

**SUMMER SPECIAL!**

**MY DESERT WIPEOUT! • THUNDERSTORMS & TERROR**

# **PLANE & PILOT**

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## **SUMMER FLYING**

- **MOUNTAINS:** High & Hot
- **TURBULENCE:** How To Fly & Avoid
- **DOG DAYS:** Don't Get Burned!

### **Pilot Reports**

**GOLDEN BONANZA:**  
Precious Metal

**CUB REVIVAL:**  
Mellow Yellow



**READ YOUR AIRPLANE'S VITAL SIGNS**  
**HOW MUCH INSURANCE COVERAGE?**



*Golden*  
**BONANZA**

*Victor Sloan put his  
gold-plated, super-smooth  
rebuilt powerplant into  
this gorgeous Beech.  
Result: love at first flight.*

*By Bill Cox*

*Question—Take a stock A36TC Bonanza, rig it perfectly, blueprint and balance every part on the engine and prop and what do you get? Answer—the most uncannily smooth piston powerplant you've ever flown behind.*

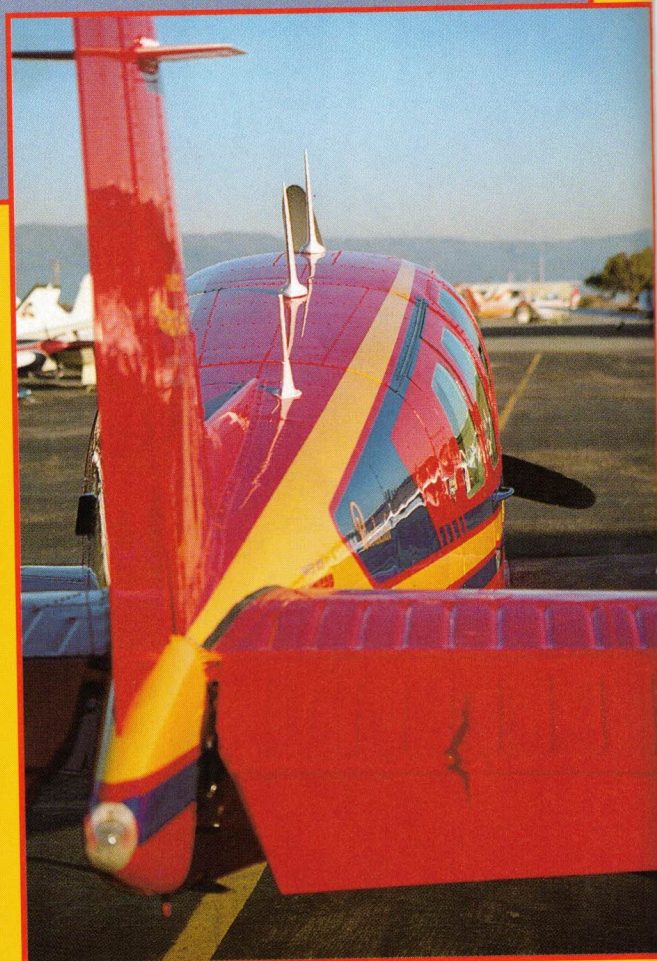
**L**ike the old joke about military intelligence, smoothness and piston powerplants seem almost contradictions in terms. Piston engines achieve their power by a series of rapid explosions inside



