

MUSCLE BEECH

*Short-body Barons
mix sporty handling
with truck-like hauling*

BY PETER A. BEDELL

Since its inception in the mid 1950s, the light twin has been looked upon as one of the ultimate forms of personal air transportation. The Beech Baron, now in its thirty-fourth year of continuous production, has remained an icon of the light twin category. ■ Introduced in 1961, the Baron emerged from Beech's 95 series, better known as the Travel Air. Beech swapped the Travel Air's 180-horsepower Lycomings for a pair of 260-hp Continental IO-470s. After some cosmetic and ergonomic changes, the first 95-55 Baron was created and Beech dealt out some serious competition to Cessna's speedy 310. ■ Five seats were offered that first year. However, a sixth seat was added with the introduction of the A55 in 1962. In 1964, the B55 was introduced. Marketed as the economy Baron, the B55 proved to be the big seller of the line, capturing more than

PHOTOGRAPHY BY MIKE FIZER



half of all 55-series sales.

In 1966, Beech lengthened the nose of the B55 by 12 inches and installed two 285-hp Continental IO-520s to create the C55 Baron. Produced alongside the B55, the C55 claimed a 200-knot cruise and a 1,700-foot-per-minute climb at a 5,300-pound max gross weight.

In 1968, the D55 replaced the C and incorporated the "speed-sweep" streamlined windshield. The E55 was introduced in 1970 and remained in production alongside the B55 until 1982, when the 55s were dropped in favor of the stretched Model 58. A total of 3,654 55-series Barons were built; 1,201 were C, D, and E55s.

Using a 55 as a guinea pig, Beech spun off another lesser known version of the Baron in 1967. To create the 56TC Turbo Baron, company engineers hung a pair of 380-hp Lycoming TIO-541s on a C55 and sent it into production. At 250 knots, this hot-rod predecessor of the Beech Duke was the fastest piston twin of its time. In fact, the 56TC could

easily outrun its kerosene-burning brother, the King Air 90. Finding one of these thirsty brutes may be tough, however. Beech made just 94 between 1967 and 1972; and only 58 are currently registered with the FAA.

Although the C, D, and E55s fly on almost 200 fewer horsepower than the Turbo Baron, there is still plenty of power left for some heavy hauling. A power-to-weight ratio of 9.3 pounds per horsepower explains a lot about the performance of these airplanes. With a useful load nudging the one-ton arena, the 1968 D55 pictured on these pages can carry six 170-pounders, full fuel, and 99 pounds of baggage. After a 596-foot ground roll, it can then lift that load off the ground and clear a 50-foot obstacle in 968 feet, according to the pilot operating handbook's obstacle-takeoff figures.

To achieve takeoff numbers like this, however, liftoff must occur well below the airplane's minimum controllable airspeed (V_{MC}), inviting a potentially disastrous situation in the event of an engine failure. After a number of V_{MC} rollover stall/spin

accidents occurred during training, Beech and many other manufacturers were asked by the FAA to issue a revision to their POHs establishing a V_{SSE} (minimum safe single-engine speed). In the case of the C, D, and E55s, 85 knots or better is the magic speed that operators are encouraged to maintain when one engine is caged.

After the takeoff rotation speed was raised to the new V_{SSE} , takeoff figures took a bashing and were raised to more than double the previous numbers. Extended flaps are no longer an item on the takeoff checklist because of their effect in lowering liftoff speeds—as much as 20 knots below V_{MC} . New figures reflect a ground roll of 1,315 feet and 2,050 feet to clear a 50-foot obstacle. These figures should be your guide to safe operation of the airplane. However, if you're in a

pinch, the previously documented performance is there.

The AOPA Air Safety Foundation recently published a type-specific safety review for the Baron series (see "Safety Pilot," *July Pilot*). As is the

case with most airplanes, the study revealed that the Baron's biggest enemy is its pilot. Nearly 80 percent of all Baron accidents (serious or minor) were attributed to the pilot, slightly worse than the record of the comparison aircraft. Areas where pilots had problems with the airplane included fuel management, failure to lower the landing gear, and retraction of the gear during the landing roll.

Retractions on rollout have been attributed to, among other things, the non-standard placement of the gear and flap switches. Looking, feeling, and confirming before you throw a switch is standard operating procedure for those new to the 55s. With the flap switch on the left of the power quadrant and the gear on the right (unlike the now-standard gear-left, flaps-right layout), many 55s have ended up on their bellies after the pilot retracted the gear, instead of the flaps, during the landing roll. This supports the age-old "wait 'til you're off the runway" adage. Barons are equipped with at least one squat switch on the gear. However, at high

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Trademarks of the 55s include the reversed gear and flap switches and reversed prop and throttle controls. Dual yokes can be swapped for the single throw-over yoke to increase room and panel accessibility.



speeds, there may not be enough load on it to trip the switch.

