Lockheed 12-A Electra Junior

Love story

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BY BARRY SCHIFF

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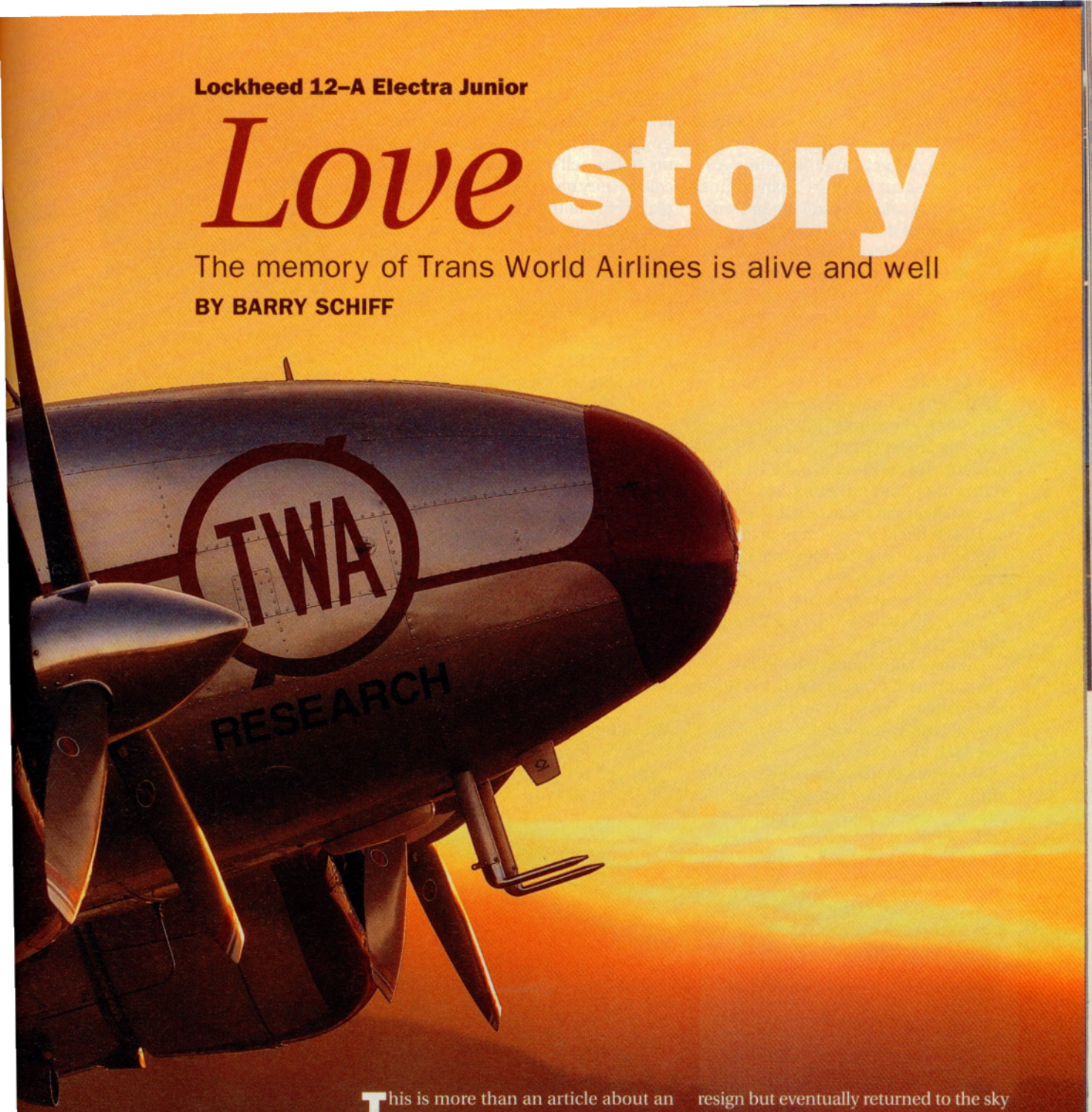


This is more than an article about an airplane. It is also a love story.

