



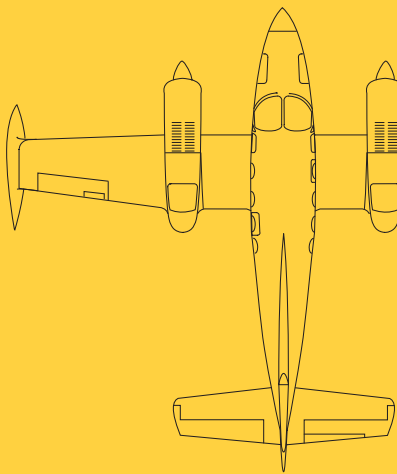


CESSNA 340: Development and Design

The Model 340 represents Cessna's attempt at producing a pressurized cabin-class twin that wouldn't break the bank.

By Scott Bengtson

The new Model 340's tail came from the 310. The horizontal, elevators, rudder, and vertical fin were all Model 310 pieces.



Sometime before the development of the Cessna 340 was started, there was a project that did not go into production. The Cessna Model 330 was developed and flown, but not brought to market. This airplane is considered the most direct predecessor of the Cessna 340.

Model 330

The Model 330 shared the cabin of the 340, except the cabin windows were shaped similarly to the cabin windows in the 441 Conquest. With the new 330, Cessna tried a laminar flow airfoil that they had not flown before, and the vertical tail shape was very elliptical, with a cruciform horizontal stabilizer.

New manufacturing concepts were tested as well. This wing would be a wet wing, replacing the tip tanks and bladders used up to this point; although the prototypes were tested with and without tip tanks.

It also differed from previous Cessna twins by having a greater aspect ratio. The wingspan would be 40 feet, 6 inches, more than 3.5 feet longer than the Model 310 wing. The flaps were a Fowler type.

Due to poor handling characteristics (primarily stall issues) and economic timing, the project was stopped in the late 1960s.

Model 340

The project was restarted in 1970 as the Model 340. Cessna went back to what they knew best. They picked up the parts of the other models they were already building and created the 340. Building on the 330 fuselage with oval windows, Cessna added wings from the 310/320 series, including split flaps, electric gear, and the signature tip tanks. These wings provided the known flight characteristics of the 230-series airfoil already used on the 310, 401, 402, 411, and 414.

The 230-series is a favorite airfoil of Cessna and was also used on Citation 500 and 550 models, and later, the T303 Crusader and the 208 Caravan. It was such a favorite around Wichita, it was also used on the Bonanza through King Airs at Beechcraft.

The new Model 340's tail came from the 310. The horizontal, elevators, rudder, and vertical fin were all Model 310 pieces. What hides this somewhat is that the tailcone on the 340 moves up to the top of

the cabin, making the horizontal stabilizer even with the top of the propeller tips. For all the other Cessna models, the thrust line is very close to the centerline of the horizontal stabilizer. The 310 tail was grafted onto the original tailcone, creating a junction forward of the horizontal stabilizer. If you look closely, there is a slight angle change in the skin from the forward part of the tailcone.

The 310 and 320, even with their almost identical appearance, do not share the same Type Certificate. However, the 320 and the 340 do share the same Type Certificate, even with their difference in appearance. The Model 320 was important to Cessna as the model that pioneered turbocharging, which was directly applied to the 340 development and all 400-series models.

Pressurization wasn't new, but the development of the 340 brought a pressurized cabin-class airplane to a market that had been limited to larger aircraft like Cessna's own 421 series, Beechcraft King Airs and Queen Airs, Piper Navajos, and Aero Commanders, all of which had large, geared, turbocharged engines. The 340 was the first practical, affordable, owner-flown,



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Production run

Cessna 340

1972: 115

1973: 110

1974: 70

1975: 55

Cessna 340A

1976: 125

1977: 175

1978: 162

1979: 201

1980: 145

1981: 80

1982: 43

1983: 0

1984: 18



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cabin-class pressurized aircraft. Many followed into the niche, but they were two to four years behind the 340, such as the Beechcraft Baron and the Ted Smith (later Piper) Aerostar 601P.

The Beechcraft Duke did precede the 340, but was always in a different market; again, with big, unique engines to make the concept work. The Model 340 was certified by the FAA Oct. 15, 1971. The powerplant on the original 340 was a Continental TSIO-520-K that produces the same 285 hp that was used on the 310Q at that time.

The 310 rudder that carried over to the 340 provided plenty of authority for engine-out conditions, in addition to the extra length of the fuselage.

Unfortunately, there was a control failure during the flight test program that cost the life of a Cessna test pilot. From that accident, several safety precautions and systems were added to the testing of aircraft that are still used today.

Among other safety devices, they added a knotted rope from front to back for pilots to use to pull themselves to the

door. They also mounted handles and steps to get to the aft doors.

Cessna 340A

Sales for the new pressurized twin were about 115 units for the first year, and then sales started to slow in 1974 and 1975. By this time, the competitive market had added the Ted Smith Aerostar 601P and Beechcraft had pressurized the Baron 58. Both of these models had more horsepower than the Cessna 340. As typical with many Cessna products of the day, Cessna also competed with its own products. The 340 models competed directly with the 414 and the T310R.

Cessna created the 340A new for 1976 (certified Nov. 19, 1975) by adding the engine installation from the 414; this increased power up to 310 hp. This new engine was the Continental TSIO-520-N.

Not only did the horsepower output change, but the turbo system controllers provided better operation. The gross weight went up slightly to 5,990 pounds from 5,975 pounds and the speed improved by 17 mph.



