Heavy lifter

Piper's Aztec can haul it all

BY THOMAS A. HORNE

PHOTOGRAPHY BY MIKE FIZER

Piper's Aztec line of piston twins are big, trucky workhorses well known for their ability to lift heavy loads out of short runways. They also have remarkably docile handling characteristics and cabin volumes reminiscent of those huge 1950s-era General Motors land yachts. In today's used-airplane market, Aztecs can represent the biggest bang for the buck if you're looking for a twin but are pressed for cash.

History

The Aztec line traces its roots back to 1948, when Piper bought the Stinson Division of the old Consolidated Vultee Aircraft Corporation. One of the Stinson designs then on the drawing boards was the Twin Stinson—a fixed-gear, tube-and-fabric, twin-tail design powered by two 125-horsepower Lycoming O-290 engines.

Piper ran with the Twin Stinson idea, getting rid of the twin tail, fixed gear, fabric covering, and low-powered engines in the process. This redesign was named the Piper Apache, and the first of these 150-hp Lycoming O-320-powered retractable-gear twins was delivered in 1954. It was the first of what would be many of Piper's "Indian" designs, and was given the PA–23-150 type designation.

The Aztec addressed the Apache's main shortcomings—deficits of power, speed, and single-engine climb rate—by using two 250-hp Lycoming O-540 engines. It retained the PA–23 designator,


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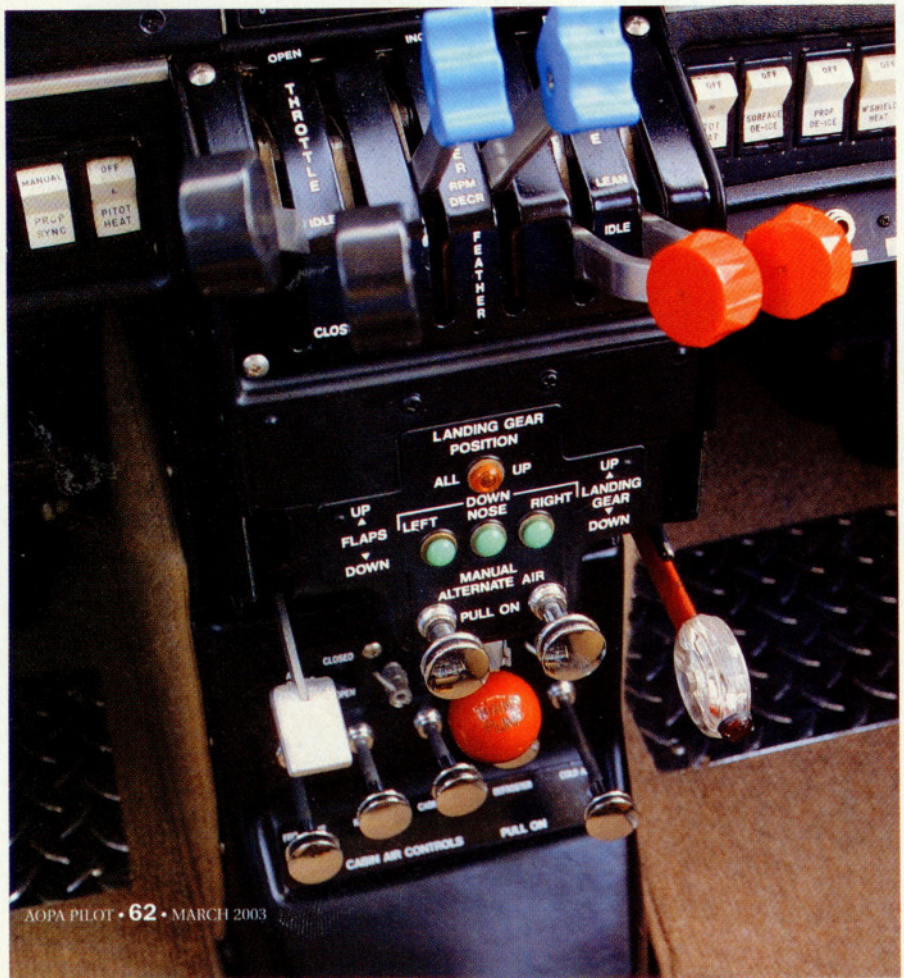
RPM
N250TA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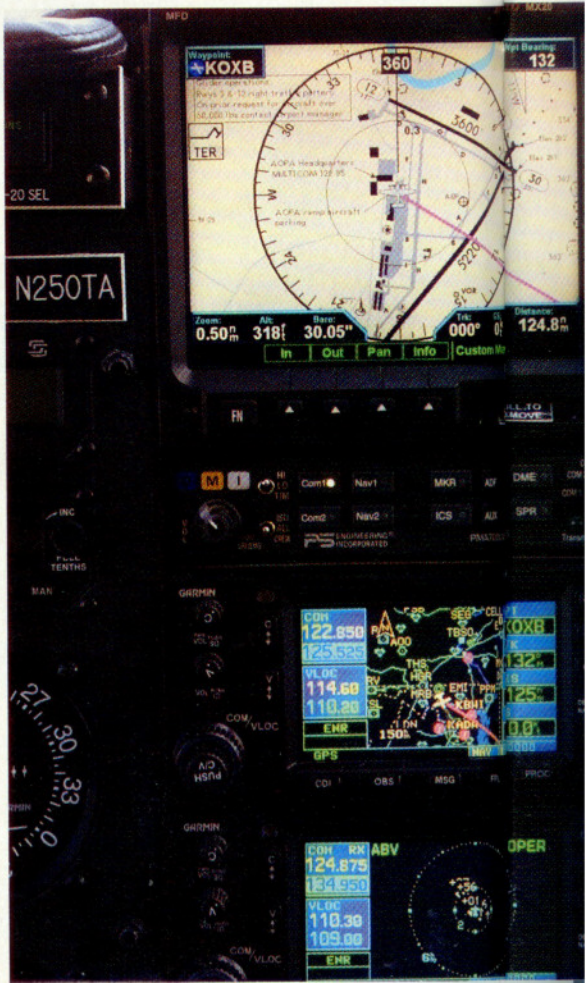
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Aztecs have the elbow-, head-, and legroom of a mid-1950s General Motors land yacht.