It begins when Ruth Richter Holden was a child. Her father, Paul Richter Jr., was executive vice president of Trans World Airlines and one of its three founders. She grew up in Kansas City, Missouri, TWA's hometown, as an "airline brat" surrounded by TWA people and their airplanes.

Holden was enthralled by flight and became a TWA "hostess" in 1955, working the round-engine airliners of that era. She married in 1958. At that time management did not permit flight attendants to be married. She was forced to resign but eventually returned to the sky as a pilot and now has 1,500 hours, an instrument rating, and a Piper Warrior.

Wanting to honor her legendary father, who died at 53 when she was a teenager, Holden created a Web site (www.paulrichtertwalegend.com) detailing his involvement with TWA.

This Web site caught the attention of Ed and Connie Bowlin, who wanted to sell their Lockheed 12–A Electra Junior. The airplane had once been owned by TWA, and the couple had hoped that Holden could provide historical information that would help them to sell the airplane.

PHOTOGRAPHY BY MIKE FIZER

Desire

NC18137 was built in 1937 at Lockheed Aircraft's Burbank, California, factory and delivered new to Continental Airlines for use on its short, lean routes. Continental sold the airplane to Transcontinental and Western Air (later called Trans World Airlines) in 1940. The Electra Junior was operated by TWA from 1940 to 1945 as an executive transport and as an airborne research laboratory. It was used, for example, to develop static discharge wicks. At the end of WWII, TWA sold the Electra to the Texas Oil Company (Texaco).

Holden knew that TWA had owned only one Model 12A (TWA aircraft number 240), and the Bowlins' e-mail sent her scurrying to her father's stack of logbooks. There she verified that her father had taken her at the age of 10 on a flight from Kansas City to Washington, D.C., in that same airplane. That was on July 16, 1944. She also recalls having been flown in it two years earlier with TWA President and pilot Jack Frye.

During a subsequent telephone conversation with Connie Bowlin, Holden said matter of factly, "I don't know why I should help you to sell this airplane. I should be the one to buy it."

She recalls thinking that she could not afford the airplane but simply had to have it. "You don't go looking for love; it finds you."

Holden adds, "I purchased the airplane sight unseen in June 2005, even if it might have meant having to mortgage my home, sell my firstborn, and let the county bury me in a pauper's graveyard. I placed my faith in the ancient aviators who will help me to find a way to keep and fly *Ellie*." (So named by Holden from the initials of the Lockheed Electra.)

Holden had no buyer's remorse, even though she had no idea how she would get the aircraft from Griffin, Georgia, to her home in San Luis Obispo, California. She had neither a taildragger endorsement nor a multiengine rating. Fortunately, she was able to sweet-talk her close friend Curt "Rocky" Walters, a captain for American Eagle, into going to Georgia with her and getting checked out in the airplane.

