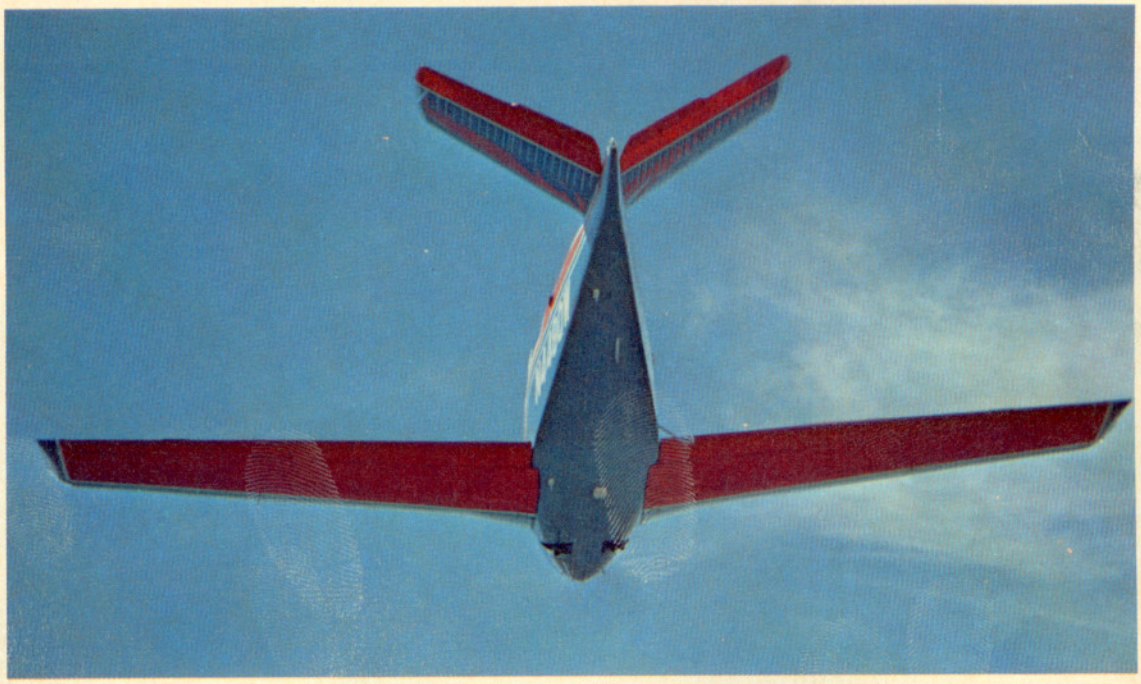
pilot flight check:

The BEECHCRAFT BONANZA V35B



Classic symbol of the 200-mph-plus Bonanza V35B is its "V" or "butterfly" tail. The airplane will range to 1,007 statute miles, including 45 minutes of reserve fuel.

Now in its 27th year of production, its hallmarks continue to be high performance coupled with flying ease and ruggedness

by ROBERT I. STANFIELD / AOPA 155494

■■ Beech Aircraft is marketing three 1974 Bonanzas. There is the F33A, dubbed by the company "the unconventional Bonanza with a conventional tail." There is the A36 (also single-tailed), termed "the longest Bonanza." And then there's the V35B, which sports the original "V" or "butterfly" tail.

AOPA chose to fly the V-tail, now in its 27th year of production. A monument to this model series is the fact that more than 12,000 butterfly- and single-tail Bonanzas have rolled off the Wichita, Kan., line since the first V-tail was produced in 1947. The single-tailed version, otherwise similar in configuration, first came to light in 1960. And of the total number of Bonanzas produced, 78% are still flying.

The V35B is a comfortable, fast and rugged airplane, licensed in the utility category—at full gross weight of 3,400 pounds—to 4.4 positive G forces. It meets structural requirements 15½% higher than normal-category standards (stresses placed upon an airplane during normal usage).