but had the "-250" suffix to indicate the engines' power output. The first Aztecs were the 1960 models, and Piper's Lock Haven, Pennsylvania, factory would continue to produce these popular twins until 1981. Records show that 4,811 of the various Aztec models were built, and that about 2,400 are still registered today.

The first Aztecs were called just plain Aztecs, and were built in 1960 and 1961. They looked like larger versions of the Apache, what with their snub noses and unfaired landing-gear enclosures. The Aztec B—in production from 1962 to 1964—came with six seats, a pop-out emergency exit window, a longer nose, and a 150-lb-capacity nose baggage compartment to go with it.

With two Garmin 430s, an UPSAT MX20 multifunction display, and a Sandel EHSI (electronic horizontal situation indicator), this Aztec is uniquely display-heavy.

Aztec Cs (1964 to 1967) added fuel injection as standard equipment and faired-in landing-gear doors, and they could be ordered with optional turbocharging. Optional ice-protection equipment (deice boots and a heated windshield, plus the usual electrically powered propeller and pitot-static heat) was another first with these Aztecs. The C models also had higher maximum gross weight limits than their predecessors (5,200 lb versus 4,800 lb).

Aztec Ds (1968 to 1970) were the first to have the modern T-arrangement of flight instruments, and some other, smaller, interior changes marked these models.

With the Aztec E (1970 to 1975) came an immediately recognizable design change: a pointy nose. The extra room was for the optional weather radar system's antenna, but it also gave the nose baggage compartment more volume.

Aztec Fs (1976 to 1981) were fitted out with one-piece windshields, a bigger stabilator (with balance horns), and wingtip extensions. The extensions let owners install optional 20-gallon-per-side auxiliary fuel tanks; this boosted fuel capacity to 177 gallons, up from the Aztec's standard 137 gallons.