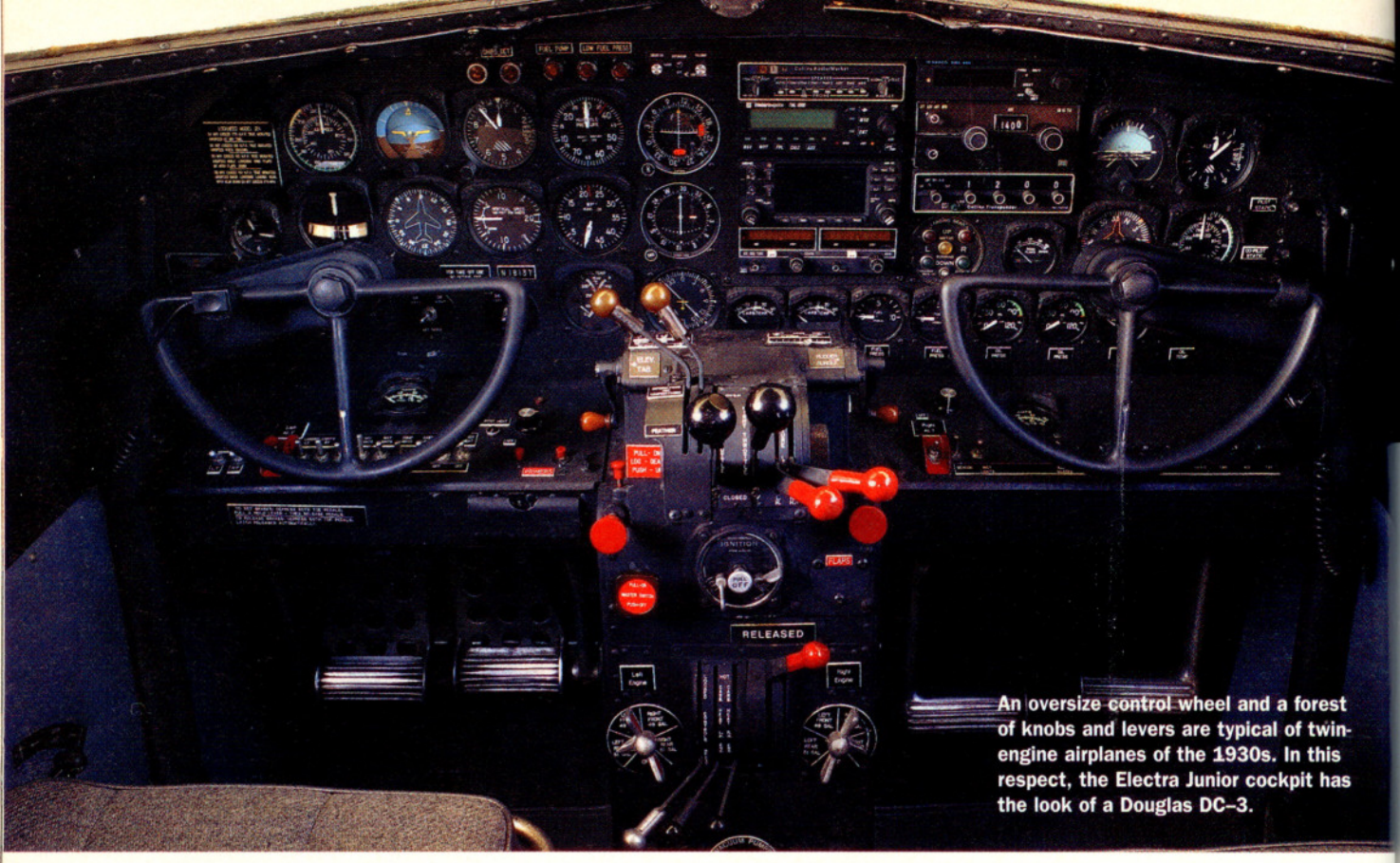
Walters flew the airplane to California with Holden riding shotgun and grinning all the way. He, too, fell in love with the airplane and became Holden's partner in its purchase. They immediately began the process of restoring "old number 240" to its original condition and TWA livery.

Mistaken identity

The untrained eye often mistakes the Lockheed Electra Junior for the venerable Model 18 Twin Beech. The two air-

Sprightly Ruth Richter Holden shows jubilation and enthusiasm after her Electra Junior is restored to its original TWA livery (above). Her partner, Curt "Rocky" Walters, dons a TWA captain's hat (right).

Club seating provides spacious accommodations for four, but the Lockheed must have been cramped when configured as an airliner to accommodate eight passengers. A jump seat (left) allows an observer to sit behind the captain.



