



We're going

BY

Pilots can be picky. They have their own preferences, whether it's a Cessna 195 or any other type of airplane. The popularity of the Bonanza has intensified by the fact that many other airplanes are out of production for a long time. They are scarce, corrosion-prone, and it's a real urge to care for them proportionately. The Bonanza is a popular quest to find an airplane that performs, looks good, and is a classic. Bonanzas are ranked high among the most popular airplanes. Fortunately, the Bonanza is not an Aviation Specialty. Minnesota, offers a variety of Bonanzas for performance and other reasons. D'Shannon has a long history of flying general aviation aircraft and a great deal of experience around Bonanzas.

PHOTO

D'SHANNONIZING A DEBONAIR

We're going to pump you up.

BY THOMAS A. HORNE

Pilots can be fiercely devoted to their marques, whether they're short-wing Pipers, Cessna 195s, North American Navions, or any other type of aircraft. This dedication is intensified by the knowledge that most light airplanes are out of production and have been for a long time. Parts are becoming more scarce, corrosion is always setting in, and the urge to care for an endangered breed rises proportionately. Along with this goes the ever-popular quest to improve any airplane's performance, looks, and utility. ■ Owners of classic Bonanzas and Debonairs must certainly rank high among those most loyal to their airplanes. Fortunately for them, Beryl D'Shannon Aviation Specialties of Lakeville, Minnesota, offers a wide-ranging choice of performance and other modifications. ■ Beryl D'Shannon has been in the business of modifying general aviation airplanes for 30 years, and a great deal of its business revolves around Bonanzas, Debonairs, and Barons.

PHOTOGRAPHY BY MIKE FIZER

AOPA Pilot recently had an opportunity to look over one of its latest STC'd modifications—replacement of a stock Debonair's Continental 285-horsepower, IO-520-B engine with a D'Shannon-modified, factory-rebuilt, zero-time Continental IO-550 of 300 hp. In this case, the subject airplane is a 1967 C33A Debonair, and the modifications don't end with the engine, as we'll soon see.

The company calls the engine modification the "Raw Power" conversion, and it's aptly named. The standard-issue 285-hp engine gives the Debonair a 1,200-fpm rate of climb and a 75-percent cruise speed of 174 KTAS at optimum altitude. With the conversion, D'Shannon claims the Debonair becomes a fire-breather with a 3,000-plus-fpm initial rate of climb and a redline-nudging, 190-KTAS cruise at 75-percent power. Redline is 195 KIAS.

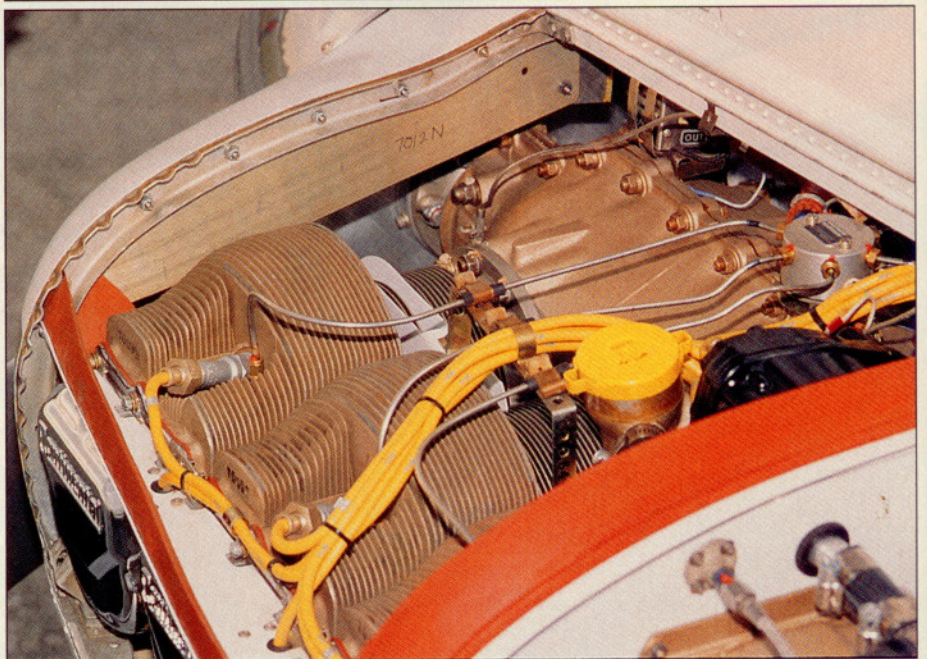
On my flights, initial rates of climb were in the 2,800-fpm range. Then again, I used a climb speed of 110 KIAS or so (V_Y is 95 KIAS). At 4,500 feet