*Photography by James Lawrence*

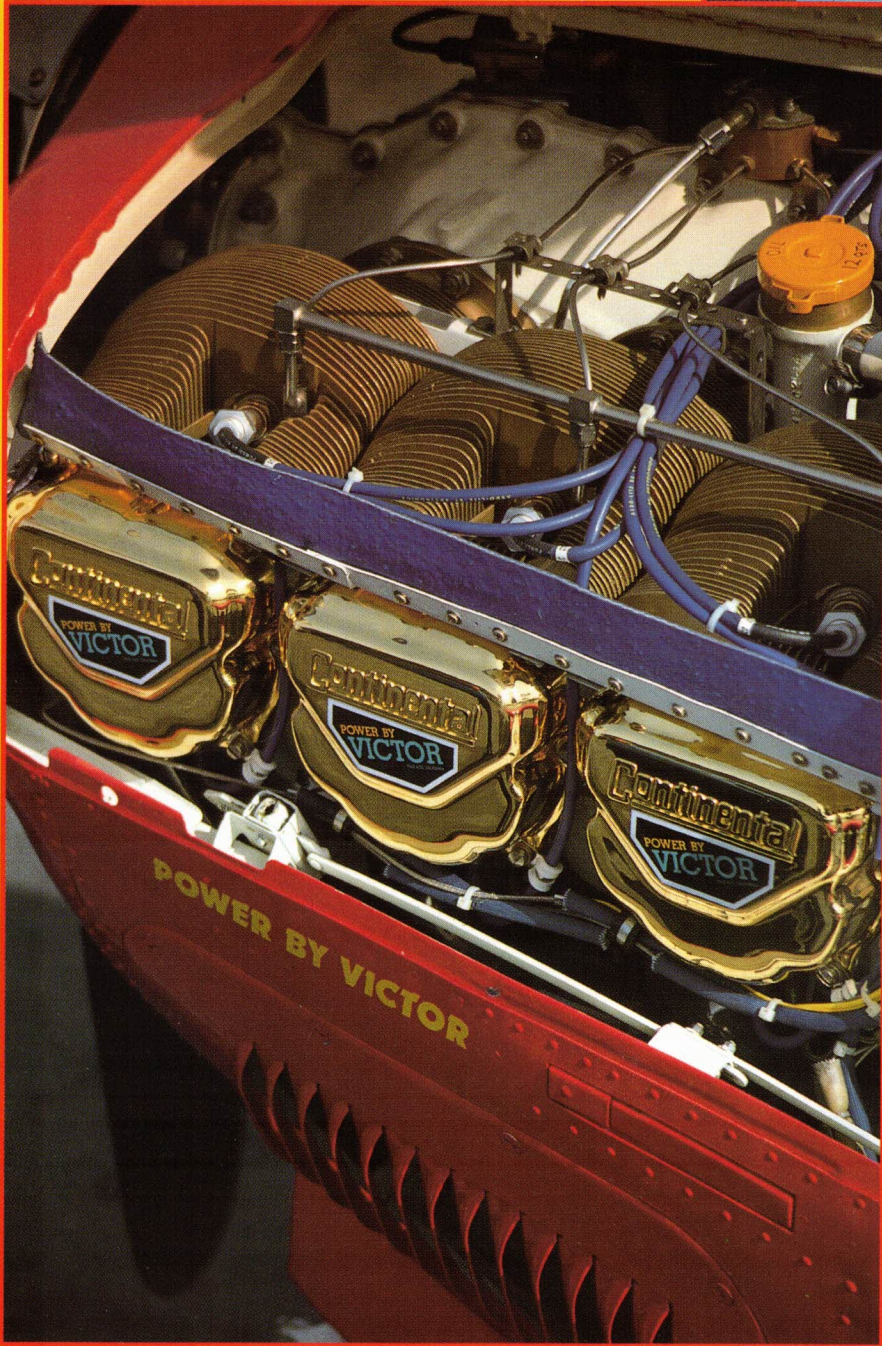


*Victor Sloan's  
"Queen of  
Smooth"  
Bonanza slices  
through the  
afternoon sky.*



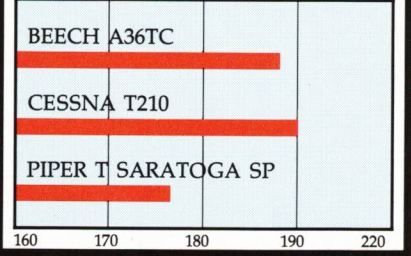
*Classic Beech A-36 lines are ably abetted by a beautiful paint job from Aeroflair of Santa Maria, Calif.*

*Papa Victor Sloan and his gold-plated baby.*

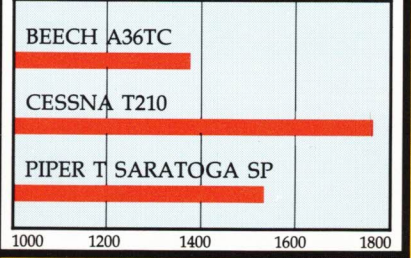


*Show and tell: "Power By Victor" means immaculate fittings, gold plating, smoother running and better performance.*

