The 'baby' Comanche

A capable airplane at a reasonable price

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PHOTOGRAPHY BY MIKE FIZER

Budget Buys

On November 24, 1959, Max Conrad landed a Piper Comanche equipped with a Lycoming four-cylinder 180-horsepower engine in El Paso, Texas. He had just flown non-stop across the Atlantic Ocean from Casablanca on a record-setting 6,966-nm flight. It put the Comanches on the map. Today, the Comanche 180 may not have as vocal a following as Beechcraft's V-tailed Bonanza, nor is it as common as Piper's later series of retractable-gear Arrows, but pilots seeking an economical, comfortable, and durable airplane that looks as good today as it did when it was first introduced in 1958 should give a baby Comanche a look. What they will find is a four-place airplane that cruises at 135 to 140 knots, burns 9.5 to 10 gallons of fuel per hour, has beautifully balanced flying characteristics, is capable of 700-nm legs, and can pack 650 pounds of payload after the tanks are topped off with 60 gallons of fuel.

Piper's first modern design

The all-metal Comanche was Piper's first modern airplane. In 1957, only the year before the introduction of the Comanche, Piper's top-of-the-line single-engine model had been the fixed-gear, boxy-looking welded-tube and fabric PA-22 Tri-Pacer.

The Comanche design, by Howard "Pug" Piper, son of company founder William T. Piper Sr., featured advanced design characteristics such as a tapered laminar flow wing and a stabilator in place of the more conventional horizontal stabilizer and elevator. Some 1,184 baby Comanches were produced from 1958 to 1964. In the end, these innovative but labor-intensive design features—and Hurricane Agnes, that swept through Piper's Lock Haven, Pennsylvania, production facility in 1972—combined to end Comanche production. The baby was replaced by the boxier and easier-to-manufacture PA-28 Cherokee line of four-place singles.

Why did Piper choose a low-wing design for its first all-metal airplane after decades of churning out high-wing airplanes? One version of the story is that Al Mooney, founder of Mooney Aircraft Company—flying an early M-20 prototype—chose to land at Lock Haven because of bad weather at his destination. Pug Piper graciously found room in a Piper hangar for the low-wing Mooney and promised to keep it safe while Mooney continued his trip. It's rumored that Piper engineers went over the Mooney with a fine-toothed comb—and that's why the first all-metal Piper looks a lot like a Mooney.

"I have owned my Comanche for 37 years. It has been our family transportation all that time. It's a very comfortable long-trip aircraft. It's amazing what a bad rap the 180 has, almost entirely from those who have never flown it."

—Chuck Rehlin, AOPA 346153

PA 24-180

The Comanche fuselage, wing structure, and tail are the same for the 180-, 250-, and 260-horsepower variations. Owners of 180s are reassured that the same structure that is limited to a 2,550-pound maximum takeoff weight (MTOW) in their airplane is also sufficient to support the 3,200-pound MTOW of the 260-horsepower version.

Each wing is built around a very stout I-beam shaped main spar. Since the thickest section of laminar flow airfoils is farther aft in the chord of the wing than non-laminar flow wings, the inner ends of both spars bolt together under the rear passenger seat. This permits a flat cabin floor. Another reassuring fact for Comanche owners is that—even though Comanches are low-wing airplanes—the lower portion of the wing spar is well protected by the belly skin and frames. Rarely does the load-bearing portion of the wing such as the main spar get damaged in a wheels-up landing.

That's good news for owners. What isn't good news is that the majority of Comanche FAA incident reports involve landing-gear mishaps. An AOPA Air Safety Foundation Safety Review of the Comanche showed that failure to extend the landing gear accounted for nearly 10 percent of the pilot-related accidents in single-engine models. In 1977 the FAA decided that the landing gear failure rate was so abysmal that it incorporated an entire section on landing gear maintenance from the aircraft service manual into a repetitive airworthiness directive (AD 77-13-21). This AD requires dimensional inspections and refurbishment of landing gear wear points at 1,000-hour intervals.

The landing gear retraction system consists of a single bi-directional electric motor that's controlled by the landing gear switch. Two flexible conduits transmit motion from a cross-shaft to the main landing gear actuating linkages in each wheel well. There are a lot of moving parts in the landing gear system, but it's a very strong and reliable system when properly maintained. A knowledgeable technician familiar with the Comanche landing gear system is indispensable to owners.