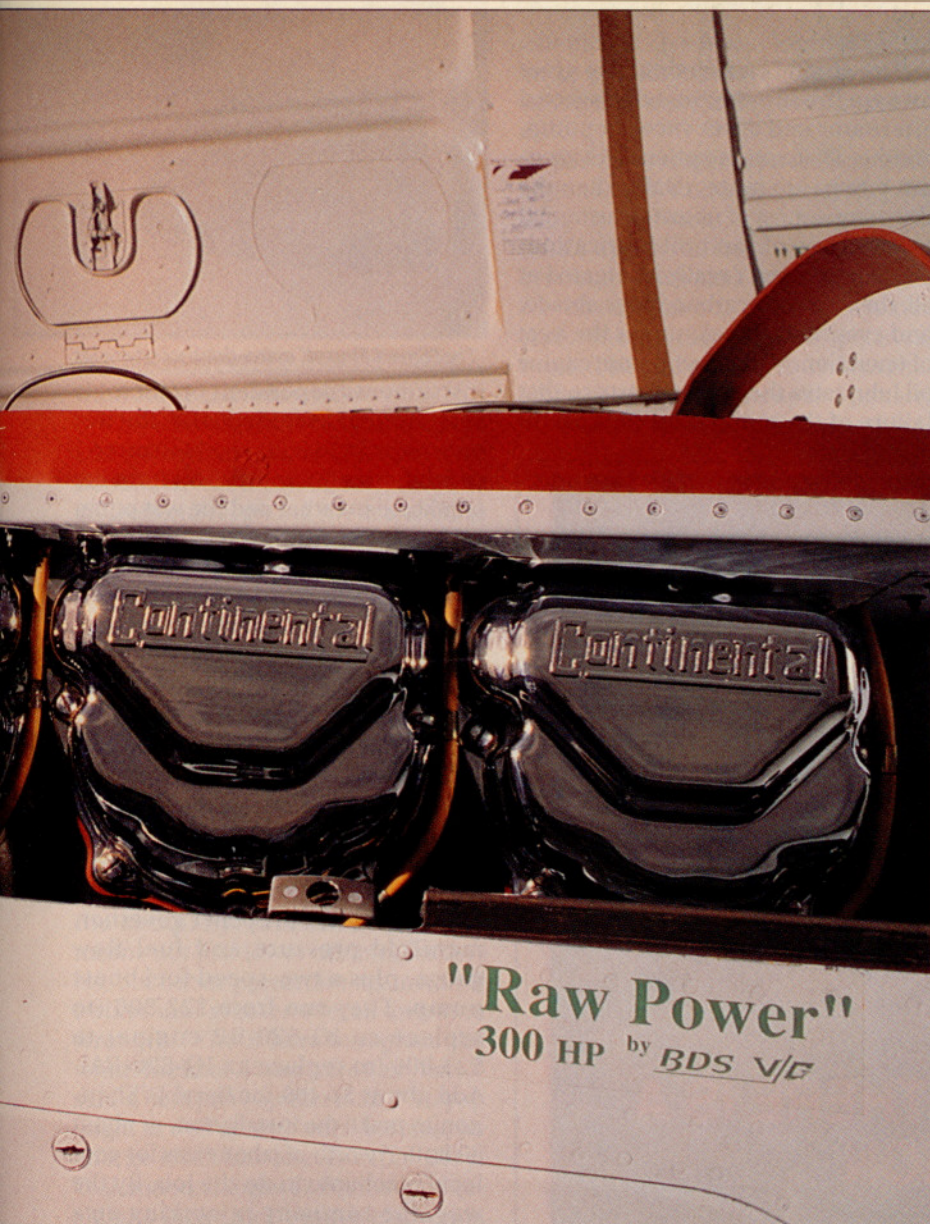


and at high-speed cruise settings, the airspeed indicator was indeed buried deep into the yellow arc. This argues for very careful attention to pitch control, especially in turbulent conditions. An even better idea would be to limit the use of high power settings to higher altitudes, where indicated airspeeds drop into the normal operating range.

