

Used Aircraft Report:

The "Straight 35" Bonanza

by DON DOWNIE / AOPA 188441

The first 1,500 Bonanzas are commonly called the "straight 35," with a long expanding history of improvements. When the first prototype Bonanza flew in December 1945, the company had 500 orders with cash deposits—a backlog that grew to 1,500 before the first delivery in 1947. By the end of July 1978, 13,701 models of the Bonanza had been built.

Sitting in the Screaming Eagle Aviation shade hangar in Santa Paula, Calif., our test airplane, N202D, was No. 57 off the first year's production line, thus a very early Model 35. A data sheet in the window—the airplane was for sale—noted a 225-hp Continental with 230 hours SMOH, 3,499 hours on the airframe and nominal avionics. It originally was fitted with a 185-hp Continental engine. The price had been \$18,950 with a cut to \$17,900, but the airplane still was available. A 1978 V35B lists for \$73,470, so this was a bargain-basement approach to joining the Bonanza Society.

Mike Dewey (AOPA 225296), who heads Screaming Eagle, checked the keys and the paperwork before we pulled N202D into the California sunshine. Much of this airplane was original. The instrument panel was gray with gauges hard to read by today's standards. The Beech electric prop had well-preserved wooden blades. Seats were neither reclining nor adjustable. The stall warner was a vane in the airflow near the trailing edge of the left wing inboard of the aileron point. Avionics included a venerable Narco Omnigator, the bulky King KX-100 primary nav/com set and a large King ADF slung below the left side of the panel close to the pilot's knee.

Outside, the airplane looked good. Small tip tanks and a full paint job showed a minimum of hangar rash. Originally, the Model 35 came out with no paint, and many owners of this vintage airplane have maintained them in mint, mirror-clean condition. Ample cowling access doors opened to show the clean, 225-hp Continental that was standard in 1954-56 units.

All straight 35s and several later models contained the cussed and discussed combination manual fuel

pump, fuel selector and fuel strainer combined in one unit. The 1947 owner's manual states, "the fuel should be used from the left tank first because the carburetor fuel vapor-return line returns approximately three gallons of fuel per hour to this tank." This feature automatically provided a reserve of approximately five gallons in the left tank when the right tank had been used completely.

"The fuel-tank selector valve also operates as the fuel pump," said the manual. This selector switch required that it be pushed down to change tanks, and many an early Bonanza has been landed "out of fuel" with at least one tank filled.

Other cockpit installations that might be considered quaint by today's standards included placing the throttle vernier directly below the control yoke, burying the electric toggle switch that controls the rpm on the Beech propeller below the yoke where the pilot could feel it but not see it, a pinch-to-pull mixture control mounted on the left of the same subpanel with the gear and flap switches. Even though they were separated by the yoke, these switches worked in an identical manner, although the gear-up switch required moving a safety catch to activate it.

There has always been a problem in checking out with the Bonanza's single-pilot, throw-over control yoke. To give dual instruction and check-out, technically you should install temporarily a two-wheeled, full dual-control system. Since both Dewey and I were current in so-called "complex aircraft," (200 hp or more, retractable gear and flaps and controllable prop), this presented no great problem. One of my dusty log books shows a factory ferry flight back in 1948 with Bonanza 35 N798B. With stops at Garden City, Rock Springs and Salt Lake City and three aboard, our total flight time to Burbank had been only 9:35. Not at all bad in those days.

During our walk-around, we inspected the vintage stall warning vane fitted into the top of the left wing, inboard of the aileron point. (It wasn't until the C model that began production in 1951 that the conven-

tional leading edge stall warner was installed.) During subsequent steep stalls in flight, it was interesting to watch this vane flip up away from the wing surface as disturbed airflow came over the top of the wing.

While many Bonanza pilots have flown in and out of some extremely rugged airports, the owner's manual on the straight 35 notes that "taxiing over a 4-inch obstruction at 15 mph will impose a load on the nose wheel 42% greater than the design load." We stayed on pavement with N202D.

Flap travel through the B model was restricted to 20 degrees and, for some singular reason, the wiring on this particular airplane left the red warning light on when full flaps were extended. This unique feature caused us to make at least one go-around. Flap retraction time was 8 seconds, while extension was 10 at 105 mph. At the same speed, 5 mph above the recommended gear and flap speed, gear retraction was a leisurely 15.4 seconds and extension was 13.3.

The single control wheel on the yoke was, to put it politely, "dainty" when compared with today's "ram's horn" units. With seat travel restricted by the main spar, the cockpit is barely big enough for a long-legged pilot. Shoulder harnesses became standard on later F models and were discontinued after that.

