Pilot Flight Check:

The BELLANCA *Citabria*

by DON DOWNIE / AOPA 188441

■■ What can travel more than two miles a minute, looks and rides like a classy sports car, is fully aerobatic, gets almost 20 mpg, and sells for $12.64 per pound? It's the Standard (7ECA) Citabria with Lycoming's thrifty 115-hp engine.

Aside from the smaller powerplant that saves you $2,000, plus fuel, the 7ECA is almost identical to the 150-hp version. It has no flaps, but none are really needed, since the lightweight Citabria sideslips like a cat on a waxed floor. The 115-hp version is 50 pounds lighter, with the weight and balance taken care of by installation of the 12-pound battery forward of the firewall as opposed to normal installation aft of the baggage compartment.

N53866 looked bright, shiny and dry as Citabria's chief test pilot, Dick Johnson, taxied up in front of the snow-studded company delivery center in Saint Paul, Minn. My wife, Ruth, and I walked out of the old, prisonlike terminal building and winced at the below-freezing weather.

"This cabin is a good tight one," grinned Johnson as he read our minds. "You won't have any trouble keeping warm." Deep in our luggage, we had brought seven feet of flexible heater tubing and a roll of "gun tape," just in case the back seat was too cold. However, Johnson was right. All that he'd done to help us evade the cold was to tape over the two main fresh air scoops that normally feed ventilation to the cockpit. An added latch at the top of the cabin door helps assure a tight seal.

For the first time in nine Citabria-Decathlon deliveries over the past six years, it wasn't necessary to turn the front-seat cushion around to make enough leg room for a leisurely 2,000-mile-plus ferry flight. Front seats are now adjustable, and the back of the rear seat folds forward to provide easy access to baggage. Another improvement—small, but appreciated—is re-engineering of the door-emergency release so that the handle points down and doesn't jab you in the right calf.

Quality control on the cabin interior was the best of all the group we've ferried, and my wife commented: "This back seat is the most comfortable I've ever been in," after our delivery.

We signed the single delivery form, loaded our baggage and waved a "see you next trip" to Johnson and Bellanca vice president Jim Brown, who runs the fly-away center. The airframe on N53866 was stock except for the popular aerobatic custom group ($800) that includes wheel fairings, spinner, landing light, front and rear left-shoulder harnesses, oil quick-drain, accelerometer, aileron gap-seal kit, scalloped paint and a "greenhouse roof." This tinted cabin-top section virtually eliminates the built-in blind spot of a high-winger in a turn. Merely make your turns steep enough to see out through the roof.

Additional equipment on this ship included a communications group, ELT, Escort 110 Nav/Com, intercom (we didn't use it), landing gear strut steps to use when checking your fuel, and a rheostat instrument/cabin light. Cost for this particular package was $2,670 added to the basic price of $13,400. The total equipped price of our airplane was $16,870. By comparison, a no-accessory Cessna 150 is now $12,650, while the Aerobat begins at $15,250.

Saint Paul was clear and cold, but a call to the FSS showed everywhere else to be dismal. Our immediate destination was Des Moines, Iowa, and we made it down Highway 35, about half the way to Mason City. That night the thermometer dipped below zero, but crawled up to 11°F when we went out to the airport the next morning to put the ship in a heated hangar for a couple of hours of deicing.

"Standard" Citabria keeps costs down by using thrifty 115-hp engine, still takes off in less than 500 feet and goes cross-country at over 120 mph. Photos by the author.

Takeoff performance was great on this "substandard" day, and the 115 hopped into the air just like a 150-hp model. We continued down Highway 35 toward Des Moines, where we worked out some weather before proceeding on to stops at Lincoln and Grand Island, Neb.

Ice lined the edges of the Grand Island runway and taxiways, but Exec-Air lived up to its red-carpet reputation. Flight time was 3:11, and we took 25.2 gallons of low-lead 100 octane (7.95 gph at 2,650 rpm, full rich mixture). At only two of our nine fuel stops was 80-octane fuel available.

It remained cold enough for the snow to be well frozen, and we had no problem picking up slush that would later freeze inside the wheel fairings. If this ship were to be operated where there was a possibility of freezing slush or mud, there would be a strong temptation to remove these fairings (it's an easy job) and cram them atop the baggage.

Flight time between Grand Island and Dodge City, Kan., was 2:42, and we took an even 20 gallons, which gave 7.3 gph. On the Lycoming O-235-C1 fuel flow curve, this is the recommended fuel flow for 75% hp, so our 2,600 rpm cruise at an average altitude of 3,000 feet, full rich, represented some 98 hp and was well within specifications.