Despite pilots' grabbing the wrong switch, the Baron fared better than the comparison aircraft, averaging 4.7 total accidents per 100,000 hours flown between 1982 and 1993. The comparison aircraft—which included the Cessna 310, and Piper Apache, Aztec, and Aerostar, among others—managed 5.4 accidents per 100,000 hours.

In addition to the nonstandard gear and flap control locations, Beech placed the throttles in the middle of the power quadrant, instead of the now-standard left side. A throwback to the days of the Beech 18 and World War II, the throttles-in-the-middle-layout reasoned that pilot and copilot would have equal access to the power levers. Since many of Beech's twins were designed that way, it made an easy transition for pilots to move up

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the line. Unfortunately for Beech, none of the other manufacturers took to this layout, and it eventually complied with the norm in 1984 with the redesign of the Baron 58.

If in the market for a used Baron, be very liberal in the amount of type-specific training you receive. Insurance companies like to see 200 hours in type before giving pilots a reasonable premium. If you have a lot of multi-engine time in other twins and decide to buy a Baron, your carrier may require you to take five hours of instruction, considering the increased chance that you will grab the wrong switch or "feather" the throttle. Check with your insurance carrier before committing to a buy.

Panel oddities aside, there's no denying that the Baron is extremely pleasing to fly. Its fingertip handling encourages pilots to take the twisty and scenic route home. At lighter weights, climb rates in excess of 3,000 feet per minute will plaster a smile on the face of any GA pilot. Overall, flight characteristics are well balanced and,



Barons offer impressive short-field performance, if needed, by extending the flaps to 15 degrees. Careful consideration must be given to rotating below V_{MC} , though.





although the airplane has three-axis trim, there is rarely a need to touch either the rudder or aileron trim.

Single-engine performance in the C, D, and E55s is one of the best in their class. At sea level and max gross weight, the D55 will climb away at about 335 feet per minute with the critical left engine's propeller feathered. Later models of the E55 claim 388 feet per minute. At lighter loads, we've seen a solid 1,000 feet per minute at blue line.

Despite all its good handling traits, the Baron has a Jekyll and Hyde personality if the airspeed gets too slow. With a V_{MC} that is higher than the stall speed at sea level, the Baron can lose directional control before the wing gives the pilot any warning of a stall.

Vortex generators (VGs) placed on the wing and rudder (or vertical stabilizer, depending on who makes the kit) have become a popular addition to enhance the Baron's low-speed handling characteristics. One VG manufacturer claims to reduce V_{MC} by as much as 12 knots and stall by 10 knots. If consistently utilizing short runways, the VG kit should be considered to lessen the chance of a V_{MC} mishap near the ground. In flying this aircraft both before and after the application of VGs, we can say that it, in fact, lowered the indicated stall speed by about 10 mph. Loss of directional control during a V_{MC} demonstration occurred at about the same indicated airspeed, but the after-VG test was conducted in much cooler weather, giving the benefit of the doubt to the VGs. We chose not to actually stall the airplane in a V_{MC} situation, given the ship's not-too-glamorous reputation for entering a flat spin.

Besides vortex generators, engine conversions from a number of shops will swap out the stock IO-520s for 300-hp IO-550s. The American Bonanza Society (316/945-6913) has proven to be a haven for Baron owners despite its type-specific name. The 10,000-member ABS publishes a monthly magazine that contains almost any contact you may need in order to care for, upgrade, or modify your Baron. ABS also provides technical assistance through aircraft service clinics (see "The Wrenching Experience," December 1994 *Pilot*) where your particular airplane is inspected. A spinoff of the ABS is the Bonanza/Baron Pilot Proficiency Program, Inc., which offers pilot training



courses in the owner's aircraft. SimCom of Orlando, Florida, also offers type-specific simulator training and flight training in your aircraft.

Once strapped inside the older Barons, you'll probably notice a lack of shoulder harnesses unless the aircraft was retrofitted with an aftermarket belt system. The pilot's seat is high and commanding and offers a nearly 360-degree view. Side windows that curve into the roofline provide good upward visibility. Emergency-exit windows that open and a pilot's storm window help keep the cabin cool on summer days. Once the Baron is airborne, overhead vents and a slew of vents in the floor keep things cool for the few minutes it takes to reach cooler altitudes.