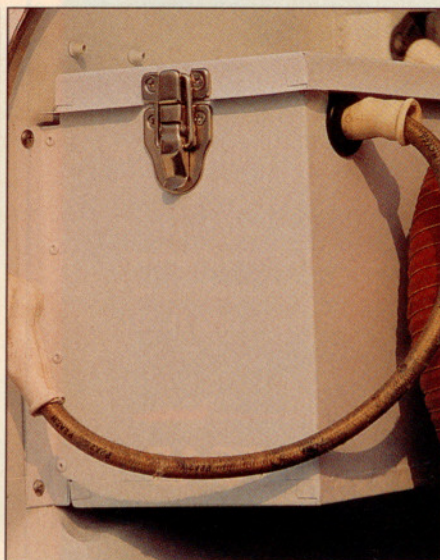
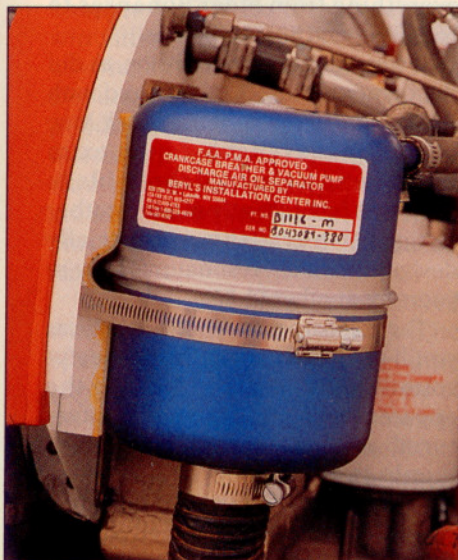
How can a mere 15 extra horsepower produce such a quantum leap in climb performance? Good question. A Beryl D'Shannon spokesman explains thusly:

Continental rates its IO-520s when driving accessories. Therefore, these engines aren't really putting out a full 285 hp. The spokesman goes on to say that the IO-550s are rated at 300 hp, but in reality, they may develop some





Beryl D'Shannon Aviation offers myriad mods for Beeches. Among them for the Debonair are the "Raw Power" Continental IO-550 engine upgrade with optional chrome heads, (below) wet vacuum pump, and stainless steel battery box.



15 additional horsepower. So the real difference between a runout IO-520 and a brand-new Raw Power IO-550 is more than 15 hp—it's more like 40 to 50 hp.

A representative of Teledyne Continental counters by saying that IO-520s are rated based upon a brand-new condition. Under old certification rules (which would have applied to the engine in the 1967 airplane we're referring to), the engine's power output could vary from plus 2.5 percent to minus 2.5 percent. So at the very least, an old IO-520—when new—may have been putting out about 278 hp.

As for the IO-550, they're certified under newer, more stringent rules. These rules require plus 5 percent, minus 0 percent variations in power output. So the most power a new IO-550 could create is 315 hp.

Therefore, the greatest power differential between new IO-520s and IO-550s *could* be about 37 hp, which is close to Beryl D'Shannon's claims. Obviously, that difference would be greater if the IO-520 was near TBO and, therefore, developing less power.

There's a fuel savings, too, according to Beryl D'Shannon. Compared to the IO-520, the IO-550 will burn about 1 gallon per hour less at 75-percent power, or about 14.7 gph. The IO-550's longer piston stroke is the main reason for this efficiency. The longer stroke makes the engine "a more efficient pump," according to a Continental spokesman. "For the IO-520, fuel specifics are about .42 to .44 pounds per horsepower per hour. In the IO-550, that number is lower—about .39 to .40 pounds per horsepower per hour," he added.

The IO-550 also has an automatic leaning feature that operates at both full and partial power settings. An aneroid sensor constantly adjusts the fuel/air mixture according to changes in ambient air pressure. For takeoff, the mixture is left in the full-rich position; as the airplane climbs, leaning takes place automatically. Once at cruise altitude, you lean manually, using published rich-of-peak exhaust gas temperature settings. Once set, the sensor will maintain the selected fuel/air mixture.

There are additional benefits to the conversion. These relate to engine longevity and component reliability. Beryl D'Shannon installs cylinder baf-

fling of its own design and seals the top end of the engine compartment very, very tightly, using specially shaped, molded rubber seals and a compartment enclosure made of a sandwiched aluminum/honeycomb. All this keeps a well-directed airflow to the cylinders. The company says that its IO-550s run with cylinder head temperatures anywhere from 10 to 30 degrees cooler than other installations. To help stave off corrosion, engine compartment acid etching, priming, and painting is also available

for \$699.