SPECSHEET

1958 Piper Comanche 180
Price when new: $17,900
Current market value, per *Vref*: $30,000

Specifications

Powerplant(s)	Lycoming O-360 A1A
Recommended TBO	2,000 hr
Propeller(s)	Hartzell or McCauley
Length	24.7 ft
Height	7.3 ft
Wingspan	36 ft
Wing area	178 sq ft
Wing loading	14.3 lb/sq ft
Power loading	14.2 lb/hp
Seats	4
Empty weight	1,455 lb
Max gross weight	2,550 lb
Useful load	1,095 lb
Fuel capacity, std	50 gal
Fuel capacity, w/opt tanks	60 gal
Baggage capacity	200 lb

Performance

Takeoff distance, ground roll	750 ft
Rate of climb, sea level	910 fpm
Max level speed, sea level	167 mph
Cruise speed/endurance w/45-min rsv, std fuel (fuel consumption, ea engine) @ 75% power, best economy	160 mph/ 10 gal/hr
Service ceiling	18,500 ft
Absolute ceiling	21,000 ft
Landing distance, ground roll	600 ft

Limiting and Recommended Airspeeds

V_Y (best rate of climb)	96 mph
V_{FE} (max flap extended)	125 mph
V_{LO} (max gear operating) Extend	150 mph
V_{S1} (stall, clean)	66 mph
V_{SO} (stall, in landing configuration)	61 mph

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.

Comfy cabin

The average PA 24-180 weighed 1,535 to 1,550 pounds when it left the factory. Maximum takeoff weight is 2,550. The cabin, in true Piper single-engine fashion, is accessible after climbing up on the right wing—for drag reduction, there is no step—then stepping down through a single door on the co-pilot's side of the airplane. The cabin is comfortable, measures 45 inches wide by 47 inches tall, and has good ventilation. The windows and windshield are relatively narrow, and although there are rumors of poor visibility, Comanche flyers don't seem to notice. Knots 2U of Burlington, Wisconsin, manufactures and sells the STC-approved Arapaho windshield, which extends the top line of the windshield.

The baggage compartment is accessible through a 20-inch by 20-inch door and is capable of handling 200 pounds—except for serial numbers 24-1 through 24-102, which are limited to 100 pounds—and is located behind the rear seat.

Flaps are manually actuated to 9, 18, and 27 degrees down by a large floor-mounted lever until the 1962 model year when this "Armstrong" method was replaced by an electrically actuated system. Similarly, in early models both main wheel brakes were simultaneously applied by a single pull-type lever immediately below the throttle knob until 1961 when pilot toe brakes became standard equipment. Nosewheel steering turns 20 degrees left and 20 degrees right, which limits the turning radius.

Pre-1961 instrument panels are non-standard—there's room for avionics on the extreme left and right edges, while the

Like other airplanes of this vintage, the early baby Comanches have a non-standard instrument panel (right).The landing gear is operated with a small toggle switch, not the large, bulbous handle many pilots are accustomed to (top right). The rear bench seat is as comfortable as the back seat of your father's Ford Torino (top).

> ***"The Comanche is very stable in IFR and particularly on the approach."***
>
> **—Byron Turkett, AOPA 370560**

middle is occupied by a shock-mounted floating panel with a scatter-shot grouping of instruments anchored by a pair of huge and hard-to-decipher A.N. style, World-War II-surplus gyros. The panel was updated to include a center-stack radio rack and more standard instrument groupings beginning in 1961. Upgraded panels are common on pre-1961 baby Comanches. Ron and John's Comanche Service in Portland, Oregon, has an STC to upgrade the earlier panels.

Flying qualities

Every Comanche 180 owner interviewed for this article praised the airplane's flying qualities. All control surfaces are well balanced, and normal flight ops rarely require anything more than fingertip pressures. That said, it's important to realize that the stabilator is powerful, and Comanche pilots soon learn to carefully turn the ceiling-mounted pitch trim knob—which resembles a window-crank handle and knob from a 1955 Mercury—to relieve pitch pressures, which are moderated by an anti-servo tab. Once trimmed in cruise, well-rigged Comanches move along as if on rails.

Some have tagged the Comanche 180 as a "ground-hugger" because laminar flow wings trade low-speed lift for less drag in cruise. Yet the handbook cites 1,370 feet to takeoff and climb over a 50-foot obstacle at sea-level in a fully loaded airplane. Once you reach the best rate-of-climb speed of 96 mph (83 knots) and the gear is up, the airplane climbs 910 feet per minute.

The Comanche airframe is slippery and if pushed can scoot along at up to 145 KTAS at low altitudes with the power knobs pushed full forward. This slipperiness also requires Comanche pilots to exercise caution during descents as airspeeds can quickly slide into the caution (yellow) arc. The landing gear can be extended at up to 150 mph (130 knots) to reduce speed during descent, although most Comanche owners try to slow to 120 mph (104 knots) to reduce wear on the actuating system.

Much has been written about Comanches being skittish on the ground and hard to land smoothly. The combination of a laminar-flow airfoil that does stop flying abruptly, the wing being at a positive angle of incidence, and a large nose tire result in an airplane that gets light on the gear during takeoffs, yet most of the problems with uncomfortable landings are caused by sloppy speed control and failing to add enough nose-up trim on short final. The baby Comanche is markedly easier to land than the larger-engined, later-model Comanches because of the reduced forward weight of the four-cylinder engine.

