



Piper Twin Comanche

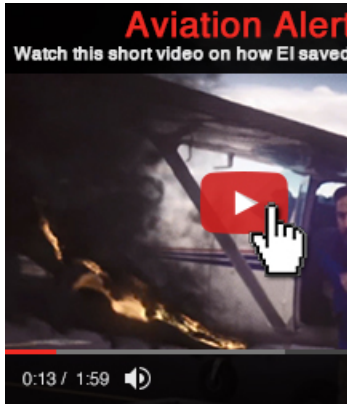
Twin-engine reliability and safety at single-engine prices. Although long in the tooth, the airplane is still supported with parts and mods.

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When Diamond announced its diesel-powered Twin Star three years ago, we figured the company's grasp on reality was, at best, tenuous. In the current market, who could possibly be interested in a new light twin? We were wrong, of course. Diamond has done well with the Twin Star and having flown the airplane, it reminds us of another light twin that appeared four decades earlier: Piper's Twin Comanche.

Although they have little in common technologically, other than having wings, propellers and engines, the Twin Comanche and Twin Star share important attributes. Both are relatively light and small, are easy to handle and, above all else, they're relatively fast and economical.



Obviously, to buy a Twin Star, you need a disposable half million, but not so the TwinCo. Prices have escalated recently, but late-model Twin Comanches hover around the \$120,000 mark, although ambitiously upgraded airplanes might fetch more. And why not? The Twin Comanche all but stands alone among small twins in providing the security of a second engine without the ruinous fuel consumption that scares many would-be owners away from twins. Although the oldest of the TwinCo's were built more than 40 years ago, there's still a decent parts supply, although from aftermarket sources, not Piper, good owner groups and the airplane's Lycoming IO-320s are practical and durable powerplants.

Model History

The Twin Comanche first saw the light of day in 1963 and between then and 1972, Piper built about 2150 Twin Comanches in its Lock Haven, Pennsylvania plant, the same factory that produced the venerable Cub. By any measure, the Twin Comanche was sleek and sporty compared to the airplane it followed, the dowdy, bulbous-nosed PA-23 Apache. (That airplane eventually evolved into the PA-23-250 Aztec, a strong airplane for Piper in

its own right.) The Twin Comanche has two designations, PA-30 and PA-39.

The first Twin Comanche shared two things with its slower predecessor, the Apache: It had four seats and the same basic 160-HP Lycoming O-320 powerplant. One difference is that the PA-30 has the injected version of the O-320, the IO-320-B1. Cabin room was virtually identical in both airplanes.

But the Twin Comanche was clearly a different airplane. Compared to the Apache's short and squat looks, the Twinkie was rakish, with a sloped windshield, a pointed nose, tiger shark engine nacelles and even optional tip tanks. With cruise speeds as fast as 170 knots, along with miserly fuel burn, the Twin Comanche proved popular among private owners, flight schools and charter operators.

In 1966, Piper introduced a new Twin Comanche—the PA-30B. Although it has two extra seats, it really isn't a six-place airplane for anything but the shortest flights and the smallest people. The extra seats eat up the baggage space and the useful load of 1390 pounds allows just a half load of fuel if all six seats are filled. Given the airplane's low fuel consumption, half fuel is enough for 300 miles or so, but it's not realistic to think of the Twin Comanche as a six-place airplane. (There are windows for the fifth and sixth seat passengers, but they're better at illuminating what's really a large baggage compartment.)

In an era when turbocharging wasn't common in light aircraft, Piper brought out the PA-30B in 1966, with optional factory installed Rayjay turbochargers, boosting potential speeds to 190 knots in the mid to high teens. Nor were these the seamless, automatic wastegate turbos we're used to today. Each turbo had a wastegate controlled directly by a mechanical cockpit knob. Although such a system is cheap and reliable, it imposes yet another cockpit duty on the pilot. For any pilot not used to this system, flying it can be like running a steam locomotive.