An oversize control wheel and a forest of knobs and levers are typical of twin-engine airplanes of the 1930s. In this respect, the Electra Junior cockpit has the look of a Douglas DC-3.

craft are very similar in appearance, and there are so many more Twin Beeches than there are Electras. Lockheed had built only 130 Juniors when World War II began, necessitating a shift in the factory's focus from civil to military aircraft. Less than a dozen Juniors are still flying worldwide.

The fuselage of the Electra Junior tapers to distinctive and petite vertical fins, a trademark of its legendary designer, Kelly Johnson. The landing gear was designed by Lloyd Stearman.

With a maximum cruise speed of 225 mph, it was the fastest transport airplane of its day.

The Electra Junior was the airplane in which Victor Laszlo and his wife, Ilsa Lund, escaped from Morocco in the classic 1942 film *Casablanca*, starring Humphrey Bogart and Ingrid Bergman.

Paraphrasing author Bob Grimstead, "The Electra Junior is reminiscent of an elegant era when style was an integral part of all great designs." Lockheed's next airliner, the curvaceous Constellation (colloquially called "Connie"), was arguably the most stylish of all.

The Electra Junior has two cargo compartments, one in the nose and another aft of the cabin. They carry a maximum of 450 pounds, 250 up front and 200 in the rear. The center-of-gravity limits reportedly cannot be violated as long as neither cargo compartment is overloaded.

Cabin entry is made through a passenger door behind the left wing. You then climb up the inclined cabin, over the wing spar, and into the cockpit.

Hallowed ground

Walters invited me to sit in the hallowed left seat, the same seat that decades ago had been occupied by famed TWA aviators such as Frye, Richter, Daniel "Tommy" Tomlinson, and, the most famous of all, Howard Hughes. (Although Hughes flew many of TWA's airplanes wherever and whenever he wanted, he never flew one in passenger service.) It almost felt as though I were walking on a grave.

Cockpit ambiance reeks of aviation's Golden Age. Even the old leather smell is from a bygone era. I slowly and reverently allowed my fingers to wander and lightly touch and become familiar with the old controls, levers, knobs, switches, and instruments.

I pulled out the large square knob that is the master switch, completed the before-start checklist, and began the busy two-handed sequence of steps needed to awaken the supercharged 450-horsepower Pratt & Whitney engines. The procedure is more art than science. Like other radial engines, each engine comes to life one or two cylinders at a time, belching and coughing great swarms of smoke guaranteed to create instrument conditions for anyone standing behind.

Before taxiing, Walters told me that I was the only one with access to the toe brakes. "The bad news is that the airplane has poor brakes," he cautioned. He then added with a smile that "the good news is that it has poor brakes." I understood; although we would not be able to stop in a short distance, the ineffective brakes made it less likely that I would ground loop or cause the taildragger to nose over during a botched landing.

Over-the-nose visibility is not great. Shallow S-turns are helpful during taxi to ensure that it is clear ahead.

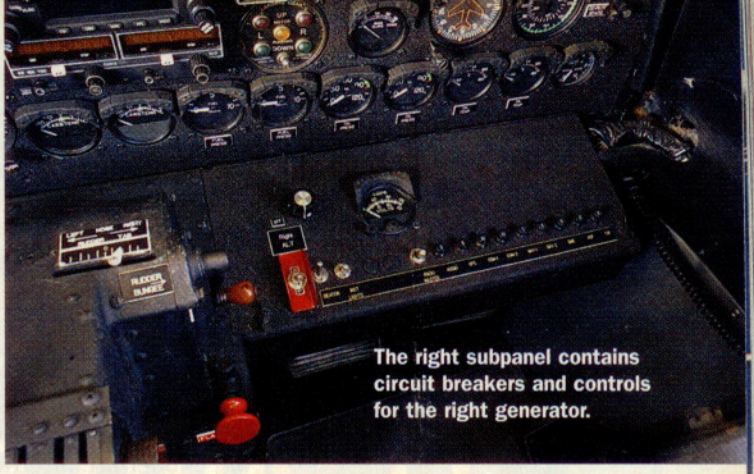
After a conventional runup, I taxied onto the runway, lined up with the centerline, and engaged the tailwheel lock to tame the taildragger during its takeoff roll. Flaps are not used for takeoff.

