



Budget buys

Real beauties

The airplanes you can take home to mom

BY STEVEN W. ELLS

Pilots who have an eye for form and function will probably agree that the Cessna 120 and its sibling, the 140, are airplanes that have eye appeal. The rounded rudder, conventional landing gear, and overall proportions create the classic lightplane look. When Cessna flooded the lightplane market with these beauties following the end of World War II, few people realized how important this honest little airplane would turn out to be in the history and development of the Cessna Airplane Company.

The 140 and its lean little brother, the 120, jump-started Cessna's transition to a peacetime business after World War II. Between 1946 and 1951, when production of the 140 ended, more than 7,500 of these airplanes had rolled out the doors in Wichita. Not only did this airplane provide a tremendous economic boost for postwar Cessna, the design also helped establish the strut-braced single-engine line of Cessnas as air-

PHOTOGRAPHY BY MIKE FIZER



Retired Delta Air Lines Capt. Frank Bottoms Sr. purchased his 1946 Cessna 140 in April 1997. Bottoms joins some 25 to 30 members of the “gaggle fleet”—his neighborhood flying subdivision’s group of retired pilots in Spruce Creek, Florida, who fly each Saturday morning for \$100 breakfasts. “This is a lot more fun than the Lockheed 1011 that I flew to Europe,” he says.

frames that could, to borrow a line from Timex, “take a licking and keep on ticking.”

The design philosophy that is the key to the astounding in-flight structural-integrity record of all strut-braced Cessnas started with the 140 and was finalized in 1948, with the creation of the metalized single strut-braced wing for the 170 series. This wing was then installed on the 140A, which was produced until 1951.

Cessna’s transition airplane

Today there seem to be Cessna airplanes on every ramp of every airport in the world, but it wasn’t always so. Cessna’s real start began during the prewar buildup when the U.S. Army placed an order for 33 T-50s, a bulbous-shaped, tube-and-fabric twin that was powered by two 290-horsepower Lycoming radial engines with nonfeathering propellers. This was the largest single airplane order Cessna





had ever received. As suddenly as the war had catapulted Cessna from a small company into a bustling factory with more than 6,000 employees, all wartime production ended abruptly in mid-1945. The first evidence of Cessna's ability to respond to a new postwar world was a taildragger two-seater dubbed the 140—or was it the 120 that came first?

120 or 140—which came first?

Depending on whom you talk to, there will always be differing opinions on whether the Cessna 120 or the Cessna 140 came first. The type certificate data sheet (TCDS) lists the 140 as being approved on March 21, 1946, starting with serial number 8001, and the 120 a week later, on March 28, with serial number 8003. The stark little 120 listed at \$2,695. The 140 differed from the 120 since it was equipped with an electrical system, featuring a Delco Remy genera-

Bill Hess' 1947 Cessna 120 suffered wing damage sometime during the 1960s, and a previous owner replaced the 120 wings with 140 wings. "When people ask me what type of airplane this is, I say a 'single-engine Cessna 130'—halfway between a 120 and a 140." Hess, who flew the governor's airplane for the State of New York—beginning with John D. Rockefeller—purchased the airplane in 1996 in order to join Spruce Creek's "gaggle fleet." The Cessna 120/140s are "good-time airplanes," Hess says.

tor and a pull cable-actuated starter, split-type wing flaps, quarter windows behind each door, and tube-and-fabric wings. The list price for a 140 was \$2,995. The airplanes were an immediate success.

Five-year production run

In 1946 Cessna sold 3,846 120 and 140 airplanes. The 120/140 was such an appealing new design that Cessna was delivering 30 airplanes a day. But the market flattened quickly, and yearly production numbers tapered off to 2,523 airplanes in 1947 and 704 over the

next two years before the end of 120/140 production in 1949.

The 140A was introduced in 1949 with new all-metal wings that were first developed in 1948 for the four-place 170 program. In three years of production, 525 140A airplanes were sold.