Flying the Az-truck

Climbing into an Aztec's cockpit is like getting into a big old Buick. You take huge strides up the wing-walk, then drop your legs into the cavernous interior. You sit tall in the saddle, and the general impression is one of being in something bigger than a light twin. There's gobs of leg-, head-, shoulder-, and elbowroom—something that draws many pilots to Aztecs. Once you've settled in you might want to look back and see how any passengers are doing. You'll see that they've got legroom of the kind you'd find in a stretch limo.

Checklist procedures are totally uncomplicated, but don't look for much guidance from the older Aztec pilot's operating handbooks. Better ones—laminated, spiral-bound, and conforming with the latest GAMA formats—are available from Sporty's Pilot Shop (800/LIFTOFF). The only oddball item on the pretakeoff checklist is the one that calls for extending the landing gear's emergency pump handle.

This brings up the Aztec's hydraulic system—one of the model's potential gotchas. Pressure routed from a hydraulic pump—which is mounted on the left engine—is used to raise and lower the landing gear and flaps. Should the left engine fail, the pilot will have to use the emergency pump handle to

Hits and misses

Hits

- Big, big cabin.
- Acceptable cruise speeds (180 to 200 kt).
- Uncomplaining engines.
- With tip tanks, 1,100-nm range.
- Forgiving, easy to fly, strong like a bull.
- With ice-protection and storm-detection gear, versatile weather avoidance.
- Great short-field performance.
- Big useful loads and plenty of baggage space.
- Easy to land.

Misses

- Overhead pitch trim crank drives you nuts.
- Hydraulic pump on one engine? Gimme a break.
- Gas-fired Janitrol/JanAero heaters can be a fire hazard.
- Pre-Aztec F models pitch up with flap extension.
- Nonstandard panel layout on pre-1968 Aztecs.
- Early Aztecs have *single* alternator and vacuum pump as standard equipment! Most upgraded by now.
- Hard-working Aztecs don't age well, can look downright frumpy. Ugly, even.

An interior and exterior makeover by Oxford Aviation in Oxford, Maine, gives backseaters the feel of being in a first-class rail car.

create enough pressure to raise or lower the landing gear. It takes about 30 to 40 strokes on the pump handle to do this. For Aztec drivers, this lends a whole new meaning to the term *critical engine.*

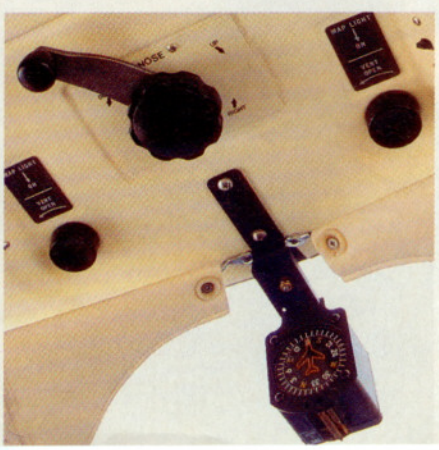
For the unlucky pilot who loses an engine immediately after takeoff and wants to realize the Aztec's 200-some-odd-fpm single-engine climb rate, it can be a very busy time indeed. Having the pump handle at the ready—as per the checklist—minimizes that time. A better system is available for F models: An optional auxiliary hydraulic pump can be installed on the right engine.

What if all your pumping is in vain, and the landing gear still won't come down? There's a backup for the backup—a carbon dioxide bottle that can blow the gear down as a last resort.

Aztecs make wonderful instrument platforms. It's sort of like sitting on a sofa. But first you have to trim the airplane, and here's where neophytes can have fits. To manually trim the stabilator and rudder you use a pair of overhead crank handles. They're very sensitive, and most pilots end up cranking the wrong way at first. That large stabilator is sensitive, so small inputs in pitch can result in big excursions. In time, you get the hang of it.