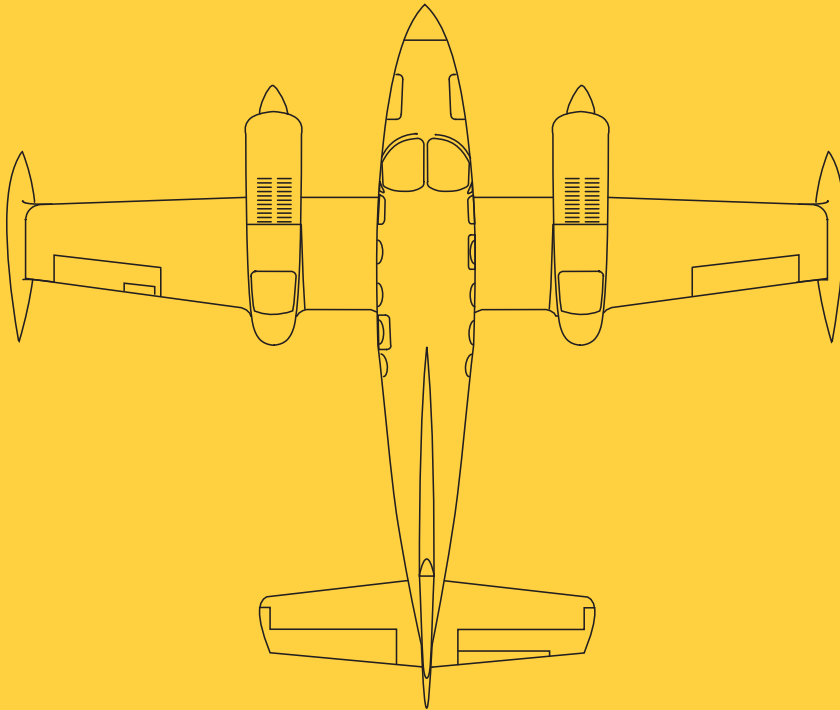
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The 340A also received the pressurization system that the 400 series aircraft used, providing smoother operation and controllability. Sales for the "A" model averaged just under 150 units per year until Cessna's temporary shut-down of production in 1983. Production resumed in 1984, and 18 more units were produced. *(Some sources list 16 or 17 units produced in 1984. —Ed.)* Shortly after that, Cessna suspended production of piston aircraft.

The combination of the additional horsepower and the unique-to-the-model 340 stabilizer position created a problem with the skins of the stabilizer cracking. The problem grew to be enough of an issue that Cessna had a field campaign to replace the stabilizers with thicker skins.

Cessna created a wonderful-flying, small cabin-class, owner/operator aircraft with the 340A. The cabin had the same amenities as the larger Cessna, including an airstair door, club seating, pressurization, and performance. The pressurization differential of 4.2 psi created an 8,000-foot cabin at a 20,000-foot cruising altitude.



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Deicing equipment was always available, but in 1977 Cessna met the standards for certifying the 340A for flight into known icing (FIKI). Some of the required equipment included a seven-boot system with sequence timer, windshield anti-ice plate, dual 100-amp alternators, anti-icing fuel vents, and heated propeller boots. FIKI capability makes the 340A a favorite of charter companies needing all-weather capability in a cabin-class aircraft.

The seats had a special feature. The cabin was narrow. To make moving through the cabin easier, the inboard armrests were spring-loaded to move out of the way when you were passing through the aisle. There is baggage space in the back of the cabin, but the 340 has space in the nose along with the traditional wing lockers.

The feeling of a much larger aircraft comes from the high tail and the split cabin airstair door. The 340 never had plans to lengthen the nose like the 400 series and the 310R; it has a very nice balance as-is.

In 1976, Cessna introduced the

wet-wing 421C without tip tanks and a simplified fuel system. The tip tank fuel system in some Cessna twins requires attention to fuel management. By 1979, all 400 twins had removed the tip tanks, and the 310 was out of production by 1981, leaving the 340 as the only model with tip tanks in the Cessna lineup.

Many assumed that the wing from the 414A would be moved to the 340A, and the 340A would also receive the hydraulic landing gear. A different approach was planned; a wing change would be called for, but the wing would come from the T303, a new light twin, cabin-class product Cessna introduced in 1981.

This new wing had wet-wing technology, hydraulic landing gear, and used the same 230-series airfoil the 340A already had. This was a wing that was already tested, and its characteristics were known. It was not to be.

For one year, 1980, the 340 had a little brother, the Model 335. Not well known, it was an effort by Cessna to fill the void of the 310R going out of production and the introduction of the new T303. The 335 was a non-pressurized 340 fuselage

with 402B wings and an engine installation providing 300 hp. Only 65 units were built that year.

The next version of the 340 was conceived as the 340B. Unfortunately, the timing was bad and the shutdown of all piston aircraft at Cessna over liability issues never allowed the 340 to return to production.

SCOTT BENGTON currently has a small aircraft parts company, Royal Air Products. Scott worked at Cessna for 30 years, where he managed the development of marketing programs for the Cessna 208 Caravan, including the introduction of the Garmin G1000 Avionics Suite, the TKS anti-icing system, and the new, more powerful engine for the Cessna 208B Grand Caravan EX. He has many hours of experience flying the Caravan as a marketing acceptance pilot, as well as experience in Cessna's 425 Conquest I, 441 Conquest II, and all Cessna 300- and 400-series aircraft. Send questions and comments to editor@cessnaflyer.org.

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