FLYING®

World's Most Widely Read Aviation Magazine • Keyword on AOL: flying

November 1998

Buy Part Of This Jet

NetJets sells you only as much bizjet flying as you need

New Rules On Icing

Piper Meridian Update

Fuel Management Tips

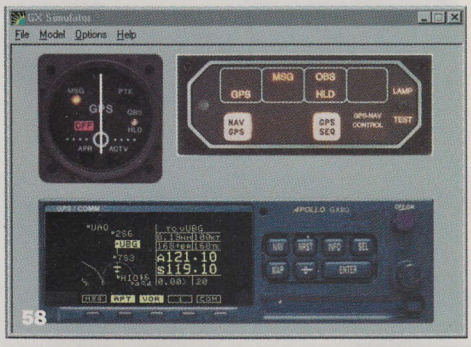
Used Cardinal Review

US $3.99 UK £2.50 CAN $4.99

11

03929

0 275501 6



NOVEMBER 1998

VOLUME 125 • NUMBER 11

Paul Bowen photographed the Falcon 2000 flying up the Hudson River just west of New York City. Executive Jet has Falcon 2000s on order and will put them into its NetJets fractional ownership program. The 2000 has the same cabin cross-section as the three-engine intercontinental Falcon 900 series and offers the range for coast-to-coast trips under any expected headwinds.

PILOT REPORTS . . . . .

FLYING SAFELY . . . . .

TRAINING . . . . .

FLYING OPINION . . . . .

FLYING NEWS & NOTES . . . .

Flying Magazine (ISSN 0015-4806) is published monthly by Hachette Filipacchi Magazines, Inc., 1633 Broadway, New York, NY 10019. One-year subscription rate (12 issues) for U.S. and possessions, $26; Canada, $35.82 (includes 7% GST tax), Canadian business number 126018209 RT; IPN sales agreement number 99155; and Foreign $34; cash orders only, payable in U.S. currency. Periodicals postage paid at New York, NY 10001, and at additional mailing offices. Authorized as periodicals mail by the Post Office Department, Ottawa, Canada, and for payment for postage in cash. Postmaster: Send all changes of address to *Flying*, P.O. Box 53647, Boulder, Colorado 80322. Printed in the U.S.A. Occasionally we share our information with other reputable companies whose products and services might interest you. If you prefer not to participate in this opportunity, please call the following number and indicate that to the operator: (303) 604-1464.

Straight-Leg Cardinals

The fixed-gear Cardinal is a much more popular used airplane than when it was new thirty years ago.

PHOTOGRAPHY BY ROBERT GOYER

When the Cessna Cardinal (177) first flew on July 15, 1966, the number on the design was 172. Yes, this airplane was conceived as a replacement for the venerable 172, which is still being produced 32 years later and over 20 years after the Cardinal flew west into the sunset, not making it out of the 1970s, the decade for which it was designed. As we have learned so many times in aviation, an all-new model is not always magic. The Cardinal simply did not measure up, for a lot of reasons. By the time things were made right, it was apparently too late.

The first clue we got was on the introductory flights. Where Cessna has always placed pilot reporters in the left seat of anything it builds, up to and including the jets, all of our first rides in the Cardinal were in the right seat. Cessna did allow reporters into the left seat after the introductory hop and there we found that the Cardinal had an extremely sensitive stabilator and that the airplane wasn't overly stable in pitch. In turbulence, the nose would bob up and down.

Powered by a 150-horsepower Lycoming four-cylinder en-

gine, the Cardinal didn't have a lot of pep, either. It is a big airplane with a big cabin, so there was a temptation to overload the airplane. The maximum takeoff weight of the original Cardinal is 2,350 pounds, compared with 2,300 for the Skyhawks of the day. That extra weight combined with the Cardinal's laminar-flow wing to demand good takeoff technique. "Good" meant letting the airplane run level until it was ready to fly. Lifting the nose even slightly early on takeoff could greatly extend takeoff rolls. And the Cardinal's climb speed has to be nailed precisely at 90 mph to get book performance.

Cessna had, at the time, a huge dealer-distributor network, a lot of marketing savvy, and a production capability unmatched in general aviation. It was determined that the Cardinal was the right thing to do and it cranked out 1,000 copies of the airplane in the first six months of production. That's over a third of the total number built in 11 years.

Two important things happened early on. Even before the Cardinal was introduced, the dealers and distributors did not like the idea of it replacing the 172. So the Cardinal got a new number, 177, and Cessna set out to certify the Lycoming O-

Checklist

Big cabin

Big doors

Troubled youth

Good visibility

Darlin' in the market

320 in the 172, to replace the O-300 six-cylinder Continental powerplant it had been using.

Once the Cardinal got into pilots' hands in real numbers, Cessna also realized that the twitchy pitch control system had to be fixed. The result was an inverted slot at the leading edge of the stabilator and a one-pound increase in the weight of the stabilator counterbalance. The official word was that this was to address a decrease in pitch control authority in a side slip. Whatever, a bunch of the original Cardinals suffered damage from nose-first landings, caused either by a slip or by pilot-induced porpoising. All the airplanes were modified at Cessna's expense.

After the initial six-month, 1,000-airplane flurry of manufacturing activity, Cessna built only 164 more 1968 Cardinals.

The 1969 Cardinal was dubbed the 177A; the main change was in the powerplant. More horsepower always helps, and this '69 Cardinal has a 180-hp O-360 under the cowling, driving a fixed-pitch propeller. The maximum takeoff weight is 2,500 pounds.