Getting along

I advanced the throttles, leading slightly with the left to help keep Junior tracking true. The tail comes up by itself at about 40 mph, but some forward pressure is required with a cabin full of passengers. *Ellie* shows that she is ready to fly by serenely levitating without any help from the pilot, thank you.

The engines are limited to 450 horsepower for 1 minute. Maximum continuous is 400 horsepower.

The left subpanel contains electrical switches and controls for the left generator.



The right subpanel contains circuit breakers and controls for the right generator.

Cockpit ambiance reeks of aviation's Golden Age. Even the old leather smell is from a bygone era.

Surprisingly, there are no cowl flaps, and as expected, high oil temperatures can be a problem.

In-flight visibility from the cockpit is fair to poor because of the small windscreens and huge engine cowlings acting like a pair of blinders.

Did I mention that the cockpit is noisy? It is. There are two reasons to keep the power low, to preserve fuel and your hearing. Noise level in the cabin, though, is pleasantly acceptable.

The airplane flies nicely about all axes at all speeds, except that the ailerons are a bit heavy and create considerable adverse yaw effect without appropriate rudder assistance.

Many of the V-speeds and performance information to which modern pilots usually have access are not available to Electra pilots. Niceties such as landing distance, V_X (best-angle-of-climb speed), and V_{YSE} (best-rate-of-climb speed with an engine out), for example, can only be estimated.

The fuel system consists of four tanks, a forward and an aft tank in each wing, which hold a total of 200 gallons. Either engine can be supplied by any tank.

A safety feature usually found only on larger airplanes is that the forward fuel tanks can be dumped to improve engine-out performance at heavy gross weights.

Each engine has a vacuum pump to spin the gyros, but you must select which one you want to use. The other serves as a standby pump.

The landing gear is extended electrically between 120 and 140 mph. At more than 140 mph, the motor has difficulty pushing the legs down and forward against the relative wind and into the locked position. At less than 120 mph, the gear clunks hard against the forward stops.

The main landing-gear legs are physically interconnected, so if one comes down, you know that the other is down, too. The tailwheel, however, is welded down.

Once the main gear has been extended you can accelerate to the redline airspeed of 275 mph (if desired).

There are no wheel-well doors. When the gear is retracted, half of each wheel protrudes from the bottom of its nacelle and would help to protect the airframe in the event of a wheels-up landing.

The Electra Junior is strictly an electric airplane. Hydraulics is used only to operate the disc brakes.

With a 2-foot chord, the electrically operated split flaps are large and effective, but they move slowly, requiring 22 seconds to go all the way down. As the flaps extend, the ailerons droop about 10 degrees, providing the effect of full-span flaps. Both the landing gear and the flaps can be raised or lowered using a hand crank in case of an electrical malfunction.

Memories

I retired from TWA in 1998, and my airline ceased to exist when American Airlines acquired TWA in 2001 and immediately stripped away the historic logo from wherever it existed. The sense of déjà vu was almost overwhelming when I heard the voice of San Luis Obispo Tower coming through the headphones after I reported downwind. "TWA One-Three-Seven, you're cleared to land."

The cockpit seemed filled with ghosts. I could almost hear a TWA graybeard with four gold stripes warning me as I turned onto final approach. "Don't screw up the landing, kid. We're watching."

I came over the fence at 85 mph and touched down with a wheel landing at

65 mph. The long-legged Lockheed rolls on effortlessly, making even a mediocre pilot look good. The elevator is so effective that forward pressure on the control yoke keeps the tail off the ground until slowing to almost taxi speed.

The Lockheed Electra Junior first flew on June 27, 1936, six months before the Twin Beech, and was an advanced airplane for its time. It was a slim, scaled-down version of the Model 10E Electra, the larger airplane in which Amelia Earhart attempted to fly around the world in 1937.