The 55 Barons are either extremely roomy four-place airplanes or somewhat tight six-place airplanes. Unlike the optional club-seating 58s, the 55s offer forward-facing seats only. The middle passengers enjoy a comfortable ride in a cabin that is generous in headroom and legroom. Aft seaters may feel a little pinched because of the tapering airframe. In the back, kids will be fine, but adults confined to the aft seats may want to stay there only a

Passengers riding in the middle row enjoy a comfortable ride in reclining seats, but adults confined to the aft seats may be limited to only a few hours.



short time. Aft CG limits must also be considered before loading adults back there. If need be, baggage or sandbags can be placed in the nose to stay within CG limits.

With six on board, the baggage area is still ample. In taking a number of trips with this airplane, we have learned that whatever can fit into a full-sized station wagon will fit into the D55. The nose baggage bay can hold 300 pounds of things as large as an ice chest and some

suitcases. An extended aft baggage compartment behind the aft seats is good for 120 pounds of additional cargo. If the rear seats are removed (as is done by many owners), a cavernous 45-cubic-foot area is available for whatever un-gainly cargo can fit through the doors.

In terms of speeds, the airplane performs as well as, or better than the POH promises. On a recent trip from the Washington, D.C., area to Prescott, Arizona, the D55 proved to be a versatile performer. With passengers to be scooped up in Wichita and relatives to visit in Santa Fe, New Mexico, plus fuel stops, the total time for the 3,635-nm trip was 19 hours—equating to an average groundspeed of 191

knots. Most legs were flown at 65 percent power (21 inches or full throttle, depending on altitude, and 2,400 rpm). This setting provides about a 190-knot cruise with a fuel burn of 27 gallons per hour at a mixture setting of 75 to 100 degrees rich of peak EGT.

Exploring the long-range performance of the D55, we made the leg from Prescott to Wichita a non-stop bladder tester. As we sucked oxygen at 13,500 feet, the IO-520s were run-

ning on 18 inches of manifold pressure with the propellers pulled back to 2,100 rpm. Fuel flow settled on about 20 gallons per hour total. True airspeed hung around 170 knots. At this setting, the 750-mile leg was covered in just over four hours with the aid of a couple of knots of tailwind. Well over an hour's fuel remained in the tanks upon our landing in Wichita.

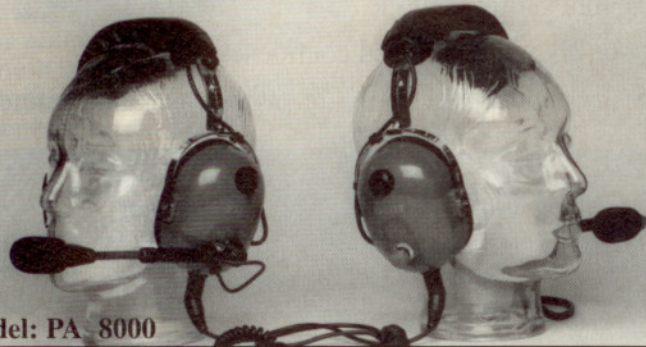
With only four aboard, the trip was plenty comfortable, save for the Janirol heater that gave up the ghost and



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required us to retrieve blankets from the back. Like most piston twins, Barons are not particularly quiet airplanes inside. As one colleague puts it, "That'll happen when you put an extra engine, propeller, and 20 knots on a Bonanza." A good headset/intercom arrangement or plain earplugs also do a good job.

Another inconvenience is fishtailing in turbulence. Since they share the same basic fuselage, the 55 Barons and the short-bodied Bonanzas both tend to fishtail readily. If not already equipped, a good yaw damper may be a wise investment.

Descent planning is one of the most important considerations to make in flying the Baron. Lower the nose a few degrees and the airspeed rushes towards the yellow arc—but don't pull off too much power and crack those costly Continentals. The IO-520s have established a pretty nasty reputation for developing crankcase cracks. However, as with many other engines with "tainted" reputations, a little extra care will probably take the engines to TBO relatively unscathed.

Although a number of accidents have been blamed on fuel mismanagement, the Baron's fuel systems are not too complex—compared to, say, the Cessna 310. Older Barons have four tanks and were offered standard with 106 usable gallons, although most left the factory with the optional 136-usable-gallon tankage, to allow for a more realistic range. For takeoff and landing, only the mains are to be selected. Many investigations into engine-failure-after-takeoff accidents revealed one or both fuel selectors in the Aux position. In 1974, Beech offered a new fuel system that contained the fuel in one tank per wing, which limited selector position to On,

Off, or Crossfeed. In addition, an optional 166-gallon capacity was offered that year, which increased range to 1,212 nm in the E55.