Its 285-hp Continental IO-520-BA six-cylinder fuel-injected engine generates a top speed of 210 mph at sea level. Cruise, at 75% power (6,500 feet), is specified as 203 mph (true airspeed). And cruise range, with 74 gallons of 100/130 octane usable fuel (including allowance for warmup, taxi, takeoff and climb, plus 45 minutes reserve), varies

BEECHCRAFT BONANZA V35B

Performance

Top speed (sea level)	210 mph
Cruise speeds:	
75% power (6,500 ft)	203 mph
65% power (10,000 ft)	198 mph
45% power (12,000 ft)	164 mph
Cruise range (74 gal, including 45-minute reserve plus fuel allowance for warmup, taxi, takeoff and climb):	
75% power (6,500 ft)	816 sm
65% power (10,000 ft)	900 sm
45% power (12,000 ft)	1,007 sm
Rate of climb (sea level)	1,136 fpm
Service ceiling (3,400 lb)	17,500 ft
Absolute ceiling (3,400 lb)	19,200 ft
Stall speeds (power off):	
Gear/flaps down	63 mph
Gear/flaps up	74 mph
Takeoff ground roll	1,115 ft
Takeoff (over 50-ft obstacle)	1,870 ft
Landing ground roll	797 ft
Landing (over 50-ft obstacle)	1,505 ft

Specifications

Engine	Continental six-cylinder, fuel-injected IO-520-BA, rated at 285 hp at 2,700 rpm
Propeller	McCauley constant speed, two blades of 84-in. diameter, or three blades of 80-in. diameter
Weights:	
Max ramp	3,412 lb
Max takeoff	3,400 lb
Max landing	3,400 lb
Empty (includes unusable fuel and standard avionics)	2,031 lb
Useful load (standard airplane)	1,381 lb
Wing area	181 sq ft
Wing loading	18.8 lb/sq ft
Power loading	11.9 lb/hp
Dimensions:	
Wingspan	33 ft 6 in
Length	26 ft 5 in
Height (top of fin)	7 ft 7 in
Cabin length	8 ft 1 in
Cabin width	3 ft 6 in
Cabin height	4 ft 2 in
Passenger door	36 in × 37 in
Baggage door (standard)	18.5 in × 22.5 in
Usable fuel:	
Standard tanks (22 gal each)	44 gal
Optional tanks (37 gal each)	74 gal
Oil capacity	12 qt
Baggage:	
Volume	35 cu ft
Utility shelf	1.7 cu ft
Capacity	270 lb
Basic price	$47,350

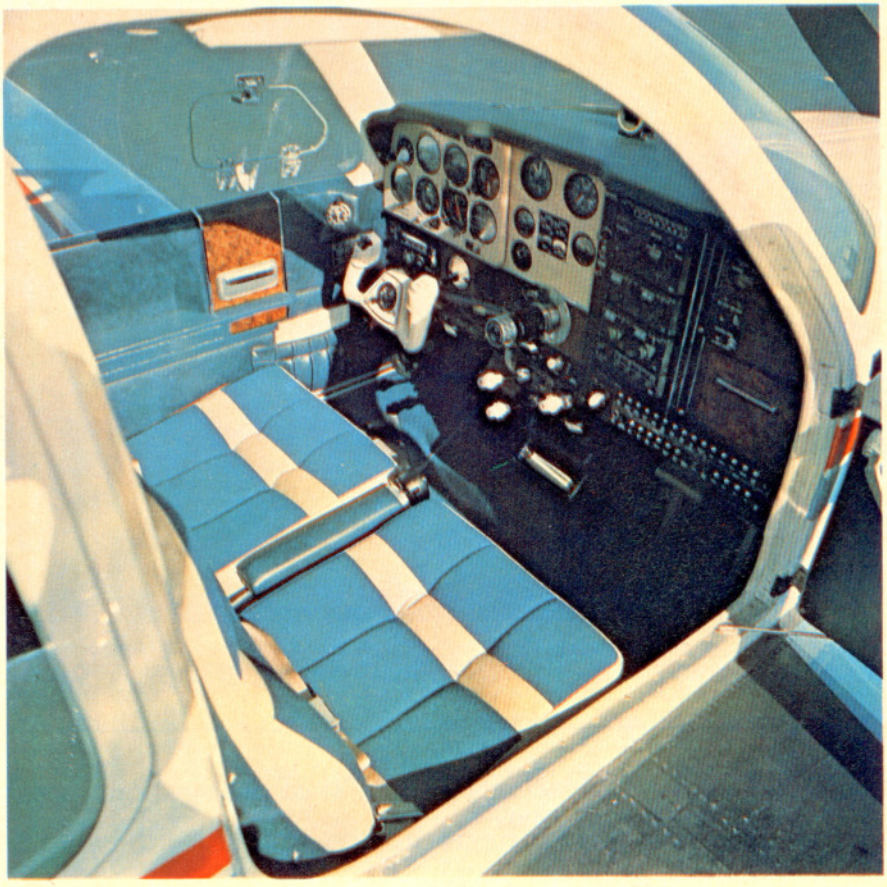
from 816 statute miles at 75% power to 1,007 statute miles at 45% power.