In 1969, Piper introduced the PA-30C, which offered minor improvements. Among these was a new instrument panel with an offset radio rack and flight instrumentation in the classic T-pattern, rather than Piper's traditional hodgepodge arrangement, which many of the earlier airplanes still have. The last of the Twin Comanches was the PA-39 series. Distinguished by its counter-rotating engines, this series was regarded by many as the finest of the Twin Comanche line and, say many owners, the one to buy.

Twin Comanche production ended in 1972, a victim of both a declining market and Tropical Storm Agnes, which drove the Susquehanna River over its banks, flooding the Lock Haven plant. By then, Piper was already established in Vero Beach, Florida, but neither the single nor the Twin Comanche variants made the transition to Vero.

Market Scan

With more than 2000 built, there are usually plenty of Twin Comanches to pick from in various stages of repair, restoration and upgrade. We think a prospective owner should be thinking in the \$100,000 to \$140,000 range. According to the Aircraft Blue Book Price Digest, the PA-39 CR—first year 1970—sells for about \$112,000, a bit more than a 10-years newer Seminole but significantly less than a Beechcraft Duchess. Despite being longer in the tooth than either of those models, the Twinkie still enjoys the edge in both speed and efficiency, although the Duchess may be a better handling airplane. It's certainly easier to land gracefully.

Our price appreciation study of the Twin Comanche reveals that it has appreciated in value at a greater rate than have many airplanes. As avgas prices continue to rise, this trend will likely sustain itself. Even if the twin market isn't robust, there's always some demand from owners comforted by the notion of a second engine.

Performance

Depending on model and year, Twin Comanche owners report cruise speeds of 160 to 210 knots on 13 to 16 gallons per hour, all up. Our guess is that the median cruise is closer to the lower number than anything above 200 knots. Generally, airplanes with higher cruise speeds have various speed-boosting mods. An unmodified, normally aspirated Twin Comanche can best be thought of as a 160-knot airplane.

While it's true that this isn't faster than some modern singles, having the second engine is important to some owners. With back-up vacuum and electrical systems, tackling low IFR or night operations is less stress inducing, even if the airplane isn't exactly stellar on one engine.

Like any light piston twin, the Twin Comanche will eke out a climb with one engine caged, but you won't suffer a nosebleed during the ascent. If everything is done just

right and the weight isn't too high, look for about 200 FPM of climb, or a bit more. (Interestingly, the new Diamond Twin Star hasn't bettered that performance, nor would we expect it to.)

When it was first introduced and thanks to its popularity as a multi-engine trainer, the Twin Comanche suffered somewhat of a tarnished reputation with regard to handling on one engine.

On a number of training flights, Vmc demonstrations got out of hand (thanks, in part, to Vmc speeds being optimistically marked 10 knots lower than today). So, Vmc and stall speed could be nearly the same. This proved to be an unnerving and fatal experience for a number of unsuspecting students and their instructors. (Many of those instructors probably were on the green side themselves.)

The stall/spin syndrome was aggravated by the FAA's then ill-advised recommendation that Vmc maneuvers be performed at as low an altitude as possible—to get full asymmetric power. This, coupled with a wing that tended to lose lift all at once in a stall, helps explain the series of training accidents. This sort of carnage wasn't unique to the Twin Comanche, by any means. The fact that the training community has wised up since the 1960s probably does more than any factor in explaining why the Twinkie has a typical accident record and isn't considered especially nasty on one engine, despite the anemic climb rate.

On the PA-39—the Twin Comanche variant with counter-rotating props—stall strips that weren't standard on early models were installed on every airplane. Counter-rotating props provided an additional safety benefit by eliminating the critical engine. The FAA also issued an AD requiring that Vmc be increased to a more realistic 72 knots. Another feature on late-model Twin Comanches is interconnected aileron and rudder controls. Owners say it keeps the ball almost dead center without rudder coordination, during reasonable rates of turn and bank angles.