Operating costs are more or less in line with those of other airplanes in this class. Beech's notoriously high parts prices can drive the costs up, but many owners feel an hourly figure that doubles the cost for fuel works out well. At an average 30 gallons an hour for the big-engined 55s, that works out to around \$120 an hour. If the airplane flies fewer than 100 hours a year, expect that figure to rise to



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The Baron's landing gear has proven to be reliable, so long as it is not retracted on the ground.

about \$175 per hour. One owner attributes his low operating costs to the fact that the Baron—unlike an Aerostar, for example—can fit into an average-sized T-hangar instead of renting space in his airport's gang hangar.

For aircraft owners thinking of stepping up to a twin, the decision is one of the hardest to justify, but the time may be right. In just three years, the value of an average 1968 D55 has risen \$12,000, according to the *Aircraft Bluebook-Price Digest*. But the Baron is still less valuable than an average 1968 Bonanza 36. This popular aircraft costs \$12,000 more than the average D55 of the same year, according to the *Bluebook*.

Fact is, the single would probably suit your needs more efficiently unless you regularly haul big loads out of short strips and cruise more than a few hundred miles. Still, the big-engined, short-bodied Barons provide a lot of airplane for the money.

Continued

1968 Beechcraft Baron D55
Current market value: \$70,000

Specifications

Powerplants	2 Continental IO-520-C, 285 hp ea
Recommended TBO	1,700 hr
Propellers	McCauley two-blade, constant-speed, full feathering
Length	29 ft
Height	9 ft 3 in
Wingspan	37 ft 10 in
Wing area	199.2 sq ft
Wing loading	26.6 lb/sq ft
Power loading	9.3 lb/hp
Seats	6
Cabin length	11 ft 9 in
Cabin width	3 ft 6 in
Cabin height	4 ft 2 in
Empty weight	3,053 lb
Empty weight, as tested	3,389 lb
Max ramp weight	5,324 lb
Gross weight	5,300 lb
Useful load	2,271 lb
Useful load, as tested	1,935 lb
Payload w/full fuel	1,455 lb
Payload w/full fuel, as tested	1,119 lb
Max takeoff weight	5,300 lb
Fuel capacity, std	112 gal (106 gal usable) 672 lb (636 lb usable)
Fuel capacity, w/opt tanks	142 gal (136 gal usable) 852 lb (816 lb usable)
Baggage capacity	nose 300 lb, 18 cu ft; aft 400 lb, 35 cu ft; extended aft 120 lb, 10 cu ft

Performance

Takeoff distance, ground roll (obstacle)	596 ft
Takeoff distance over 50-ft obstacle	968 ft
Accelerate-stop distance	2,525 ft
Accelerate-go distance (normal T.O.)	1,315 ft
Max demonstrated crosswind component	22 kt
Rate of climb, sea level	1,670 fpm
Single-engine ROC, sea level	335 fpm
Max level speed, sea level	210 kt
Cruise speed/endurance w/45-min rsv, opt. fuel (fuel consumption, ea engine)	
7,000 ft @ 75% power, best economy	200 kt/3.8 hrs (90 pph/15 gph)
10,500 ft @ 65% power, best economy	191 kt/4.7 hrs (75 pph/12.5 gph)
Service ceiling	20,900 ft
Single-engine service ceiling	7,100 ft
Landing distance over 50-ft obstacle	1,414 ft
Landing distance, ground roll	868 ft

Limiting and Recommended Airspeeds

V _{MC} (min control w/critical engine inop)	80 KIAS
V _{SSE} (min intentional one-engine ops)	85 KIAS
V _X (best angle of climb)	87 KIAS
V _Y (best rate of climb)	102 KIAS
V _{XSE} (best single-engine angle of climb)	87 KIAS
V _{YSE} (best single-engine rate of climb)	99 KIAS
V _A (design maneuvering)	156 KIAS
V _{FE} (max flap extended)	152 KIAS
V _{LE} (max gear extended)	143 KIAS
V _{LO} (max gear operating)	
Extend	143 KIAS
Retract	143 KIAS
V _{NO} (max structural cruising)	196 KIAS
V _{NE} (never exceed)	224 KIAS
V _{S1} (stall, clean)	79 KIAS
V _{SO} (stall, in landing configuration)	69 KIAS

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.