With Dewey assiduously studying the checklist, we pumped fuel into the Continental and finally were rewarded with noise, smoke and finally a contented purr. We taxied slowly down the limited ramp at Santa Paula and admired the excellent visibility of this, one of the first of all Bonanzas. There really isn't a blind spot in the cockpit except for under the wing—and that's no problem on the ground.

Our runup was by the book and unhurried. When an airplane is up for sale, you want to be really sure that all systems are go before leaping into the air.

We leaped, and things worked out predictably. The gear came up and we toggled the prop back to 2,500 rpm, retaining full throttle as prescribed in the manual. With just two of us aboard and full main tanks,



Many original Bonanzas have been modified and modernized by their owners. The one flown by the PILOT was no exception, with added third window, tip tanks—and a full paint job. Original stall warning vane remains on top of the left wing, just forward of the flap.

BEECH BONANZA 35

Straight 35 (1947)	E, F & G 35 (1954-1956)
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Specifications

Engine	E185 Continental, 185 hp	E225 Continental, 225 hp
Propeller	Beech electric, variable-pitch	Beech constant- speed
Wing span	32 ft	32 ft 10 in
Length	25 ft 2 in	25 ft 2 in
Height	6 ft 6½ in	6 ft 6½ in
Wing area	177.6 sq ft	177.6 sq ft
Wing loading	14.35 lb/sq ft	15.34 lb/sq ft
Passengers and crew	4	4
Cabin length	6 ft 11 in	6 ft 11 in
Cabin width	3 ft 6 in	3 ft 6 in
Cabin height	4 ft 2 in	4 ft 2 in
Empty weight	1,490 lb	1,675 lb
Useful load	1,060 lb	1,050 lb
Payload with full fuel	780 lb	797 lb
Gross weight	2,550 lb	2,725 lb
Power loading	15.5 lb/hp	14.6 lb/hp
Fuel capacity (standard)	40 gal	39 gal
Fuel capacity with aux tanks	70 gal	59 gal
Oil capacity	11 qt	10 qt
Baggage capacity	120 lb (16.5 cu ft)	270 lb (16.5 cu ft)

Performance

Takeoff distance (10-mph wind)	425 ft	500 ft
Rate of climb	950 fpm	1,300 fpm
Maximum speed	184 mph	194 mph
Normal cruise speed	175 mph (65% power, 10,000 ft)	184 mph (65% power, 8,000 ft)
Economy cruise speed		175 mph (53.3% power, 8,000 ft)
Range at normal cruise (no reserve)	750 sm	775 sm
Service ceiling	18,000 ft	19,000 ft.
Stall speed—CAS (clean)	59 mph	66 mph
Stall speed—CAS (gear and flaps down)	46 mph	55 mph
Landing distance (into 10 mph wind)	315 ft	227 ft

our rate of climb was well above the published 950 fpm; with an outside air temperature of 85°F, we showed 1,200 fpm rate of climb at 80 mph indicated. (The rate of climb of the subsequent A and B models dropped to 890 fpm, since the gross weight went up 100 pounds to 2,650.) Mingling in the busy airspace surrounding Santa Paula, we soon exchanged maximum rate of climb for a cruise climb where visibility over the nose was better. At the maximum angle of climb, over-the-nose visibility is fair to good. At 100 mph, it is excellent.

We climbed over the haze to 3,000 feet, set 23 inches and 2,300 rpm and soon had 150 mph on the clock. At 80°F this calibrates to 162 mph true. Not bad at all for an airplane designed in 1945.

It was a subtle pleasure to feel the light, responsive controls. Rate of roll was excellent and the tip tanks seemed to cut down on the original yawing tendency of the V-tail. Installation of tip tanks, 12-gallon "flight extenders," also tended to increase spiral stability, an item found wanting by many early Bonanza pilots. Later models carried a 20-gallon Brittain tank.

The straight 35 was probably the first of the "clean" post-WW II general aviation four-placers. Since it accelerated so quickly once the nose was dropped, it developed a reputation for shedding essential wing panels following spiral dives under instrument conditions.

Soon pilots found that lowering the gear when encountering rough IFR, even above the 100-mph gear speed, tended toward longevity. Today's sophisticated pilots have since learned to stay ahead of the airplane under these trying conditions and the Bo-

nanza is no longer considered a particularly "hot" airplane except that its performance remains excellent.

When you drive this older ship around the skies, it is difficult to realize that it's well over 30 years old. It's a great credit to Walter Beech and his crew of engineers that the design was as good as it is even by today's standards. No wonder the large, loyal American Bonanza Society had some 500 aircraft at their convention in San Diego this year.

