BEECHCRAFT DUKE

The Duke's exotic shape fires the passion of many pilots. You can now buy one for less than the cost of a new single.

The Beechcraft Duke is in a unique category. If it was built today, and its price relationship with the King Air C90 remained constant, the Duke would retail for about a million four. The airplane sells for a small fraction of that in the used market, but its owner must deal with that reality when the airplane goes into the shop because it's a million-dollar-plus airplane that is being fixed. Maintenance bills tend to track the equivalent new price of an airplane, not its present value on the used market. This is probably why airplanes like the Duke today sell for far less than they cost 15 years ago when new, even without adjusting the dollars for inflation. Bonanzas of this vintage, on the other hand, generally sell today in the used market for more than they cost new.

One reason for this is that the cost of refurbishing two Duke engines can exceed the value of the airplane and, sadly, the time is not too far off when it will be more practical to scrap some of these older piston airplanes than to overhaul the engines. This is already the case with some turbine airplanes.

The Duke has an interesting history. In the late 1960s, Cessna was poised to make an all-out assault on the pressurized piston twin business, starting with the 421 and following with the 414 and 340. Piper had the Pressurized Navajo under development and Beech had a pressurized version of the Queen Air, the Model 88, as its offering. The Queen Air didn't look adequate to compete for Beech, and word came from on high to develop a new pressurized piston twin to fit into the product line below the turboprop King Air. Development of the Duke actually started with the Baron 56TC, in 1967, which had the new direct-drive Lycoming TIO-541 engines that were to power the Duke, mounted in the same cowlings to be used on the Duke. This big-engine short-body Baron was to be an engine testbed as well as a claim to the fastest light twin.

Lycoming, opting for direct drive, followed a different path to 380 horsepower than did the Cessna 421's Continental of 520

cubic inch displacement, which was geared and rated at 375 horsepower. (That engine was later pushed to 435 hp for the Commander 685.) For the Pressurized Navajo, the Lycoming 541 was used but was geared and the horsepower was increased to 425.

There is a message in this. Manufacturers knew they had to have more horsepower to make the larger and heavier pressurized twins perform well, and the only economical way to do this was to boost the horsepower of more or less existing engines with turbocharging. The Duke engines develop their horsepower at 41.5 inches of manifold pressure and 2,900 rpm. Any way you get it, horsepower is expensive, and when you draw it out of a basic engine that is used to producing a lot less horsepower, maintenance costs go up. Caring for two deep-breathing Lycomings is what Duke ownership is all about.

The Duke is based on a Baron-type wing and landing gear. The wingspan is greater on the Duke, and the gear stronger, both to accommodate greater weight. The Duke's fuselage and empennage borrow nothing from other Beech airplanes. Some folks who were around Beech at the time have hinted at the possibility that marketing drove the design of the Duke fuselage and that the engineering task was to make it work. It came out as a not-quite-cabin-class airplane. There are four comfortable facing chairs in the cabin and a big baggage area in the nose. There is little space for bags or personal items in the cabin and there is no toilet provision.

As a result, the Duke has drawn customers mainly from the legion of pilots who respect the quality of Beech airplanes above all else. The Duke never, in the truest sense, competed directly with the cabin-class Cessna twins. In fact, the Duke was not even aimed at the corporate market. It was developed, to quote from our October 1972 pilot report, "for the owner-pilot market, to offer light twin buyers a stepup airplane with the comfort and sophistication of a jet."

The Duke does a good job of this and is a fun airplane to operate. In 1972, I had the opportunity to attend the factory school and then, on several occasions, to take a Duke and use it as if it were my own.

First impressions were that the cabin was larger than I expected, and that the flight deck was comfortable though you had to be agile to get up there. I do remember taking my fine friend Louis Stout of Little Rock flying in a Duke once. Louis was a really big guy—*really* big—and when he started making his way to the right front seat of the Duke, I couldn't watch. Moments later he proclaimed that he was in, and there he was, sitting in the right front seat and grinning from ear to ear. Maybe I wasn't all that agile 24 years ago.

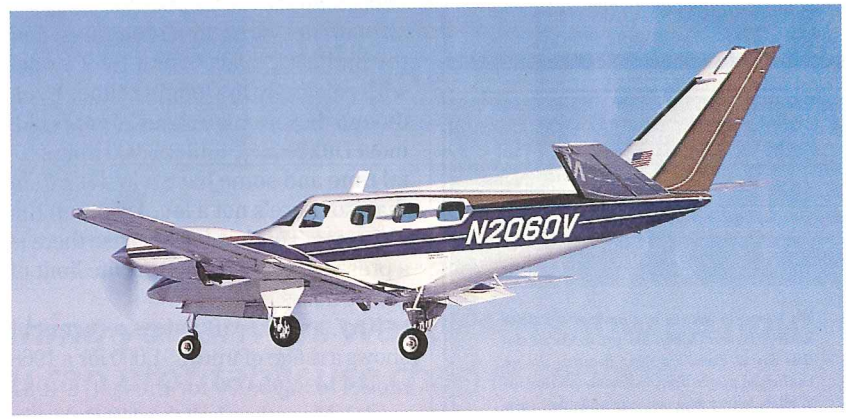
On one trip in the Duke, I learned that a fuel stop would be required on a 1,200-nm trip if generous reserves were to be maintained. (Later models have more fuel, offered as an option.) The climb rate averaged 1,000 feet per minute to Flight Level 190 and the sound level was wonderful at 65 percent power cruise. I didn't realize it, but the leaning procedure I use today for my turbocharged Continental was apparently learned at Duke school years ago. Lean to a flow and then tweak the leaning based on a maximum allowable turbine inlet temperature for the phase of flight. The Duke, at 65 percent, used 110 to 112 pounds per hour per engine on my trips. Two hundred pounds per was put through for climb.

