landing gear (hydraulically) and allow the wheels to contact the rising slope. As the aircraft comes to a stop, add substantial power to pull the machine out of the water and onto land, steering as necessary with differential power to remain on the ramp.

The rugged and hefty appearance of a Widgeon belies its delightful handling qualities and performance. It is a wonderful blend of amphibious utility and pure, unadulterated fun. □

Links to additional information on amphibious aircraft can be found on AOPA Online (www.aopa.org/pilot/links.shtml).

1941 Grumman Aircraft Engineering Widgeon G-44
Price new: $28,000
Price as tested: $300,000 (estimated)

Specifications

Powerplants	2 Ranger 6-440-C5, 200 hp
Recommended TBO	on condition
Propellers	Sensenich wooden, two-blade, fixed-pitch, 72-in dia
Length	31 ft 5 in
Height (on wheels)	9 ft 7 in
Wing span	40 ft
Wing area	245 sq ft
Wing loading	18.5 lb/sq ft
Power loading	11.3 lb/hp
Seats	5
Cabin length	12 ft 1 in
Cabin width	4 ft
Cabin height	4 ft 5 in
Empty weight	3,240 lb
Empty weight, as tested	3,396 lb
Maximum takeoff weight	4,525 lb
Useful load	1,285 lb
Useful load, as tested	1,129 lb
Payload w/ full fuel	637 lb
Payload w/ full fuel, as tested	481 lb
Maximum landing weight	4,525 lb
Fuel capacity, std	108 gal
Oil capacity, ea engine	14 qt
Baggage capacity	400 lb (stern) 20 lb (bow)

Performance

This data is based on a stock airplane with Sensenich fixed-pitch, wooden propellers. The test aircraft had been modified with Hartzell constant-speed, metal propellers that substantially improve low-end performance but for which performance data is unavailable.

Takeoff distance, ground roll	900 ft
Takeoff time, water run	25 sec
Rate of climb, sea level	700 fpm
Maximum level speed, 3,000 ft	143 kt

Cruise speed/endurance w/no rsv, std fuel (fuel consumption, ea engine)	
@ 75% power, maximum	130 kt/4.5 hr 6,000 ft 72 pph/12 gph
@ 62.5% power, recommended	120 kt/5.5 hr 6,000 ft 60 pph/10 gph
@ 50% power, economical	109 kt/6.5 hr 6,000 ft 49.5 pph/8.25 gph
Service ceiling	14,600 ft
Single-engine service ceiling	near sea level
Landing distance, ground roll	600 ft

Limiting and Recommended Airspeeds

V_{MC} (min. control w/one engine inoperative)	70 kt
V_X (best angle of climb)	70 kt
V_Y (best rate of climb)	80 kt
V_{XSE} (best single-engine angle of climb)	69 kt
V_{YSE} (best single-engine rate of climb)	80 kt
V_{FE} (max flap extended)	90 kt
V_{LE} (max gear extended)	unlimited
V_{LO} (max gear operating)	unlimited
V_{NO} (max structural cruising)	152 kt
V_{NE} (never exceed)	182 kt
V_{S1} (stall, clean)	65 kt
V_{S0} (stall, in landing configuration)	57 kt

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmospheric pressure, sea level, gross weight conditions unless otherwise noted.