Key features evidenced during flights by The PILOT, during which specified performance figures were met or exceeded, included:

- Cruising at 6,500 feet, 75% power, the airplane trued out at 206 mph. Fuel flow was 15 gph. Cruising at 8,000 feet, 65% power, true airspeed computed at 196 mph. Fuel flow was 14 gph.
- During slow flight at 8,500 feet, gear and flaps up, and holding to an 85-mph indicated speed, the aircraft was quite stable and responsive in steep banks, left and right. The same tendencies applied in flight at 9,500 feet, gear and flaps down, indicating 80 mph.
- Stalls were flown power off, both "dirty" (gear and flaps down) and "clean" at 9,500 feet. In the former configuration the stall warning activated as we eased back through 60 mph; the "break" came at 52 mph indicated and was straightforward and easily controllable. Clean, power off, the warning indicator activated at 78 mph, with break-away at 63 mph; the recovery again was quick and with a minimum loss of altitude—about 200 feet.
- Rapid deceleration and descent, when necessary, is keyed to the landing gear extension speed (the gear takes but 9 seconds to extend or retract) of 175 mph. At 7,500 feet the V35B, cruising at 180 mph indicated, following the chopping of power and the dropping of gear, then flaps, took only 15 seconds to decelerate to 100 mph. With the nose eased down to 140-mph indicated speed (maximum flap extension speed), the V35B's rate of descent was 3,500 fpm. With the flaps retracted and speed building up to 175 mph, the airplane moved down in excess of 4,000 fpm.

The Bonanza flown was the smart-looking, red-white-and-blue N3135W, the 9,538th V-tail produced. And, while the base price of the V35B is $47,350, this demonstrator was loaded with $29,484 of optional equipment, bringing its actual price to $76,834. Most manufacturers will load their demonstrators with options, simply to show them to

Panel configuration of the V35B includes instruments grouped in the useful "T" formation and a radio stack canted towards the pilot.



prospective customers. The average equipped V-tail will move out of the factory at a cost between $60,000 and $65,000.

With its optional equipment, the empty weight of N3135W was 2,194 pounds. Coupling 26 pounds of oil and 36 pounds (six gallons) of unusable fuel, the basic empty weight totaled 2,256 pounds—leaving 1,144 pounds for additional fuel and passenger/baggage loading. Should the tanks be topped (74 gallons), adding 444 pounds, then 700 pounds would be left for people and baggage.

This airplane carried a fifth optional fold-away seat (child's) in the aft section, with a maximum structural capacity of 270 pounds. Another such seat could be carried. Also included was the optional large cargo door, 22½ inches tall by 37¼ inches wide.

Walk-around of the flush-riveted aircraft showed all flaps and ailerons to be internally hinged, creating little drag. Slotted flaps (30 degrees maximum extension) allow an 11-mph stall advantage. All controls are on ball bearings, at the movement point. The wing itself is of two-spar construction—running from one wingtip to the other.

And the strong gear—the same as used in Beech T-34 military carrier landings—is also the same as is utilized by the 5,400-pound Beech B58 Baron. It is attached fore and aft on the spars, with a maximum extension limit of 200 mph. It has been tested to a descent component of 600 fpm without structural damage.

The single-opening cowlings (one latch) show the engine to be seated in a cradle mounted to the keel section—a safety feature in that, in event of an emergency, the engine will follow the keel down, not back. Standby generators of 12 volts each, mounted on the engines, offset any alternator loss.

The Bonanza is a plush airplane. The roomy interior includes individual air outlets for each seat. Two side windows (one on each side) will open all the way for emergency exit; they partially open for ground ventilation. Behind the pilots' seats is the emergency gear extension handle (which one can feel, but cannot see).

One bright feature of the panel layout is the radio stack, which is canted toward the pilot (and which contains an avionics master switch that will turn off everything).

All instruments feature internal lighting (as against post lighting). A floodlight runs clear across the top (underside) of the panel.

Engine instruments are grouped with the fuel flow over the mixture control (as is the exhaust gas temperature—EGT—gauge), the manifold pressure gauge over the throttle, and the rpm gauge over the propeller control. Flight instruments are grouped in the useful "T" formation. (The indicated airspeed is calibrated, eliminating the need for the use of tables.)

Our initial flight was made with three aboard, including Beech marketing representative Stephen T. Millham. With our weight total of 510 pounds, plus 276 pounds (46 gallons) of fuel and 40 pounds of baggage, we initially grossed out at 3,082 pounds.

Field elevation at Virginia's Dulles International is 313 feet. At takeoff the sea level pressure was 30.03. Outside air temperature was 57°F, and wind was from the south at 8 knots.

