A **go-fast** turbo 182

All it takes are a few simple mods

BY RICH KARLGAARD

I earned my private pilot certificate in my trusty Cessna 172SP in 2001 and my instrument rating a year later. That year I flew my Skyhawk from California to Maine and back, landing in 27 states. My wife and two kids put their faith in the Skyhawk during vacation trips from our home in northern California to Palm Springs.

Alone, the airplane and I took on bigger, some say foolish, challenges. We crossed Lake Michigan three times and once did a 100-foot-ceiling, quarter-mile-visibility takeoff from Green Bay, Wisconsin's Austin Straubel International Airport. The Tower said, "Report when airborne." Not words a pilot hears every day. We jousted with a thunderstorm in northern Minnesota and with the devil's own thermal turbulence over Nevada on a blazing August afternoon.

It was all fun. Well, except for the thermal turbulence. That I truly hated. It was time to get a turbocharged airplane.

A brand-new turbocharged Cessna T182T was the answer. But I knew it would cost twice as much as the 172SP, so I went in with a partner. In November 2002 we took Southwest Airlines to Tulsa, then drove to Independence, Kansas, to pick up N64LK. The plane checked out beautifully and we had a ball flying it back to California along the southern route—through Texas, New Mexico, and Arizona. The turbo Skylane flew perfectly from the get-go. Not a squawk.

As the California spring arrived, however, I discovered things that I really didn't like about the Skylane. In warmer weather, the airplane was a beast during the first 500 feet after takeoff. Even with 10 degrees of flaps, it never did snap off the runway as did the lighter Skyhawk with no flaps. At gross weight and no wind, the Skylane would claw for altitude during its first minute in the air. Making matters worse, the Skylane's instrument panel sat taller. One inch more doesn't sound like much, but it hurt visibility over the nose. And of course the fire-breathing Skylane drank gas at twice the rate as the Skyhawk only to go 30 knots faster.

I was close to having buyer's remorse. I missed my Skyhawk—until I installed some simple (but not cheap) modifications that made all the difference. The mods include a 3-foot wing extension by Wing-X STOL, wing tips by RMB, and flap-gap seals by Knots 2U. With them, the turbo Skylane flies perceptibly better. The airplane pops off the runway at gross weight in no

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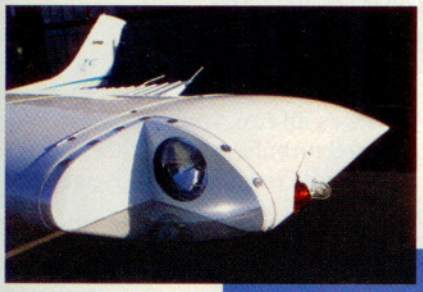
Modifications to the Skylane include a 3-foot wing extension by Wing-X STOL and wing tips by RMB.

wind and gives the pilot a choice of climbing 200 fpm quicker—or at the original book climb rate but in a nose-lower attitude. In cruise the airplane is 2 to 3 knots faster below 10,000 feet, 4 to 5 knots faster below 15,000 feet, and 6 to 8 knots faster above 15,000 feet. Later I'll go over these impressive numbers in greater detail. What I really love, and quite indescribably so, is the Skylane's nose-lower attitude in all phases of flight. Nose low is the only way to go.

I should mention that my first airplane, in which I soloed, was a nose-low thoroughbred—a Beechcraft A36 Bonanza. There is a long, sad story to tell about my beautiful Bo, which I will keep brief. Back in the late 1990s I founded a venture capital firm that would fund dot-coms. Remember those days? For a few months during late 1999, I thought I was going to be seriously rich. My company had filed with the Securities and Exchange Commission to go public. Because I owned a million shares, well, you do the math.

Flying also had entered the picture at this time. With two lessons under my belt, I did what any mega-millionaire would do. I bought a cream-puff 1994 Bonanza and continued lessons. The Bo and I soloed in early 2000. I figured I would get my ticket, get the instrument rating, move up to a Beechcraft King Air 90 for the multi, and then on to jets. Maybe a new Beechcraft Premier I if our stock kept rising.



The LoPresti HID Boom Beam lights have been a safety boon (above). The wing extensions improve slow-flight characteristics (right).

Those were my dreams, and as it turned out, that was all they would be. The initial public offering never got off, and my wife ordered me to sell the A36 after a top-overhaul recommendation. I really liked that A36. It was solid, it was quiet, but best of all was the Bo's expansive vista over the nose. Bonanza pilots have a world of visibility in climb. The A36 in cruise flew a bit nose down, the countryside sliding by like an IMAX movie.

The Skylane cruises slightly nose down, Bonanza-like, after the wing extension and flap-gap seals. At least it seems that way when compared with the old profile. I do love it. Nose lower, I can crank the seat down a few turns. That, in turn, produces greater visibility above the Skylane's door frame. It's amazing what a mere 1 degree or so of downward nose tilt can do for visibility, ahead and above.

Alberto Rossi, who runs Rossi Aircraft at the Palo Alto, California, airport, had suggested the mods. It came about this way: One day I asked Rossi if he knew of any STCs (supplemental type certificates) that would pump the Skylane's prop speed from 2,400 rpm to 2,500 rpm. This simple tweak had turned the tepid 172R into the hot 172SP. Couldn't it be done for the Skylane? Alas, no such STCs existed, Rossi explained.