Overall, handling of the Twin Comanche is predictable with only one quirk: takeoffs and landings. Here, the aircraft can be a bit of a rascal. It's difficult to obtain consistent, graceful landings because if held off the runway, the airplane tends to pay off with a jolt. And on takeoff, the Twin Comanche wants to fly before Vmc.

Developing techniques to deal with these peccadilloes is a frequent topic among pilots. For takeoff, owners learn to avoid pre-Vmc liftoffs by holding the airplane in ground effect until Vmc. This takes some deft handling, since it can lead to nervous skittering on the runway or porpoising. On landing, the TwinCo is a floater until, all at once, it isn't, with a thud passengers tend to notice. When the wing sheds its lift—all at once—the gear goes kerplunk! Generally, these rude arrivals are laid on the tapered, laminar-flow wing and stubby rear main gear. To make matters worse, the stabilator seems to have limited authority during the flare.

Owner tells us the Comanche's landings are safe, even if they're not pretty. We don't see in the accident record any evidence that cratered landings damage the airplane more frequently than with other models. Advice abounds on improving landings, including installing a smaller nosegear tire or raising the flaps during the flare to dump the lift and pin the airplane to the runway.

Range, Payload

Because of its stingy fuel burn, the Twin Comanche has excellent range and payload tradeoffs. A few years ago, one owner wrote us gloating that with a 120-gallon capacity—thanks to tip tanks—he could fly halfway across the continent with fuel to spare. “Who could ask for more on a nickel budget?” he asked.

The first Twin Comanche, incidentally, carried 90 gallons in four wing tanks. Like the single-engine Comanche, it had four seats, with baggage space behind the rear seats.

Unlike other models, gross weights of Twin Comanches didn't evolve much. The first models had 3600-pound gross weights with empty weights of around 2300 pounds, for a useful load of 1300 pounds. With 90 gallons of gas aboard, that left 760 pounds—just enough for four people and some bags but not that much different from the load hauling capability of many stout singles.

The PA-39 CRs have gross weights of 3725 pounds but empty weights of around 2500 pounds for even less useful load than the earlier models. With 120 gallons of fuel aboard, allowable cabin load declines to 500 pounds or so. But thanks to those economical engines, that much gas translates to seven hours of endurance and exceptional range. It's both practical and possible to offload fuel in exchange for cabin load.

Maintenance

AD-wise, the Twin Comanche isn't a killer. The landing gear bungee cords are supposed to be replaced every 500 hours in service, or every three years, whichever comes first. Some TC experts say this should be done annually. The bungee cord AD was promulgated in 1977 to prevent the landing gear from collapsing after a manual extension. It also helps in retracting the landing gear and, when it's too worn out to do this, the gear circuit breaker is likely to pop.

Unusual for most models, the Twin Comanche has had some one-time ADs for structural issues. While we know of few accidents caused by break-ups, owners have reported that aileron spars are especially fragile components, with cracks developing under the hinge brackets.

An AD was supposed to have solved this problem. It required the installation of new hinge brackets, after which 100-hour inspections can be discontinued. However, reports from the field indicate that it would be prudent to continue examining this area.

The Twin Comanche's engines have an excellent service history which goes a long way toward making the airplane relatively affordable as twins go. Like the airframe itself, the engines are the target of relatively few serious ADs and many of those of the shotgun variety.



LoPresti Wow Cowl is a popular mod, shown here on Todd LaNeve's TC. It improves cooling and 7 MPH in additional speed is claimed.

Our sweep of service difficulty reports found few smoking guns worth mentioning. Many of the complaints related to what can best be described as aging aircraft issues—old airplanes that haven't been well maintained. In turbo twins in particular, corrosion in engine mounts has caused problems in years past. Trouble spots are the areas where exhaust heat tends to weaken the metal.