With the same engines and much less weight and drag than the 10E, the Junior has superior performance, leading some to speculate that Earhart might have succeeded had she used the more efficient 12–A. (Only two Model 12–Bs were built. These were identical to the 12–As but had less powerful, 420-horsepower Wright Whirlwind engines.) The "Baby Electra" carried eight passengers in airline configuration but only four or six as a corporate aircraft.

Only six Electra Juniors were purchased by the airlines; the rest were sold as corporate, private, and military aircraft. The airplane was so well designed and built that it is one of very few never to have had an airworthiness directive issued against it.

Thanks to Holden, Walters, and *The Spirit of TWA* (the official name they have given to their airplane), the memory of TWA is alive and well.

Holden and Walters do not consider themselves "owners" of the Electra Junior. They instead regard themselves as guardians of a living, flying legacy. They insist that the airplane belongs to the public in general and to the TWA community in particular. They use it to bring joy and inspiration to all who experience it. The airplane touches your soul. AOPA

i Visit the author's Web site (www.barryschiff.com).

SPECSHEET

Lockheed 12–A Electra Junior

Base price (1937): $39,500
Price as tested (2006): Approx. $400,000

Specifications

Powerplants	Pratt & Whitney R-985 Wasp Junior, 450 hp
Recommended TBO	1,600 hr
Propellers	Hartzell constant speed, full feathering, 3 blade, 7 ft-11.5-in dia
Length	36 ft 4 in
Height	9 ft 9 in
Wingspan	49 ft 6 in
Wing area	352 sq ft
Wing loading	26.1 lb/sq ft
Power loading	10.2 lb/hp
Seats (as tested)	6 + 1 jump seat
Cabin length	14 ft 10 in
Cabin width	4 ft 8 in
Cabin height	4 ft 11 in
Empty weight	5,960 lb
Empty weight, as tested	6,487 lb
Max ramp weight	9,200 lb
Max gross weight	9,200 lb
Max landing weight	8,650 lb
Useful load	3,240 lb
Useful load, as tested	2,713 lb
Payload w/full fuel	2,040 lb
Payload w/full fuel, as tested	1,513 lb
Max takeoff weight	9,200 lb
Max landing weight	8,650 lb
Fuel capacity, std	200 gal (200 gal usable) 200 lb (1,200 lb usable)
Oil capacity, ea engine	29 qt
Baggage capacity	450 lb, 63 cu ft

Performance

Takeoff distance, ground roll	710 ft
Rate of climb, sea level	1,470 fpm
Single-engine ROC, sea level	580 fpm
Max level speed, 5,000 ft	226 mph
Cruise speed (fuel consumption, ea engine) @ 300 hp, best economy, 9,600 ft	212 mph (168 pph/28 gph)
@ 240 hp, best economy, 12,000 ft	204 mph (114 pph/19 gph)
Max range (7,000 ft, 200 hp, 32 gph, 45 min reserve)	1,050 sm
Service ceiling	22,900 ft
Single-engine service ceiling	7,350 ft
Absolute ceiling	25,100 ft

Limiting and Recommended Airspeeds

V_{MC} (min control w/critical engine inoperative)	95 mph
V_Y (best rate of climb)	125 mph
V_{YSE} (best single-engine rate of climb)	110 mph
V_A (design maneuvering)	144 mph
V_{FE} (max flap extended)	125 mph
V_{LE} (max gear extended)	275 mph
V_{LO} (max gear operating)	150 mph
V_{NO} (max structural cruising)	230 mph
V_{NE} (never exceed)	275 mph
V_R (rotation)	80 mph
V_{S1} (stall, clean)	74 mph
V_{SO} (stall, in landing configuration)	64 mph

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted. Many of the performance figures normally provided for modern aircraft, such as V_X and landing distance, often were not available to pilots of pre-World War II airplanes.