We found during fueling that the $45 strut steps were great for double-checking the security of the gas caps, since the fuel system with its simple on-off selector could allow a dangling or miss-

Aerobatic capability of the Citabria makes it a fun machine—but also a training medium for teaching lifesaving, unusual attitude recovery techniques.

ing fuel cap to empty more than one tank with the help of the cross-feed line. I would paint a reference mark on both gas cap and wing surface so that I could tell by looking forward over the trailing edge of the wing whether or not the caps were in their proper position.

Somewhere approaching Dalhart, Tex., a highway billboard read, "Slow down, Save fuel." We sure were saving enough fuel with that little 115-hp purring along up front. As the sun began to dip in the short winter daylight, we picked up reflections from the shiny black covering over the instrument panel. Some sort of nonreflecting surface would be a welcome feature.

After landing at Tucumcari, N.M., we took only 17 gallons for 2:27 or 6.95 gph. Naturally, as our cruising altitude

went up, our fuel consumption went down, even though leaning without an EGT is far from an exact science. It's 269 statute miles for that leg, so our ground speed was 110 mph into a direct 10–15-mph headwind.

With a field elevation of 4,063 feet, a temperature of 47°F, and a 10-kt headwind, our departure ground roll took 24 seconds. The higher the density altitude, the greater the difference in takeoff and climb between the 115 and 150-hp Citabria versions. Service ceiling for the Standard is 12,000 feet with rate of climb starting at 725 fpm; while the 150-hp model will reach up to 17,000 feet with an initial climb of 1,200 fpm. Except for very high altitude operation, repeated fast climbs for glider tow or continued aerobatics, and float operations, the lower cost Standard does the same job for considerably less money. There's less noise in the smooth-running little O-235-C, and the listed cruise speed is only 5 mph slower.

We climbed to 6,500 feet until passing abeam the Anton Chico VOR and then up to 8,500 to cross the Continental Divide at Clines Corners, elevation 7,074 feet. The sun slipped into Tijeras Pass, south of Sandia Peak, as converging jet contrails sped over Albuquerque.

The single cockpit light, adjustable for red or white, illuminated key instruments, and we applied carb heat with the throttle-type control (one located directly below each throttle). The single trim tab, reachable from either seat, has a similar action, but is far enough removed from the power levels to virtually eliminate grabbing the wrong handle.

With New Mexico rabbits on the runway at Albuquerque, we eased down carefully. We touched down and taxied slowly to the west end of the field. Even with the tail down, visibility over-the-nose is excellent, and no "S-ing" is required.

It was downhill (almost literally) all the way home. Climbing to 8,500 feet beside Mt. Taylor, the next morning, we were picking up 500 feet every minute on a cruise-climb of 77 mph without benefit of updrafts. At 2,750 rpm (85 hp at that altitude), we were indicating 110 mph, which trued out close to 130 mph.

We made a final fuel and gas stop at Prescott, Ariz., before taking 2:40 and 18.6 gallons to get to our home base at Chino, Calif. Total tach time was 19.56 with 141.5 gallons of fuel used. Add a 25-minute flight by Dick Johnson who brought the airplane to us from Osceola to Saint Paul, and we came up with just 7 gph. To make any progress against headwinds, our power settings ranged from 2,600 to 2,750 rpm.

After the baggage came out, Bob Weston (AOPA 135003) and I took N53866 on to San Diego where Ron Karas will use it as a factory demonstrator until he sells it—and that shouldn't be long. Karas and I flew an air-to-air photo mission from Montgomery Field as California Aerobatics pilot Guy Neeley flew our ship.

No report on a Citabria would be complete without going for a roll in the sky. Weston and I borrowed chutes from the aerobatic school, and company president Trace Tooley figured our weight and balance on his pocket calculator. With half tanks, we were 15 pounds under gross weight and 0.11 inches forward of the 15.9-inch aft CG limit. Our takeoff roll from Montgomery Field (elevation 423 feet, 50°F, zero wind) was 20 seconds.

After clearing the Miramar NAS jet pattern, we climbed northward toward one of two aerobatic practice areas. All maneuvering speeds for both Standard and heavier Citabrias are almost identical with a +5 and −2 G limit. Because of weight- and balance-moment arm, the heavier ships are certified for +5.2 Gs.

A placard directly in front of the pilot lists the approved maneuvers and entry speeds, and notes, "Occupy front seat when flying solo."