On the normally aspirated models, heat fatigue problems on the engine mounts also have been reported. Other problems to watch: Magneto coils can develop resin leaks due to overheating; heat exchangers can become burned or cracked (this was the subject of an AD requiring an expensive 500-hour overhaul); and the spinners on the Twin Comanche's Hartzell props can develop problems.

Mods, Owner Group

Twin Comanche owners agree that the International Comanche Society is an extremely worthwhile organization. Members receive a monthly magazine, *Comanche Flyer*, and technical help from the society. Currently, the society has more about 3000 members, with regional "tribes" throughout the U.S. For prospective Twin Comanche buyers, the society offers a book describing what to look for in a used Twin Comanche. The ICS can be reached at www.comancheflyer.com (<http://www.comancheflyer.com>) or by phone at 405-491-0321.

Although the list of modifications for the Twin Comanche isn't as long as it is for some airplanes, any airplane in service for four decades has been tinkered with. LoPresti Speed Merchants offers an improve cowl, flap gap seals, spinners and spats. Contact LoPresti at www.speedmods.com (<http://www.speedmods.com>) or 877-565-1731. Knots2U, another speed mod house, has a similar product line, along with windshield, lighting and nosebowl kits, to name just a few in Knots large product line. Contact www.Knots2u.com (<http://www.Knots2u.com>) or 262-763-5100. Hartzell has been aggressive in offering new prop conversions for all aircraft, including the Twin Comanche. Contact 937-778-5726 or www.topprop.com (<http://www.topprop.com>).

Owner Feedback

Piper first flew the Twin Comanche just a few days before I was born and I've spent thousands of hours in the back, copilot's and pilot's seats of a 1963 and two 1965s. My father has well over 10,000 hours on his de-iced turbo PA-30 and when I gave up waiting for him to stop using it, I bought my own, a non-turbo built just a week before his.

In all the years, we've had just a few occasions when mechanical failures caused us to be unable to make a flight. The engines are bulletproof, easily lasting to TBO and beyond with proper care and the systems are reliable with appropriate preventive maintenance. The latter point is key and annuals shouldn't be approached with an eye toward saving money.

The landing gear and flap assemblies, gear and flap motors, Janitrol heater, fuel selector valves, alternate air boxes, and other key items should be taken apart, closely inspected, regreased and, if necessary, rebuilt long before they break on their own.

This doesn't end up increasing costs significantly and annuals generally run between \$1700 and \$2800 on the non-turbo. I expect my annual maintenance costs to be \$5000, including the annual itself. Engine reserves are \$25/hour assuming zero-time engines every 2000 hours, less if field overhauled.

The Twin Comanche goes faster, farther and higher while carrying more and burning less fuel than any other regular production twin. The non-turbo trues at 165 to 170 knots at 8000 feet with gear lobe fairings and gap seals from Knots2U. At that altitude and speed, we burn 15.4 GPH total. With the tip tanks, the airplane holds 120 gallons which allows you to travel about 1000 miles.

Things to buy: A smaller nose tire than standard results in improved landings and is available with an STC. Copper battery cables are a must. Changing out the stock generators for alternators from InterAv is another must for today's avionics. Skytec starters are also a worthwhile upgrade. HID landing lights are an enormous improvement over the stock lights and an STC allows you a nosegear taxi light.

There's an AD or two on the Janitrol heater, but some newer equipment allows you to avoid those and provides greater reliability. A few early models are still flying with Southwind heaters, but those should be almost gone now, given the available kit. With installation, that could be handled for under \$5000. The aux and main fuel tanks are rubber and long lasting; both our airplanes are on their second set. The tanks should always be left full, or else the top of the fuel cell will dry out and rot far sooner than it would otherwise. The original electric boost pumps are no longer available, but an STC is available for replacement motors. I've not had any difficulty obtaining parts and the majority of parts are available at reasonable prices.