At full throttle, directly into the wind, it didn't take long for the speed to build up to 70 mph, where we eased the nosewheel off and began rotation. Liftoff, at 90 mph, was after a ground roll of about 1,200 feet.

With power reduced to 25 inches of manifold pressure and 2,500 rpm, we initially began climbout at a "cruise/climb" speed of 140 mph indicated. Passing through 1,700 feet, holding to this airspeed (which, combined with a shallow climb angle, gives fine forward visibility for high-density airport operation), our rate of climb was 700 fpm.

Best angle-of-climb speed of the V35B is 95 mph; best rate-of-climb, 111 mph. The aircraft was angled up to the latter speed and, passing through 4,000 feet, we were moving up at the rate of 1,000 fpm. Through 6,000 feet, indicating 130 mph, and pulling 23 in. mp and

Short and rough fields pose little problem to the Bonanza. The gear has been tested to a descent component of 600 fpm.

Clean lines of the V35B enhance its performance. Sea level rate of climb is specified as 1,136 fpm; service ceiling is 17,500 feet.

2,500 rpm, the climb rate was 800 fpm.

Only light trim was necessary during ascent; the airplane practically could be eased up hands off. Visibility through the large windshield-window area was good, and remained so through all phases of flight. The engine was relatively quiet, and we could converse without raising our voices.

The Bonanza always has been a fine airplane to fly. It has the "feel" of a heavier aircraft, and is quite smooth in response to varied control pressures. It is not overly sensitive or skittish to heavy-handed maneuvering.

During cruise at 6,500 feet, with outside air temperature (OAT) 9°C, we first held to 75% power—23 in. mp and 2,500 rpm—for an indicated speed of 185 mph (or 206 mph TAS). At 8,000 feet, with OAT of −5°C, power reduced to 65% —21 in. mp and 2,500 rpm—the aircraft indicated 175 mph (or 196 mph TAS).

Never-exceed speed of the Bonanza is 225 mph. Maximum structural cruising speed is 190 mph. The normal operating range runs from 73 mph to 190 mph.

Following a rapid deceleration and descent (noted earlier), the aircraft was flown to Maryland's Montgomery County Airpark for a fuel stop, lunch, and a short-field landing (and, later, takeoff).

Normal approach speed to the V35B is about 90 mph, with touchdown at about 70 mph. For the short-field approach, a normal downwind pattern was flown at 110 mph. But, on final, with full flaps extended (30 degrees), the approach speed was held to 75 mph.

With minimum power applied, and a slightly nose high attitude, the aircraft eased down to touchdown with the nosewheel fast following the main gear to the pavement. Ground roll was approximately 500 feet, for an easy turnoff at the first intersection.

An effective short-field takeoff normally is made with the use of flaps. In the Bonanza, 20-degree extension does the trick nicely. Holding the brakes momentarily, until full power was applied, resulted in a fast roll, and the aircraft was pulled off at 70 mph indicated. Ground roll was less than 1,000 feet.

Another full-flap landing, back at Dulles, was made at the normal approach speed of 90 mph. Again, ground roll was minimal—about 700 feet. Short fields pose little problem to the V35B.

Beech offers many options with its Bonanzas. Included in this aircraft was one of four "Super Utility" packages: the No. 2 version with the Mitchell Century III autopilot (which includes roll, pitch, heading control, altitude hold, pitch trim, radio and glideslope couplers, Mitchell 3-inch directional gyro and gyro horizon). Cost: $11,010.

Another optional package in lieu of standard avionics was the King KX-170B nav/com with KI-214 VOR/ILS/GS receiver/indicator, B11-1 com/nav/GS antenna and B-24 coupler. Cost: $8,350.

Two other options on this aircraft: the Edo-Aire Mitchell NSD-360-11 navigational situation display (pneumatic non-slaved directional gyro with VOR/ILS indicator) for $2,615. And the Bendix 325 2013-0201 encoding altimeter with single-pointer-dial display (exchanged for standard altimeter) at a cost of $1,695.

In computing the estimated operating cost of the V35B in annual increments of 400, 500, 600 and 700 hours, Beech comes up with respective total-operating-cost-per-hour figures of $20.71, $19.69, $19.01 and $18.53. Operating costs per mile, respectively, would be 10.9¢ (76,000 miles); 10.3¢ (95,000 miles); 10.0¢ (114,000 miles); and 9.7¢ (133,000 miles).

When the Bonanza was first introduced in 1947, it was an appealing and instantly successful airplane. If anything, it has gotten better over the years. □