Redline on the airspeed indicator was 162 mph. N53866 did not have inverted fuel or oil systems, so that a loss of both liquids could be expected with any sustained negative loads. "Outside" maneuvers also throw a little oil out of the breather and mess up the bottom of the fuselage. The 150-hp Citabrias equipped for inverted flight, as well as the Decathlon models, have both inverted fuel and oil systems.

We approached the cloud bases at 5,500 feet, a factor that further restricted our rock-and-roll activities, but there was still ample airspace for fun. After clearing turns, came a partial power (1,800 rpm) full-back-stick stall. The airspeed went right off the low end of the clock with nose up approaching 60°. At stall, the ship broke nose-down and clean, and it was no problem, while holding the stick all the way back, to keep the wings relatively level, with just rudder application.

A hangover from our old Stearman (PT-17) days, ailerons were used on neither entries nor recoveries except for slow rolls. Precision Citabria instructors may have different procedures in this particular type of aircraft.

Next were right and left spins. For better visibility and a clean-breaking spin, entry was made out the bottom of an accelerated turn. Even though our loading envelope approached aft CG, the little Citabria broke cleanly into a near-vertical rotation. Spin recovery was excellent with application of full opposite rudder and relaxation of back pressure after half a turn. Weston had never seen a vertical reverse (a half-snap roll from one vertical turn to another), so we tried that. Using the recommended entry speed of a slow 60 mph, we were falling as much as flying during the recovery phase. Some aerobatic instructors admit that they try to teach with lower gross weights so they can use slightly higher entry speeds.

Normal aerobatic instruction and prac-

tice includes use of the accelerometer for precision, but since our maneuvers were for fun rather than points, we just went ahead and did the things that felt good. Loops were satisfying with the throttle cut and carb heat added during the vertical dive portion and a gratifying ripple as the Citabria went back through its original wake at the bottom.

Did you ever notice that many pilots make snap rolls to the right and slow rolls to the left? That's because it's easier to "squeeze" stick and throttle together in a slow roll than to muscle the stick to the right. The brand new ship had some slight stiffness in the cable controls, but these caused no problem. Our imperfect, slow rolls ran out of speed during the final portion so that the nose dropped a bit when we ran out of top rudder.

A pilot considering extensive outside maneuvers in the negative G area might want a full two-piece shoulder harness, but the single over-the-shoulder Griswold (like a Sam Brown belt) in N53866 was more than adequate for our flight.

While they're not listed as true aerobatics, we tried a number of steep wingovers and hammerhead stalls. At the end of our aerobatics, the maximum-minimum pointers on the accelerometer showed a conservative +0.2 and +3.0.

Upon our return to Montgomery Field, the tower asked for a turn to base leg for Runway 28L when we were a little higher and closer than I would have preferred. However, the flapless Citabria slips beautifully. We held a conservative 80 mph in this slipping approach, remembering that there can be some airspeed-indicator error depending on the location of the pitot-static head. Many pilots prefer to use the bottom edge of the wing as a horizontal reference during this landing approach maneuver. As the left wingtip began flirting with the cactus, our slip changed to a straight skid to spill off airspeed. We crossed the numbers, secured the tailwheel and made the first turnoff with minimum braking.

After a little practice, a pilot should be able to land this airplane and stop in less than 400 feet. Add the capability of the taildragger to make a controlled groundloop at the end of a landing roll, and you have a truly short-field aircraft. This capability is most comforting when flying across rugged terrain.

It is our opinion that an airplane driver is not really a lightplane pilot until he can recover from a spin and roll off his back if ever tossed inverted. (Add soaring experience and you have an even better-trained pilot.) The Standard Citabria is an economical combination of a comfortable "fun" airplane, a basic aerobatic trainer and an all-around fine performer. And, at two-miles-per minute, it gives you just a little longer to enjoy the good times. □

CITABRIA 7ECA

Specifications

Engine	Lycoming O-235-C, 115 hp
Height	7.75 ft
Length	22.7 ft
Wing span	33.4 feet
Gross weight	1,650 lb
Empty weight	1,060 lb
Useful load	590 lb
Fuel capacity (usable)	35 gal
Oil capacity	6 qt
Baggage capacity	100 lb

Performance

Cruise speed (75% power)	124 mph
Takeoff distance	450 ft
Rate of climb	725 fpm
Service ceiling	12,000 ft
Stall speed	51 mph
Range	694 sm
Landing distance over 50 ft	890 ft
Base price	$13,400

Fabric covered, tandem two-seater has a 590-pound useful load, burns a little over 7 gph. Tight cabin helps keep occupants warm in the winter.