The traditional Piper paint scheme, large, open cowling, and rectangular windows give the Comanche away.

The market

Comanche 180s have recently been advertised for as low as $30,000 but they will surely need a substantial cash infusion to make these 45- to 50-year-old airplanes airworthy from spinner to tailcone. *Vref* suggests that a PA 24-180 with a serviceable avionics suite, 4,400 hours on the airframe and 1,000 hours on the engine is worth $40,000 today. Really nice ones with excellent interiors and paint, equipped with an IFR-approved moving map GPS in a center stack configuration, and a smattering of upgrades such as speed mods and a one-piece windshield should bring up to $65,000. When measured against comparable light four place singles such as the Mooney M20C, Cessna Cutlass RG and Cardinal RG, and the Piper Arrow, the Comanche 180 is the lowest-priced airplane in the group. But it's also the oldest. Yet because of the exceedingly strong structure, and because of Piper's decision to apply primer paint on all of the aluminum

Hits

- **Economical to operate**
- **Sturdy airframe**
- **Simple systems**
- **A lot of bang for the buck**
- **Excellent handling qualities**
- **Good support and owners' club**

Misses

- **Not easy to get into and out of**
- **Visibility is somewhat limited**
- **Landing gear maintenance must be performed by knowledgeable technician**
- **Limited high altitude performance when fully loaded**
- **Higher-than-average insurance costs**

"It is a greatly under-rated airplane—a standout value. It is a fast, comfortable, and economical cruising machine for covering great distances in relatively short times."

—Marshall Aurnou,

AOPA 4426129

airframe parts before final construction, PA 24 airframes have resisted corrosion exceedingly well.

Buying insurance for a baby Comanche puzzles some shoppers because rates are usually higher than those quoted for comparable airplanes. Insurance underwriters explained that repair costs have increased to the point that it often costs insurance companies less to total lower value airplanes such as the Comanche rather than repairing them.

Technical details

The baby Comanche is powered by Lycoming's "bullet-proof" four-cylinder, 180-horsepower O-360 A1A engine. This engine is renowned for its durability, and it's not uncommon for these engines to still be running strong at 3,000 hours—TBO is 2,000 hours—if well maintained and flown regularly. Parts are plentiful, and the systems are simple.

The original propeller was a two-blade Hartzell, which has been subject to a couple of expensive airworthiness directives. These propellers are subject to a recurring—and expensive—500-hour inspection. McCauley sells a replacement two-blade propeller with a 2,000-hour TBO for a little over $7,000. Three-blade propellers are readily available.

At first glance there seems to be an almost endless list of ADs that apply to Comanches, but this is misleading. Only a few still apply. In addition to the 1,000-hour landing gear AD already mentioned, there is also an AD requiring the replacement of two bungees (big rubber bands) every three years or 500 hours, whichever comes first. The other critical maintenance item is the stabilator control system. The individual stabilators slide over steel torque tubes, which pivot in sealed ball bearings. The inner ends of the torque tubes slide into an aluminum stabilator horn, which supports the stabilator balance weights and transmits control yoke up-and down-forces to the stabilator.

Piper issued service bulletin 1160 in December 2005 calling for the inspection of some of these parts within the next 100 hours. The International Comanche Society (ICS) technical committee has more information on this issue.

Parts and service

The ICS is the preeminent Comanche type club. In addition to a monthly magazine, yearly dues of $65 grant access to the ICS Web site (www.comancheflyer.com). There, members participate in an ongoing forum on subjects such as operations, maintenance, and avionics. The site also has a treasure chest of in-depth technical information from the files of Maurice Taylor, a former Piper employee who served as ICS technical advisor until his passing in late 2004. Individual chapters sponsor fly-ins and technical sessions on a regular basis. The association also sells a compendium of maintenance, operations, and other Comanche-related information in an eight and one-half by 11-inch bound volume called the *Tips Special.*

Webco Aircraft of Newton, Kansas, is well known to all Comanche owners as a reliable source of service information and parts. For more information, visit the Web site (www.webcoaircraft.com).

In addition to Knots 2U, LoPresti Speed Merchants of Vero Beach, Florida, also has STCed airframe modifications for Comanches.

Aviation Performance Products of Melbourne, Florida, sells STCed modern-style engine cowlings, which reduce drag, and stainless steel dual exhaust systems, which are claimed to help prevent engine overheating.

One-hundred thirty-four AOPA members in the United States fly Comanche 180s. The combination of sportscar-like handling, moderate operating costs, an easy-to-maintain engine, and good point-to-point speeds make the baby Comanche a very desirable airplane for pilots seeking a thoroughbred airplane from the days when beauty and shape were wisely combined with form and function. AOPA