Standard equipment

Fabric-covered wings, an all-metal fuselage, an 85-hp four-cylinder Continental C-85 engine and two wing-mounted 12.5-gallon fuel tanks are standard on both models. The main landing gear legs are two pieces of

spring steel that fit tightly into slots in each side of the fuselage. Directly above these strengthened gearboxes are the attachment points for the wing lift struts. This critical structure is tied directly into the front doorpost. The U-shaped doorpost structure forms, along with a similar U-shaped rear doorpost structure, a strongbox that surrounds the cabin's inhabitants and acts as the backbone of the airframe. The wings bolt onto the forward and aft doorposts at the top corners. The front doorpost area supports almost all the flying and landing loads. The soundness of this structure is borne out by a comment from Dave Lowe, past president of the International Cessna 120/140 Association and an experienced 120/140 mechanic, as he remarked that three-quarters of all the airworthiness directives (ADs) on the 120/140 airplanes are in the tail.

Wing struts

All 120s and 140s have two welded-steel lift struts supporting each wing. Branching out in a V-configuration, the struts attach to the front and rear wing spars. Threaded rod ends terminate the struts, allowing easy adjustments to the wing dihedral and washout.

When the 140A was introduced in 1949, it was equipped with a new all-metal wing design and a single, thicker, extruded aluminum wing strut. This doorframe/wing-strut/wing-spar structure was so tough that the astoundingly small number (experts suggest that the total number is less than five—the number of fingers on one hand) of recorded in-flight breakups of strut-braced Cessna airframes is the envy of other manufacturers, and has made Cessna's strut-braced singles, such as the 180, 185, and 206, the bush planes of choice all over the world.

Flying

By all accounts the engineers at Cessna designed an honest, well-mannered airplane. Leighton Collins, in an April 1, 1946, article in *Air Facts*, said this about an early 140: "The stability situation, then, would seem to be that it is about evenly apportioned around the three axes and is just a little more than neutral. That makes for a ship which doesn't overwork you in rough air, one which is responsive, and one which is nice on instruments." In other words, the 140 flies well and doesn't have any designed-in bad habits, although

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changing to metal wings removes some of the aileron response, according to Lowe.

Depending on the engine (STCs are available for up to 135 hp) and the propeller installed, cruising fuel consumption ranges from around five to seven gallons per hour, with a clean, straight airplane achieving cruise speeds of about 105 to 110 mph (91 to 95 kt). With 25 gallons of fuel, this translates to about four and a half hours of duration and a 500-statute-mile range. The operation manual, a book from a simpler time, lists 21.5 miles per gallon at 2,400 rpm in the performance charts. 140A models, and 140s with larger engines and cruise props, reportedly clip along at up to 125 mph (108 kt).

The 120 had no flaps, but in reality the split-type flaps on the 140 weren't much more than small speed brakes. Pilots transitioning from Cessnas equipped with the powerful Fowler-type flaps that are standard equipment on all Cessna singles built from the

mid-1950s on will have to develop some new speed-control discipline if they want to consistently show off their spot-landing skills. Accordingly, the rudder has enough power to make speed control via the sideslip method a routine matter. The manual Johnson bar flap lever permits varying amounts of flap drag to be deployed after slowing to the V_{FE} (maximum flaps extended) of 82 mph (71 kt).

The 120, 140, and 140A all exhibit good manners on the ground and have enough rudder authority to handle most crosswind situations with aplomb.

Pilots who are always conscious of the wind direction and counter these conditions with the correct control inputs find that this airplane does not make them look bad, or swap ends unexpectedly on the ground. In spite of the airplane's capabilities, Lowe suggests that 100 percent of the fleet has probably been ground looped at least once over the past 50 years.