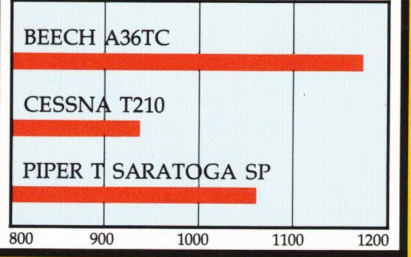
**CRUISE (knots)**



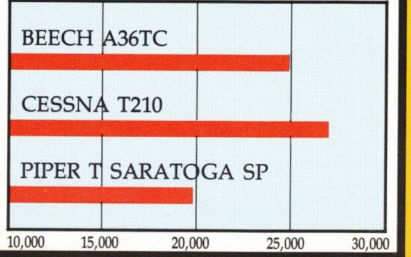
**USEFUL LOAD (lbs)**



**RATE OF CLIMB (fpm)**



**MAX OPERATING ALT (feet)**





*Sloan's Beech is fitted with a white, constant-speed three-bladed prop.*

*An almost sinister beauty enhances the Sloan Bonanza's increased performance.*



confined spaces, and not too surprisingly, the smooth transmission of that power to a prop is a trick best achieved with a combination of engineering skill, luck and sorcery.

Victor Sloan leaves luck and sorcery to wizards, and concentrates instead on simple, honest engineering skills. He achieves phenomenal engine smoothness and efficiency by a self-confessed obsession with consistency and quality.

Like so many aviation kids of generations past, Sloan aspired to be an airline pilot, but switched to working on engines rather than managing them in 1974. Sloan has been fine-tuning, overhauling and totally rebuilding aircraft engines in his current location, Victor Aviation Services in Palo Alto, Calif., for 10 years. With Sloan at the helm, Victor Aviation's 24-karat gold Limited Edition engines have earned a reputation for quality and reliability that even some engine manufacturers envy.

Airshow pilot Bob Hoover's demonstrator Shrike Commander has been powered by Victor Engines for the last six years, and Hoover, who rarely endorses anything, is uncharacteristically enthusiastic about Sloan's handiwork. "Thanks to Victor (Aviation) and your... dedicated people, I am now flying... the best pair of engines ever... Dependability is a must with my type of flying. I cannot afford anything less than the best. You have provided me with that reliability."

The twin Lycomings on Hoover's Shrike have logged 1200 hours of airshow flying (against a 1400-hour TBO) and are still running strong. Though the airplane has traditionally been unfettered with any corporate sponsor logo other than Rockwell's, it now sports Victor Aviation decals on the cowlings. In a recent letter to Sloan, Hoover concludes his comments with, "It might be interesting for you to know that since your company has had the responsibility of maintaining the engines (on my Shrike), I have not missed a single flight demonstration, and that covers quite a few years."

Okay, you may say, so it works well on fine-tuned airshow planes. But, what does a Victor engine offer the average pilot and how does Sloan achieve such phenomenal smoothness?

I'll be facing an engine overhaul or reman in my Mooney within two or three years, and for that reason, this is an especially important question to me. I fly my airplane quite a bit on demand for *PLANE & PILOT*, often IFR over mountains at night, and those operational environments allow me little margin for error. I'm one of many aircraft owners weighing the merits and costs of overhaul vs. remanufacture. Like

most owners of comparatively low-priced airplanes, I'm not one of the financial fat cats so many non-pilots think all aircraft owners to be. On the other hand, I won't shop price alone when it comes to an engine overhaul. I plan to keep the airplane, so I'll be looking for the most cost effective method of zeroing the engine while improving reliability to the maximum extent possible.

Victor Sloan may have a solution. "I have only one thing to sell," says Sloan, "and it's the hardest sell in the business, because it's intangible, not necessarily something you can reach out and touch. I'm selling safety and reliability, nothing more, nothing less. These are not modified engines. There's no STC involved. I don't boast about better climb or cruise performance with my engines. I only claim that reliability and safety are better than that of any other comparable engines in the world."