The 177A was not a raging success and turned out to be a step along the road to further refinement of the Cardinal. Only 205 of this model were built before the 1970 Cardinal 177B appeared.

The laminar-flow wing of the first Cardinals had more disadvantage than advantage, so the 177B got a new airfoil. Instead of a skinny leading edge, this model has a fatter leading edge, bringing the airfoil very close to that used on other single-engine Cessnas. A constant-speed propeller is fitted, and they did a number on the engine cowling to reduce drag and make it look better. *Flying*'s enthusiastic pilot-reporter, Stephan Wilkinson, said that on a long trip, "I consistently clocked speeds that averaged about 15 mph better than the figures given in the owner's manual." Cessna showed the 1970 model to be only four mph faster than the previous Cardinal in its performance charts, but the improvements to the airplane apparently added up to more than that. Flying qualities are greatly improved with the 177B and, when it appeared, the airplane seemed to finally be what the Cardinal should have been in the first place.

This didn't help sales a lot, though. Only in 1973 did 177B sales go over 200 units. In a last effort before the airplane was dropped in 1978, Cessna created the Cardinal Classic, a tricked-up version that didn't attract any attention. The interior was gussied up and there were writing tables for the rear-seat passengers. But the Cardinal was surrounded in the product line by Cessnas that pilots liked better—172s and 182s—and that's what sold.

To those of us observing the scene at the time, the passing of the Cardinal was a sad event. All-new, also available as a retractable, sexy-looking, with a big comfortable cabin, it had it all, we thought, or hoped. Still, the Cardinal expired in a year

The sleek Cardinal wing and low-slung fuselage gives the Cardinal a modern look that it retains decades after its introduction. The Cardinal's panel was designed with plenty of room for avionics, though the large clunky-looking Cessna ARC radios that were standard in the airplane gobbled the space up quickly.

when sales of other general aviation airplanes were setting all-time records. Its siblings were just too good.

Certainly the Cardinal is not a "bad" airplane and it is actually very strong in the used market today. There are a lot of them out there, too, with the FAA Registry listing 1,800 Cardinals in the U.S. About 250 a year change hands, according to *Vref*, an aircraft value reference, and the airplanes sell within four or five months of going on the market.

Cardinals also—surprise!— have used book prices that are greater than for a Skyhawk of the same year. According to *Aircraft Bluebook–Price Digest*, even a 150-hp '68 Cardinal goes for $1,000 more (at $31,000) than a '68 172. The gap widens substantially with the 180-hp Cardinals. For example, a 1970 Cardinal has a book value of $37,000 compared with $31,000 for a Skyhawk. The last Cardinals built in 1978 have a book price of $53,000 compared with $46,000 for a '78 Skyhawk. Book prices in the *Aircraft Bluebook* are slightly higher for the Cardinals.

When you fly a Cardinal, one of the things to love about the airplane is the visibility. Because the wing is located farther aft than on most high-wing airplanes (or the fuselage is farther forward) you can actually lean forward and look back over the leading edge of the wing in a turn. The airplanes had good sound and vibration management for their time, and there's not an easier airplane to get in and out of than a Cardinal. Not to love is the fact that the airplanes leak a lot in

the rain, on the ground or in flight. I don't think anyone has ever been able to tame this "feature."

There were 17 Cardinals for sale in a recent issue of *Trade-A-Plane*. Ten were 1968 models and none of the ads claimed to have the 180-horsepower upgrade, which is still available in the aftermarket. One of the 1968 models for sale was unique in that it was serial number one. There was one 1969 for sale and the rest were 1970 and later 177Bs. The total times on most are under 2,000 hours and most appear to have Cessna radios adequate for IFR. Some have avionics upgrades.

Cardinal owners have their own club, too, The Cardinal Club. It is at cardinalclub@juno.com or 785/842-7016.

When the Cardinal first came out, a lot of us saw it as a really neat airplane for family touring and for sightseeing. That thought remains, and the airplane appears to have found more success in the used market than it ever managed when Cardinals were brand new. Incidentally, it wasn't the first airplane named Cardinal. The original, a two-seat side-by-side, was made by the St. Louis Car & Foundry company. My dad bought one brand new on New Year's Eve of 1929; the prop from that Cardinal is hanging on my wall today.—R.L.C.

1970 Cessna Cardinal

The information in this spec box was gleaned from an article on the Cardinal in the January 1970 issue of Flying. *Speeds are in miles per hour because that was what we used at the time. Performance figures are from the manufacturer and reflect standard conditions at sea level, except where noted. The used price today is an average of the values shown in* Aircraft Bluebook–Price Digest *and* Vref. *The equipped new price is from* Aircraft Bluebook–Price Digest.

Average price, new	$22,092
Used price today	$38,500
Engine	Lycoming O-360-A1F6, 180 hp
Prop	McCauley, constant-speed, 76-in dia
Seats	4
Length	27 ft
Height	9.08 ft
Wingspan	35.5 ft
Airfoil	2412 modified
Wing area	173.6 sq ft
Wing loading	14.4 lb/sq ft
Standard empty weight	1,475 lbs
Max useful load	1,025 lbs
Max takeoff weight	2,500 lbs
Power loading	13.9 lbs/hp
Fuel capacity	50 gals
Rate of climb	840 fpm
Service ceiling	14,600 ft
Max speed	153 mph
Cruising speed @ 75% power, optimum altitude	142 mph
Endurance, no reserves	5 hrs
Stalling speed, clean	63 mph
Stalling speed, flaps down	53 mph