The engine conversion also gives owners the room to install a second alternator and a wet vacuum pump, another D'Shannon option. Wet vacuum pumps are more reliable than the dry pumps most of us are accustomed to, by virtue of their oil lubrication. Dry pumps aren't really lubricated at all; their rotating carbon vanes abrade, and eventually break, under the heat of operation. With a wet pump, engine oil lubricates the moving parts so that failure of the pump (and the cockpit



The "Speed Sloped" extra-thick windshields

instruments dependent on them) is rare indeed. Included with the wet pump (price: \$899) is a "Filtrator," which scavenges residual oil from the crankcase breather and the wet pump exhaust. The result is less engine oil loss and a cleaner belly.

The IO-520-to-550 conversion is available for all Debonairs and Bonanzas from models C33A through A36, and for all V-tail Bonanzas from the S35 through the 1984 V35B. The installation can be performed by Beryl D'Shannon at its factory, by a traveling installation team run by the company, or by your own mechanic. Prices include shipping, new hoses and air ducts, cylinder baffling, Lord engine mounts, propeller governor, manifold pressure and fuel flow gauge, plus a two-speed fuel boost pump. They run from \$22,800 (to replace an IO-520-BB engine) to \$23,800 (to replace an IO-520-BA). Add about \$1,400 for Beryl D'Shannon to make the installation, or about 30 hours' worth of labor costs for your local mechanic to do the job. By the way, the company is working on a gross weight increase for this particular conversion. (There are six other engine conversion packages, for everything from older Bonanzas to E55/E55A and 58/58A Barons.)

If you want to go whole-hog, as did the owner of the C33A pictured with this article, a three-blade Black Mac propeller is available for an extra \$5,400, and a Hartzell three-blade prop was just recently made another option. Also available are specially designed exhaust resonators. They're yours for another \$1,800.

The resonators are about as close as you'll get to a hush kit for the beefy-sounding IO-550, but most of the apparent noise reduction in our featured airplane was in the cabin, thanks to another of Beryl D'Shannon's popular Debonair/Bonanza mods—the extra-thick "Speed Sloped"



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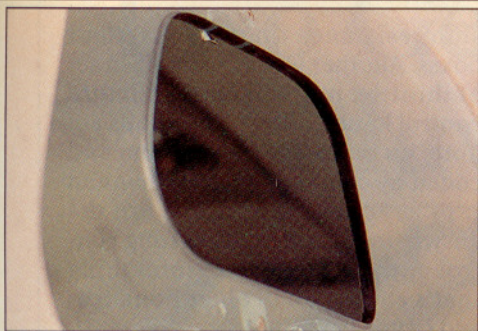
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The windshield is the same shape and size as that used in V35A and later Bonanzas, but it can be retrofitted to all Debonairs, giving them a sleeker look. (For that matter, D'Shannon's Speed Sloped windshields have been STC'd for Barons, Travel Airs, and Twin Bonanzas, as well.)

The Beryl D'Shannon windshields differ from stock Beechcraft windshields in that they're offered in greater thicknesses. They can be ordered in either three-eighths- or half-inch thicknesses. The airplane we flew had the half-inch windshield thickness; the side windows were three-eighths-inch thick. According to the company, this extra thickness means not just lower cabin noise levels, but better protection against bird strikes and greater overall airframe strength. "You'll have to replace the windshield at some point anyway," said a company spokesman. "So you might as well go with ours. Besides, we charge less than Beechcraft." Beryl D'Shannon charges \$2,000 for a three-eighths-inch-thick windshield, which includes installation; half-inch windshields are \$2,300. According to the same D'Shannon official, Beech charges \$1,700 for a replacement windshield (in fact, Beech charges anywhere from \$2,078 to \$3,625 for a Debonair/Bonanza windshield, depending on the model), but this doesn't include labor charges. Standard, quarter-inch-thick windshields are also available. They go for \$699, plus the cost of labor and installation hardware.

A side benefit of the Speed Sloped windshield is cooler avionics. The Speed Sloped windshield's leading edge mounts several inches forward of the stock windshield position. Moving the lower edge of the windshield forward means moving the defroster vents forward too, which keeps residual defroster heat farther from the

avionics. It also leaves more room for air to circulate around the avionics, whether or not the defroster heat is in use.