Tall claims indeed. To check them out, I recently flew Sloan's personal Beech A36TC Bonanza demonstrator; then, travelled up to Victor Aviation Services' Palo Alto headquarters to inspect the shop that generates Victor's high-tech engines.

Victor Sloan's demonstrator is one of those Bonanzas we've come to accept as near normal among the venerable models 33 and 36, a 1981 model that's an absolutely perfect example of its kind. Though there's not much that's unusual about the avionics (full Collins VHF's with a King KFC-200 flight director, ARNAV R50 Loran C and a Graphic Engine Monitor), Sloan's N3854G turns out to be predictably better than new. Resplendent in a bright red, yellow and blue paint job with custom lettering and striping, the airplane promises something special in performance, and it delivers just that.

From the moment you fire up the engine, you can feel the difference. More accurately, you can't feel much of anything. The engine comes alive so smoothly, you'd almost think you'd just flipped the switch on an electric motor. There's none of the usual panel jiggle and rattling vibration so often associated with starting a big Continental. Even with the throttle to the back stop and the engine ticking over at a mere 600 rpm, the airplane is solid as a rock. Instrument faces don't vibrate, the yoke doesn't twitch and the airplane feels nearly cemented to the ramp.

As you might expect, power-up for takeoff only reinforces the impression of smoothness. Push the left knob to the stop, and it's like dialing up a rheostat. The Victor Bonanza responds with an

almost eerily smooth hum of power. For our test flight, the airplane was loaded about 200 pounds under gross. Sloan was in the right seat to make certain I didn't break anything and photographer Jim Lawrence rode in back to record the trip for posterity.

Climb was quick and seemingly effortless, with the VSI touching 1300 fpm on the way up. A smoother engine always seems to reinforce the impression of more power. Whether he knew it or not, Sloan picked an excellent airplane to show off his handiwork. Besides being comfortable and luxurious, the turbocharged Bonanza holds on to climb tenaciously. Though we only ascended to 10,500 feet for our cruise checks, climb rate just before level off was virtually the same as on liftoff from a near sea level airport.

Level and trimmed with the mixture set to 75 degrees on the lean side of peak for a max cruise effort, I was again treated to the engine's seemingly fluid and even smoothness. The Los Angeles sky was obliging on the day of my flight and offered totally transparent, unruffled atmospherics, so had there been any vibration, it would have been easy to detect. Except for the sound of the engine out front and the speed with which the scenery was backing up, I could as easily have been ripping down the autobahn in the driver's seat of a Mercedes.

During the minute it took for the airplane to accelerate, I watched the airspeed needle arc around to cover 158 knots. With an OAT of zero degrees C, that worked out to 187 knots true. Since I regard airspeed indicators with about the same trust I grant the Aya-tollah, I decided to run the airplane both ways over a known distance, in this case, my old reliable 4.723 nm course between a pair of piers off the Southern California coast. Winds were forecast as light and variable at low altitude, and sure enough, that's about how it worked out. Both runs were flown nearly on course in approximately the same elapsed time.

At what Beech calls "recommended cruise" (29 inches and 2400 rpm), the top number on our two-way runs was 186 knots on about 19.4 gph. Comparing this to book figures, fuel burn was predictably higher, but cruise was a solid 13 knots ahead of Beech's promise. (There is a higher setting than this, but the fuel burn isn't worth it.) Backing off to a slightly lower cruise setting (28 inches and 2300 rpm), the speed was 179 knots, again 13 knots better than book.

My third cruise check was the most interesting, however. At economy cruise, presumably about 50 percent

power (23 inches and 2200 rpm), Sloan says he's seen some very dramatic differences. He was right. Fuel burn ran about four gallons per hour high (at 14.0 gph), but cruise was far better. Speed checked in at 163 knots compared to the factory spec of 146 knots. That's a whopping 17 knots better than even Beech feels the airplane has any right to fly at that power.

On one hand, it's perhaps only logical to see such high numbers on Victor Sloan's personal airplane. It is, after all, intended to demonstrate the smoothness of his products, and you might reasonably expect him to make certain it can do that job to maximum advantage. On the other hand, Sloan is smarter than to claim any performance improvements for his engines, though he wasn't surprised when his airplane beat the book by a substantial margin at every power setting. Sloan lets his customers talk performance for him. Another Bonanza pilot said he realized an eight-knot advantage from the Victor overhaul, a Cessna 414 driver with a fresh pair of Victor Limited Edition mills reported a 14-knot improvement in cruise and a Seneca III owner claimed he picked up 15 knots with Sloan's freshly reworked engines.