There have been many discussions about gear-up landings. The Twin Comanche has three warnings for a gear-up landing. The first is that the gear, when down, makes a readily apparent whistling sound. If you're on short final and can't whistle along with the gear, that's your first clue of a problem. The second is that the throttle, when pulled back, will lead to the gear-up light blinking if the gear is still up. Finally, when the microswitches in the throttle quadrant are properly set, a loud horn goes off as the throttles are pulled back in the flare if the gear is still up.

Insurance has been annoying in terms of pricing, probably because too many have ignored the three warning signs of their gear being up! I have a few thousand hours of PA-30 time and commercial/instrument tickets. My insurance started at \$2068 with a \$90,000 hull value and my annual cost has gone up to \$4100 this year. I wouldn't fly this aircraft without being a member of the International Comanche Society or participating in the Comanche discussion group on DelphiForums.

Name withheld by request

My father and I have owned our Twin Comanche since we picked it up new in March 1966. It's an early B model. During the first engine overhaul, we had it converted to counter-rotating props and added tip tanks. It has a combination of almost all speed modifications offered by Knots2U and LoPresti. For those mods, expect about 50 percent of the advertised speed gains. It has a Garmin GNS430 and Bendix/King KMD250 MFD with weather link. We have accumulated 7000 hours on the airframe since purchased.

Unless you are looking for a load hauler, the airplane is hard to beat. The Lycoming O-320s are pretty bulletproof. We have 1800 hours on G&N overhauls and never touched the engines with the exception of accessories. The compression is still 70/80 PSI on all cylinders. My plan is to take it to Zephyr Engines when reaching TBO.

As far as single-engine performance, it is not much different than any other aircraft in that category. In the last 39 years, I've had two precautionary engine shutdowns, one at 500 feet after takeoff (lightly loaded) and one at cruise. Our main reason in moving up from a single-engine Comanche to a twin was the added safety margin of redundant vacuum and electrical systems for instrument and night flying.

Insurance runs approximately \$3000 per year for \$135,000 hull and \$1 million liability. Annuals average \$2500 to \$3000 including parts. Finding parts can be challenging, but I've found Webco in Kansas meets almost all of my needs and if not, they can direct me where to look. Don't depend on Piper. What parts they can provide are very costly.

With only myself onboard, I get a true airspeed of 195 MPH at 22 inches MP and 2300 RPM between 7000 and 9000 feet, burning 15 GPH total at 50 degrees rich of peak. Having tip tanks gives me over seven hours of endurance, a nice option if you find a good buy on fuel.

If you want twin engine reliability with single-engine expense, I don't know of another light twin that can compare.

Chip Groner

Via e-mail

Piper's Twin Comanche, even today, is regarded as one of the best light twins ever produced. It has simple systems, carries four effortlessly while sipping 14 to 16 GPH of today's pricey fuel. It remains as modern looking today as it did 40 years ago. As with any aging aircraft, maintenance in key areas is paramount.

The landing gear is simple and robust, but requires inspection and care to insure trouble-free operation. One requirement, mandated by AD, is the 1000-hour gear inspection, which I am in the process of conducting. This involves removing the landing gear from the airplane and inspecting just about everything that moves or rotates with gages, micrometers and dial indicators. Replacement of the push-pull conduits is a given and these are readily available from Webco, a recognized supplier of Comanche parts.

Although no longer directly supported by Piper, availability of parts and replacement items has not been an issue. Lycoming and recognized shops support and overhaul the engines, Hartzell services the props, Cleveland supplies the wheels and brakes and the list goes on.

The Twin Comanche came out of the factory in a number of variations. Piper offered a turbo option which came with tip tanks. The turbo kit, developed by Rayjay, is not connected with Lycoming and is cause for Lycoming to discontinue support for the C1A engines. Recognized named shops, such as Zephyr Aircraft Engines, will overhaul these and the standard B1A engines to customer specifications up to and including new standards.