The most readily apparent modifications to N7012N, of course, are the wing-tip fuel tanks, a D'Shannon mod that's approved for every Bonanza ever built. Each tank holds 15 gallons, which adds about two hours' extra endurance to the standard specifications. The company also claims that while there is a minor speed penalty associated with the tip tanks, this is

offset by increased stability and a reduction of induced drag. That drag reduction, says D'Shannon, in large part explains the gross weight increase that accompanies the tip tank mod. In our demonstration airplane, that increase amounts to 250 pounds, all of which must consist of tip tank fuel.

Made of fiberglass, the tanks each come with all the plumbing and pumps necessary to transfer fuel from them to the mains. Filters on either side of the pumps help guarantee that

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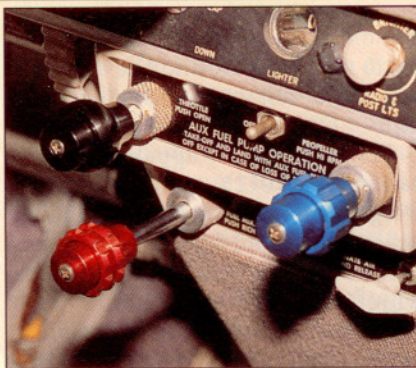
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no foreign material makes its way past and also protects the solenoid-actuated plunger-type fuel pumps. Tip tanks sell for \$4,295 a pair and require about 30 hours' worth of labor to install. Beryl D'Shannon charges a flat \$1,200 if it does the installation. For tip tank strobe lights, add another \$570 or so.

Our featured Debonair had a few other D'Shannon mods. One was a stainless-steel battery box (\$695 for older models, \$395 for newer airplanes), which promises more corro-



New throttle, prop, and mixture knobs lower the Debonair's confusion factor.

sion resistance than the standard boxes. Another was a customized set of throttle, propeller, and mixture control knobs (\$150). The knobs are done up in brushed aluminum and coded by color and feel. D'Shannon reps say that these knobs are the answer to pulling on the wrong control at the wrong time, something that's easy to do in older Bonanzas and Debonairs.

While this airplane is fairly well stocked with D'Shannon mods, the company offers many, many other improvements to all types of Beechcraft airplanes. Chrome rocker box covers, Insight EGTs, gap seals, enlarged baggage compartments and baggage doors, a higher volume fresh air system, and modernized instrument panels are just a few.

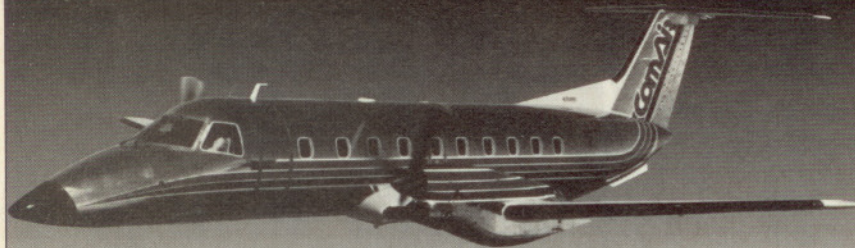
A sister company, Beryl D'Shannon V/G Systems, is in the business of making vortex generator (VG) kits—for various light twins. VGs are small, blade-like mini-tabs that are mounted on wing and vertical stabilizer surfaces. They're aligned at precise angles to the flow of the relative wind and can yield tremendous advantages. VGs delay the separation of an airfoil's laminar flow and thus provide more lift, less drag, and better control effectiveness at slower airspeeds. Stall and approach speeds are lowered, and a twin's V_{MC} (single-engine minimum-control airspeed) can be reduced by between 6 (C55 through E55 Barons) and 12 (Cessna 340) knots. VGs run from \$2,999 to \$3,450.

So far, Beryl D'Shannon hasn't developed a VG mod for older Debonairs and Bonanzas, but one is on the way for A36 Bonanzas, and the company figures it will give the airplane a 6- to 8-knot reduction in stall speed and permit a 150-pound increase in gross weight.

"They just don't make them the way they used to," goes the old saying. True enough, but aftermarket suppliers and mod shops like Beryl D'Shannon will always be there to make sure that the tarnish of old age can be reversed. Just pump up the resolve, supply the cash, and your trusty old bird can fly faster, farther, longer, and sexier than ever before. □

For more information, contact Beryl D'Shannon Aviation Specialties, Incorporated, Post Office Box 840, Lakeville, Minnesota 55044-0840; telephone 800/328-4629.

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