But there is another mod you'll like, he said. Rossi explained how a 3-foot wing extension and RMB wing tips, along with flap-gap seals, would improve the Skylane's performance envelope at both ends. Faster climbs. Higher cruise speeds. Lower stall speeds. That sounded good.

The installation took two weeks. This included, beyond adding 18.75-inch wing extensions per side, replacing the stock wingtip and landing lights with 5,000-hour LoPresti HID Boom Beam lights. Rossi suggested the Boom Beams one day after he heard my complaint about traffic density in the San Francisco Bay Area. They've been a terrific safety addition, and the Skylane circles the pattern like a Times Square Christmas tree. No, Rossi Aircraft is not the cheapest shop around (no shop in the Bay Area can be), but to my mind Rossi earns every penny.

Paint took one more week and was done to perfection under the watchful eye of Juan Solorio at T&P Aero Finishing in Salinas.

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The total bill for the Wing-X STOL extensions, RMB wing tips, Knots 2U flap-gap seals, LoPresti Boom Beams for the wingtip and landing lights, and paint came to $18,000. That's a lot of money. Was it worth it?

Yes. The joy of flying a Cessna high wing in lower pitch is worth the money.

I promised more detail on climb and speed. Here are some before and after comparisons:

- Takeoffs with 10 degrees of flaps.
- Sluggish before, sprightly after.
- Climbout rate, max gross, at 90 KIAS: 1,000 fpm before, 1,200 fpm after.
- Cruise climb at 800 fpm: 95 to 100 KIAS before, 110 to 115 KIAS after.

Before I get into cruise speeds, a couple words on operating the turbo Skylane. We take off and climb with all three knobs to the firewall, cowl flaps open. The highest cylinder head temperature (CHT) on our J.P. Instruments EDM-800 engine analyzer is typically 360 degrees Fahrenheit at these settings. Cessna set the fuel flow and designed the baffling just right.

In cruise, we've located the sweet spot of manifold pressure and rpm at 27 inches and 2,300 rpm. This produces a conservative 70-percent horsepower on the already de-rated 235-horsepower Lycoming TIO-540 engine.

To keep the CHTs below 380 degrees F, we run about 125 degrees F rich of peak at 17 gallons per hour. (Our next goal is to master lean-of-peak [LOP] operation in this airplane. One day at 9,500 feet I tried the big mixture pull and discovered two positive results and one negative. The engine ran smoothly, showing mid-300s on the CHTs. But the turbine inlet temperature spiked to its 1,700 degrees F redline and stayed there. After two minutes I aborted the LOP experiment.

Using a wide-open throttle LOP setting of 32 inches manifold pressure and 2,300 rpm should produce 75-percent-plus power on fuel flows below 15 gph. If so, full-fuel range would go from 600 nautical miles to 700. That's why we want to run LOP! For now, we run the Skylane conservatively on the rich side.)

Here are typical true airspeeds we get from our 70-percent power on 17 gph in standard conditions:

- 5,000 feet: +1 KTAS improvement (145 KTAS before, 146 KTAS after).
- 7,500 feet: +2 KTAS (148 KTAS before, 150 KTAS after).
- 10,000 feet: +3 KTAS (151 KTAS before, 154 KTAS after).
- 12,500 feet: +4 KTAS (154 KTAS before, 158 KTAS after).
- 15,000 feet: +5 KTAS (157 KTAS before, 162 KTAS after).
- 17,500 feet: +6 KTAS (161 KTAS before, 167 KTAS after).

Cruise speeds, of course, get better as one flies higher in any turbocharged airplane. But longer wings pay more dividends the higher one goes. The long wing starts to show its stuff above 10,000 feet and really makes a difference in the teens.

Rossi promised better slow flight, too. It worked out that way. The stall

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speed of a stock T182T in landing configuration is 49 knots. We have flown the Skylane at 40 KIAS without so much as a buffet. I know airspeed indicators become inaccurate at these speeds, but I also fly short final into Palo Alto at 58 knots indicated with 30 degrees of flaps and no back-side-of-the-power-curve worries. The modified Skylane feels rock solid in slow flight. Based on that feeling, and the sprightliness of takeoffs, I'd guess the Skylane has a landing configuration stall speed of 44 knots, or about the same as the Skyhawk's.

The Wing-X STOL STC comes with a 200-pound gross-weight-takeoff increase for most 182s. Alas, the STC does not apply to our Skylane. The newer and heavier post-1996 S- and T-model Skylanes don't get the gross-weight bump, partly because of landing-gear concerns. It's nice to know the extra lift is there, especially when you're at the legal maximum lining up for takeoff at Truckee, California, on a hot afternoon with wife, kids, and bags aboard. At max gross weight and 9,000-foot density altitudes, the mod Skylane takes off with authority.

All the airplane needs is a way to run LOP without redlined turbine inlet temperatures. We also hope someone STCs the prop to turn at 2,500 rpm. Imagine the climbs! AOPA

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