With surprising candor, the Beech 35 owner's manual notes: "If the stick is suddenly pulled all the way back when flying at 124 mph IAS in the Bonanza which stalls at 64.5 mph (flaps and gear up), a G-load factor of 3.8 will be reached which will be on the verge of giving a permanent deformation of the wing. If the stick is suddenly pulled all the way back when flying at 153 mph IAS, a G-load factor of 5.7 will be reached which means that in the process of pulling the stick back the wing-failure load factor will have been reached. At 200 mph IAS a sudden elevator pull back will create a G-load factor of 7, and a wing failure will be certain."

After all the mystique of the Bonanza's sleekness and predatory stall characteristics, it was enlightening to get back and do some deep stalls. Dewey is one of the nation's best airshow aerobatic pilots, so our full-wheel-back stalls were interesting without being exciting.

Full "elevator" control was available under any stalled configuration and N202D showed no tendency to tuck a wing under even during accelerated turning stalls. Dewey demonstrated a drop of at least 1,000 feet with the wheel all the way back, elevators and "ailerons" locked in neutral in a "falling leaf," and keeping the ship right side up only with application of top rudder when a wing dropped.

Gear and flaps up or down, the stall is about the same. Flaps are restricted to 20 degrees of travel, so there is no steep angle of approach. We explored the slow-speed regime and headed back toward Santa Paula. Slow to 100 mph indicated and drop the gear. Small mirrors in the tip tanks confirm that we had "three in the green." For emergency gear extension, the handbook recommends:

"A handcrank is provided for the manual extension of the landing gear in case of emergency. This handcrank is located between the front seats at the back of the seats. It is operated by first placing the landing-gear circuit-breaker in the "Off" position and the landing-gear position switch in the "Down" position, then removing the safety strap, moving the handle down into the cranking position, and turning it counterclockwise. Approximately 50 turns are re-



The panel of N202D belies the airplane's age, with older-style instruments spread about the panel and radios unfamiliar to many of today's pilots. That's a Narco Omnigator navcom on the right and a large King KX-100 navcom on the left with an also bulky King ADF just visible below it.

quired to extend the landing gear.

"NOTE: The landing gear must not be retracted with the emergency handcrank."

Despite a go-around because of a red light on the flap circuit, approach and landing were compatible with aircraft much younger than our test airplane. Santa Paula's pattern is low and tight because of adjoining hills, yet N202D fitted in well with the homebuilts, J-3s—you name it—at this uncontrolled airport.

Take a matronly lady like the straight 35 for a flight and you want to know even more about her than you can ascertain in a tour of the friendly skies of Santa Paula. Ask a veteran like Moyer Stephens (AOPA 139230). Long after he flew travel writer Richard Halliburton around most of the world in a C-3 Stearman, pioneered many airline runs and joined an elite group of early test pilots on the Northrop Flying Wing, Moyer Stephens purchased straight 35 Bonanza N3087V in 1957. This was Production No. 503 and Stephens owned it for seven years and flew it about 700 hours.

At his comfortable Southern California canyon home overlooking the Cable Airport where he kept his Bonanza, Stephens paused in writing an aviation book to comment, "The straight 35 was a fine airplane. Inez and I flew that ship all over North America and much of Mexico. We flight-planned for 159 mph; that's wide open at 10,000 feet on 124 of our 185 hp. We burned just under 11 gph of 80 octane. We bought that ship for \$7,200 and sold it seven years later for \$7,500 after overhauling the engine and installing a con-

stant-speed prop.

"The main reason I sold the straight 35 was because of the AD on the tubular center section installed on the 1,500 straight 35 models. This factory directive, dated August 14, 1952, and revised November 5, 1963, called for five access doors in the bottom of the fuselage so that forward and rear tubular truss assemblies could be inspected (magnifluxed) for evidences of cracks. After the first 1,500 units, the structure was modified on the A model and the AD was not required."

Moyer Stephens enjoyed his Model 35 well enough to turn right around and purchase an H model that he flew for an additional 400 hours.

"The Bonanza has always been a skimmer," beamed Stephens. "Put it on the step and it'll really perform."

Talk to any Bonanza owner, particularly if his bird happens to be one of the older models, and you'll probably find a fiercely loyal owner who will be glad to take the next couple of hours to explain all the virtues of the Beech Bonanza.

Purchase of an older Bonanza, like the acquisition of an older classic automobile or yacht, is part a labor of transportation and expedience, but also partially a labor of love. □

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