Support for the type, in the form of technical assistance, is available from the International Comanche Society, a 2900-member organization, through its Web site. Additional sharing and chatting among Comanche owners is found in the Comanche Owners Forum, located on the www.delphi.com (<http://www.delphi.com>) site. Support for the type is found at Webco, Knots2U, Bogart, Lopresti, Ron & Johns and Johnston, to name a few. Specialty shops focused on the Comanche type are located throughout the country, for the more challenging and thorough annuals.

Once the airplane has been brought to spec, downtime due to unsheduled events is minimal. Since I do all my own work, my annual cost is biased. But, an airplane in good shape should require about \$2000 for a quality annual.

Specific flight training for the new owner or someone who wants a real thorough flight review should come from extensively trained CFIs supported by the Comanche Flyer Foundation. Such CFIs are located throughout the country, as published in the ICS monthly magazine, Comanche Flyer.

In my 18-year ownership of a non-turbo 1964 model, a lot of modifications have been done in the interest of speed, passenger comfort and fuel efficiency. The plane is fast, fun to fly and as modern as any costing thousands more.

Hans Neubert

Anaheim, California

I began flight training in April of 2000, following in my brother Steve's footsteps of 20 years earlier. We immediately began talking about how great it would be to own an airplane together. But what airplane? Single, multi, new, used, complex or simple?



Increasingly, owners are lavishing high dollars on firewall backward panel overhauls. Todd LaNeve's TC, above, shows what's possible.

We initially thought about a time-builder, but ultimately resolved to just buy what we really wanted. The deal was sealed when I earned my instrument ticket in a PA-30. Steve had earned his multi-engine rating in the same airplane and didn't need any more prodding. The Twin Comanche seemed the perfect mix of everything we wanted.

Steve and a friend flew the airplane from Idaho to my home base at Clarksburg, West Virginia. The previous owner had dismantled and restored most of the airplane, adding a couple of modern touches to the otherwise original panel. He had also added a basic interior, but stopped short of a custom job, since he planned to sell.

With only a single working radio in our airplane, we had Hagerstown Aircraft Services (HAS) in Hagers-town, Maryland do all the restoration work, including the new interior and the airframe mods we had decided were necessary.

The major upgrades include a full Garmin stack with a Goodrich i-linc MFD, S-TEC 55X autopilot/flight director with altitude preselect and GPSS, Sandel electronic HSI, WX-500 Stormscope and Goodrich Skywatch system.

In order to get the co-pilot his share of flight instruments, we needed to get rid of the existing engine instruments. Enter the Vision Microsystems VM1000 which combines every engine gauge into one 5-inch square LCD display. By installing two VM1000s right over the throttle quadrant, we were able to give the co-pilot a Goodrich electric-attitude indicator, standard DG and an altimeter. This is all housed in a new aluminum, dual center stack panel that we designed.

Of course, after having done so much to the interior, we felt obligated to look to the airframe. We went for more speed mods, adding a flap, aileron and rudder gap seal, flap track covers and new nose bowls from LoPresti. We had previously added Knots 2U's gear lobe fairings. Besides the speed benefits, these modifications, along with the existing Robertson STOL kit, improve feel and control at low speeds and during single engine operations while modernizing the appearance.

We also painted the airplane and improved the interior. The end result is a totally modernized airplane that will easily cruise at 170 knots sipping 18 gallons per hour. Pushing the throttle and prop controls forward a little more yields speeds approaching 180 knots at slightly higher fuel flows.

While we've only amassed a few hundred hours since purchasing the airplane, it has been flown into runways as short as 2500 feet without effort. The STOL kit provides outstanding performance in both landing and takeoff. The airplane is also easy to fly on approaches into big airports, maintaining at least 125 knots on approach, sans flaps, right to the threshold.

All in all, we can't imagine a more efficient, comfortable, great performing light twin for the money. At a total investment of about \$350,000, there's certainly not a currently manufactured twin that offers the same capability anywhere near the price. We dare say this may be the finest Twin Comanche in the world. And we feel pretty good about that.

Todd LeNeve

Via e-mail

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