Block speeds on the first trip were near 200 knots with little wind, and my impression was that the Duke was a solid 200-knot performer at altitude. That's not jet speed, but it does nibble at the smaller turboprops.

The 4.7 psi pressurization system is good and will keep the cabin at 10,000 feet when the airplane is at FL 240. The

CHECKLIST

- some think it's pretty
- unique engines
- near cabin class
- fun to operate
- solid flying platform



air conditioning worked great on the trip, which was in the summertime.

The Duke has a deserved reputation of liking its runway, though I was able to operate out of runways of 3,000 feet or so. It did use most of the runway and there was no engine-out capability until some altitude was gained. My reflection on this was, "Most light twins have two engines because under some conditions, they need them."

For the time, the Duke that I flew was well-equipped with a sophisticated autopilot, weather radar, and top-of-the-line avionics. The cabin was comfortable for four and the Duke had payload numbers that worked. The airplane tested would go with full fuel and 858 pounds of payload, which was quite good with its level of equipment.

The Duke was so much fun that, yes, it remains a tempting airplane today. Dukes are strong in the used market, though not as strong as the pressurized Cessna twins. There were 21 Dukes listed for sale in a recent issue of *Trade-A-Plane*, with the lowest price $74,500 for a 1970 model with run-out engines, and the highest $255,000 for a 1979 model with relatively low engine time. Even though they average about 20 years old, most Dukes have under 3,000 hours total time and some have a lot less than that, so there's not a lot of wear on the airframes. This is good because there is a pressure vessel structural life limit of 15,000 hours.

Vref, an aircraft value reference, shows a range of from $91,000 for a 1968 model to $300,000 for the last, a 1982 model. More than half the 410 Dukes in the U.S. were built in the first six years of production, so many on the market are from that time.

Aftermarket mods for Dukes include vortex generators, intercoolers and winglets.

The downside of a Duke relates to the maintenance bills. Look at that one for $74,500 with a need for engines: The bill for a complete refurb of the engines and props could cost as much as $100,000 or even more. Lycoming 541s are quite expensive to overhaul, and cutting corners wouldn't be prudent.

A lot of Dukes have new windshields. There has been a delamination problem and this can run $14,000 or more to fix. Just for routine maintenance, not including engine overhauls, a 200-hour-a-year Duke owner who wants to keep the airplane in top shape should budget about $150 per hour for the shop. As with so many used airplanes, the original purchase price can be a small first step.

Despite all of this, some who fly Dukes say they get King Air comfort and performance for less money. One thing is sure, too: Even though the Duke goes back 28 years, a sparkling one with a snappy paint job and shiny spinners will still turn heads on any ramp.—R.L.C.

1972 Beechcraft A60 Duke

The airplane flown for a 1972 report was equipped with air conditioning, weather radar, full ice protection and top-of-the-line avionics. The specifications and performance are presented here as they were in Flying, *October 1972, though some items have been added from other sources. Performance figures are based on standard conditions at sea level, except where noted, and are based on information from the manufacturer.*

Basic price	$179,500
Basic IFR price	$236,034
Price as tested	$261,709
Price today	$110,000 to $120,000 avg
Engines	Lycoming TIO-541-E1A4, 380 hp, direct-drive, turbocharged
TBO	1,200 hrs*
Propeller	3-blade, 74-inch, constant speed, full feathering
Length	33.5 ft
Height	12.4 ft
Wingspan	39.3 ft
Wing area	212.9 ft
Wing loading	31.8 lbs/sq ft
Seats	6
Empty weight, as tested	4,687 lbs
Useful load, as tested	2,132 lbs
Payload with full fuel, as tested	858 lbs
Maximum ramp weight	6,819 lbs
Maximum takeoff weight	6,775 lbs
Power loading	8.91 lbs/hp
Fuel capacity	204 gals/1,224 lbs
Baggage capacity	500 lbs
Baggage area	32.5 cu ft
Minimum runway, 2 engines	3,045 ft
Rate of climb	1,601 fpm
Single engine rate of climb	307 fpm
Service ceiling	30,800 ft
Single engine service ceiling	15,100 ft
Maximum speed	244 kts
Cruise (75% @ 26,000 feet)	239 kts
Econ cruise (55% @ 29,000 feet)	213 kts
Range @ max cruise (45 min reserve)	1,035 sm/900 nm
Range @ econ cruise (45 min reserve)	1,168 sm/1,015 nm
Duration @ max cruise (no reserve)	4.67 hrs
Stall speed (clean)	85 kts
Stall speed (gear and flaps down)	76 kts

*TBO has increased to 1,600 hrs for some if not all TIO-541s. Check before buying.