Repairs and parts availability

If a pilot somehow ground loops his 140 at any more than taxi speeds, it's probable that the landing gear boxes

SPECSHEET

1946 Cessna 140

Current market value: \$17,000

Specifications

Powerplant	Teledyne Continental C-85-12 or C-85-12F, 85-hp
Recommended TBO.....	1,800 hr
Propeller	McCauley, fixed-pitch
Length	21 ft
Height	6 ft 4 in
Wingspan	32 ft 10 in
Wing area	159.3 sq ft
Wing loading	8.1 lb/sq ft
Power loading.....	17 lb/hp
Seats.....	2
Cabin width	36 in
Empty weight	785 lb
Useful load.....	665 lb
Payload with full fuel	515 lb
Gross weight.....	1,450 lb
Fuel capacity	25 gal
Oil capacity	4.5 or 5 qt
Baggage capacity	80 lb

Performance

Takeoff distance, ground roll.....	663 ft
Rate of climb, sea level.....	640 fpm
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption) 90 kt/4.9 hours/4.8 gal/hr	
Service ceiling.....	15,500 ft
Landing distance, ground roll	302 ft

Limiting and Recommended Airspeeds

V_Y (best rate of climb)	81 mph
V_{FE} (max flap extended)	82 mph
V_{NE} (never exceed)	140 mph
V_{SO} (stall, in landing configuration) ..	45 mph

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in the fuselage will be damaged. The spring-steel landing gear is a low-drag and low-maintenance system, but this is offset by the fact that these legs are stronger than the gear boxes that support them. Inspection of the front doorpost/gear box area is critical during all prepurchase and annual inspections. The airframe is easy to repair and if the repair is done well, it will be almost undetectable and the airplane will fly fine.

Unlike some older lightplanes, the parts situation for these small Cessnas isn't critical. Univair, a company in Aurora, Colorado (www.univair.com), and Wag-Aero, of Lyons, Wisconsin (www.wagaero.com), both supply high-quality parts for repair and refurbishment. For instance, both left and right gear box assemblies, new cowling assemblies, and other often-needed and hard-to-manufacture parts are almost always in stock.

Most 120s and 140s have been modified, or improved, since they first rolled out of the factory. Larger or at least more modern engines, shoulder harnesses, alternators, and Cleveland wheels and brakes seem to lead the list of the most desirable mods.

Many 120s and 140s had their wings metalized with aluminum, but most people agree that this slowed the airplanes down.

The supply of serviceable crankshafts for the original C-85 series of Continental engines is drying up, so a couple of companies have STCs that permit the use of an O-200 crankshaft in these engines. STCs are available for the installation of the 100-hp Continental O-200, the 108-hp Lycoming O-235, and the 135-hp Lycoming O-290. Engine cylinders are often repairable, or new ones are available (except for the O-290), from Engine Components Inc. (www.eci2fly.com) or from Lycoming or Continental at reasonable prices.

Maintenance concerns

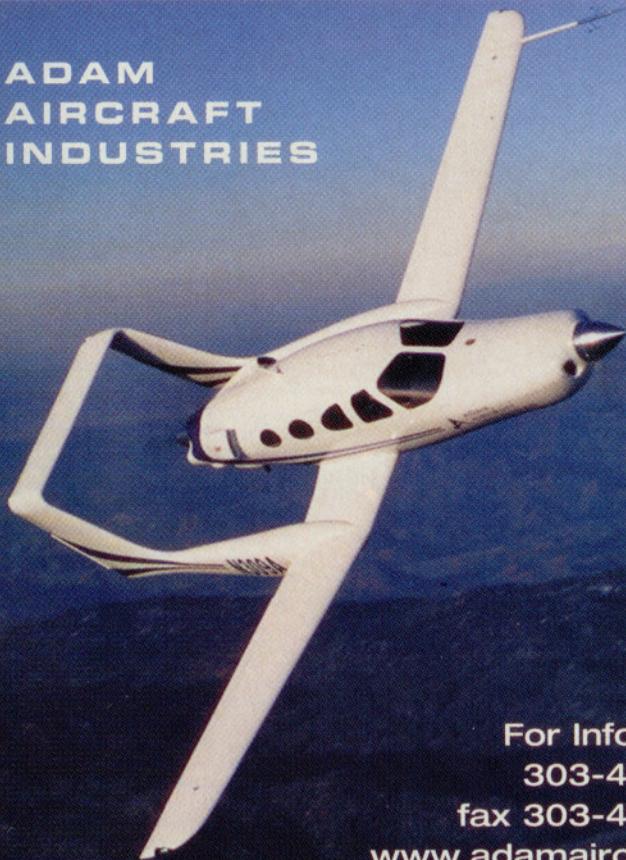
The most likely places to find corrosion on the 140-series airplanes are above the headliner at the front and rear spar carry-through structures, in the battery box area, and the wing blocks between the ears of the front spar at the bolt-together joint of the wing spars and the fuselage.