While Sloan is certainly happy with those figures, he has no plans to publicize them in his brochures and ads. "We're not selling performance," he explains, "though it certainly makes sense that a more efficient, well-balanced engine should put out more thrust at a given power setting and therefore realize some cruise efficiencies."

What strikes you most about the Victor Limited Edition engine is that it is so incredibly smooth and even. Just as with most pilots who fly the same airplane on a regular basis, I've noticed my Mooney's Lycoming is extremely smooth from 2600 rpm to the 2700 rpm redline and again at 2400 rpm, but the range from 2450 to 2550 is notably rougher. Yes, the prop has been balanced. The airplane simply prefers to fly at the former rpm setting. In contrast, the Victor Bonanza's TSIO-520 Continental has no rough areas. It's exceptionally smooth all the way from idle to redline.

The reason is that Victor Aviation takes the balancing process several steps further than merely building up a perfectly symmetrical powerplant in the shop. The company flies the airplane and analyzes vibration in flight. "As an engine operates under various rotational frequencies and vibration amplitudes," says Sloan, "these patterns are recorded in flight. We use accelerometers attached to the engine and airframe and graph the results into computerized diagnostic

equipment. Later, on the ground, with the graphs in front of us, we can analyze any discrepancies and correct any possible imbalances."

While I'm certainly not an expert on engine shops, I've visited a dozen or so quality overhaul facilities in conjunction with magazine assignments; from AAR in Portland, Ore. to RAM Conversions in Waco, Texas. Aside from their universal reputation for quality work, nearly all shared a near-fanatic concern for cleanliness. At Victor Aviation, the shop is so clean, it looks like an operating room.

To fully appreciate Victor Sloan's obsession with quality in overhauling a standard Lycoming or Continental to Limited Edition status, you need to visit the shop in Palo Alto, Calif., just south of San Francisco by the Bay. Sloan well appreciates that not every prospective engine customer will spend the time and money necessary to fly to Palo Alto to inspect an engine shop. Accordingly, Sloan offers to pay for the inspection trip if a prospect subsequently purchases an overhaul or 24-karat gold Limited Edition engine.

Fellow writer Jim Lawrence outlined Sloan's full overhaul program in the March 1989 edition of *PLANE & PILOT* ("To Victor Go The Spoiled"), so I won't reiterate that material here. The balancing procedures are especially significant, however. Obviously, the prop must be balanced. Victor treats the prop blades with a white protectant before chrome plating the spinner. Equally important, however, Victor balances internal engine moving parts that could set up harmonics and cause stresses within the powerplant. Victor Aviation also balances combustion flow so that the very process of power delivery won't cause undue vibration.

Once a prospect selects Victor Aviation for an overhaul, Sloan offers a number of interesting warranty considerations. First, all 24-karat gold Edition Engines come with a provision that Victor Aviation will perform the engine portion of the next three annuals at no additional charge. Second, Sloan offers an optional limited warranty that protects the engine to 100 percent of all parts and labor for 36 months or 50 percent of manufacturer's suggested TBO, whichever comes first. For the vast majority of pilots, that means there'll be no unscheduled engine maintenance for three years.

Logically, any pilot in the market for an overhaul wants to know what all this attention to detail costs, and the answer is that a Limited Edition Victor engine falls somewhere between an overhaul and a factory remanufactured mill. Sloan is proud of his products, and he isn't the least bit shy about telling the world exact-

ly what it costs to realize such smoothness and reliability.

With careful planning as to when to buy and sell, an owner/pilot can sometimes avoid an overhaul completely—buy an airplane just after a major and sell it well before the next one comes due. For many of us, though, overhaul time will come around eventually, and majoring the engine may be a far less costly alternative than replacing the airplane.

If quality is a key factor in your overhaul decision, Victor Aviation's selection of overhaul and rebuild options would seem to offer good value for the buck, not to mention the smoothest engines around.

P&P

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