Those who aren't familiar with fabric-covered airplanes may shy away from 120s and 140s, perhaps thinking that the fabric wing is unsafe or hard to work on. Nothing could be further from the truth. If a wing has been recovered correctly with modern synthetic fabrics, there's little to fear. Another advantage of fabric is that the owner may do minor repairs under the category of preventive maintenance. Information on the fabric process is available on the Web (www.polyfiber.com/info).

Many 120s and 140s had their wings metalized with 0.020-inch-thick aluminum under STCs, but most people agree that this slowed the airplanes down. Experienced mechanics can inspect the wing structure and make minor fabric repairs without any problem. Recovering a single wing should



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Stromberg carburetors

All Cessna 140-series airplanes were standard-equipped with a Stromberg NA-S3A1 carburetor, which employs a back suction restrictor plate on the float bowl to control leaning. These carburetors don't have an idle cutoff feature. This means that the engine is shut down by turning off the magnetos and pushing open the throttle control. This carburetor is also sensitive when leaning, and most 140 pilots who are experienced with the Stromberg carburetors tell newcomers to lean only above 5,000 feet msl until they get accustomed to the system's sensitivity, lest the engine quit. When fueled with anything other than 80-octane avgas, these carburetors also leak, with no known fix. Replacement with a more common, and more dependable, Marvel Schebler (*nee* Precision) MA3-SPA carburetor can be accomplished by STC.

The toll of time

The half-century that has passed since these airplanes left the factory has taken its toll. FAA records indicate that 2,388

of the 120/140s are still registered in the United States. In other words, two-thirds of the original fleet are either inactive, have become parts in a salvage yard, or have been exported. The 140A has done a little better over the years, with 283, or just about one-half of the fleet, still on the rolls.

Owners' organizations

Two organizations cater especially to 120 and 140 owners. The first, the International 120/140 Association, is an all-volunteer group with more than 1,400 members that has been in existence for nearly 30 years. In addition to a monthly newsletter (get your free copy on the Web at www.Cessna120-140.org), this organization has also put together a couple of 140-series-specific books that are available on the Web site or by mail. Its twenty-sixth annual fly-in and convention is scheduled for the September 20 through 23 weekend at Dunkirk, New York. Dues are \$15 a year. The mailing address is International 120/140 Association, Post Office Box 830092, Richardson, Texas 75083-0092.

The other organization that supports these capable two-seaters is on the Web (www.Cessna140.com). Dues are \$20 a

year. Both Web sites are full of data, information, chat rooms, and parts and airplanes for sale, as well as other data to encourage and assist 120, 140, and 140A owners and pilots.

Make no mistake, the 120 and the 140 are some of the lightest of light-planes, grossing out at 1,450 pounds, or 1,500 pounds for the 140A. Even at this light weight, the Cessna 140-series airplanes are sturdy, economical, well-mannered little taildraggers that are fun to fly and pleasing to the eye. Two strong owners' organizations, and the prospect of a plentiful supply of parts, bodes well for the future of

i Links to additional information about Cessna's 120 and 140 may be found on AOPA Online (www.aopa.org/pilot/links.shtml).

these important airplanes. Any pilot looking for a first airplane would do well to consider these mini-Cessnas, and, contrary to some other first airplanes, may find

that they're so happy with their Cessna 140 that it'll stay in the family for generations to come.

AOPA

E-mail the author at steve.ells@aopa.org