The Aztec's fat, flat-bottomed USA35B airfoil gives the airplane great slow-flying characteristics, and comparatively gentle stall and V_{MC} behavior. There's plenty of buffeting to warn of an impending stall, and should it come the airplane has no unusual tendency to roll off on one wing.

Count on 180-kt cruise speeds on 27 gph for normally-aspirated models.



Aztec baggage capacity is 300 pounds, split between the nose and aft baggage compartments. The overhead pitch- and rudder-trim cranks can give neophytes fits. Electric pitch trim can do away with the "wrong way" manual cranking problem.

Approaches can be flown at 90 KIAS or 100 mph using full flaps. With minimal experience, you can easily learn to consistently make greaser Aztec arrivals.

Performance

At 7,000 feet, early normally aspirated Aztecs with standard fuel tanks can cruise as fast as 180 kt/208 mph and fly as far as 780 nm/900 sm. Expect fuel burns for this 75-percent-cruise situation to total approximately 27 gph. Turbocharged models, of course, can fly faster and, if they are equipped with optional fuel tanks, farther—but fuel burns at maximum cruise power settings can reach a whopping 38 gph.

Takeoffs are inspiring, with Aztecs able to lift useful loads anywhere from 1,900 to about 2,100 lb, using about 900 feet to break ground and 2,000 feet or so to clear the hypothetical 50-foot obstacle; turbocharged versions need even less runway.

The Aztec's load-hauling capability is legendary. Full fuel, four passengers, and baggage are no problem for most models, but there is a zero-fuel weight restriction. A 1983 airworthiness directive (AD 83-22-01) dictates that once an Aztec reaches a gross weight of 4,500 lb, the additional 700 lb (to reach maximum gross weight) must be in fuel. This is to relieve wing attach points of undue wear and tear while sustaining air loads.

A souped-up Turbo E

The Aztec featured in this article is a 1974 Turbo Aztec E owned by Dane Harman of Halifax, Pennsylvania. Harman, owner of the Harman Stove Company, uses his Aztec mainly on business trips to vendors and dealers east of the Mississippi. Harman started out owning a Cessna 182, but gave that up after an errant spark plug blew out one of the airplane's cylinders and he made an unscheduled landing. He then moved up to multiengine flying in 1997, earning his multi rating in an Apache. After the 182 incident, he vowed that his next airplane would have "dual everything" in the name of safety.

He looked at a wide range of airplanes—Cessna 310s and 340s, Beechcraft Barons, even New Piper's Seneca V and Meridian—but couldn't find the combination of short-field and load-hauling virtues that made the Turbo E his final choice. He bought N250TA in 1999 for $116,000. It was a cream puff with only 1,450 total airframe hours, but Harman wanted to make it into something more.

The airplane's original panel made way for lots of acreage devoted to displays (two Garmin 430 GPSs, a UPS Aviation Technologies MX20 multifunction display, and a Sandel Electronic HSI). A Meggitt/S-Tec System 55 autopilot with altitude preselect, an AirCell in-flight telephone, a Goodrich Skywatch traffic alert system, an Insight engine analyzer, and full copilot instrumentation round out the upgrade.

Harman typically flies below 18,000 feet, using nasal cannula equipment hooked up to the airplane's built-in oxygen system. At 16,000 feet, he sets power at 32-inches manifold pressure and 2,400 rpm, and sees 200-kt true airspeeds on 36-gph fuel burns. His usual trip length—400 nm—doesn't take long.

The market says...

A lot of Aztecs are long in the tooth, and because of their worker-bee

SPECSHEET

1974 Piper Turbo Aztec E
Price new: $66,500
Current market value: $108,000

Specifications

Powerplants	Two 250-hp Lycoming TIO-540-C1A
Recommended TBO	2,000 hr
Propeller	Hartzell HC-E2YR-2
Length	31 ft 2.6 in
Height	10 ft 3 in
Wingspan	37 ft 2 in
Wing area	207.6 sq ft
Wing loading	25 lb/sq ft
Power loading	10.4 lb/hp
Seats	6
Standard empty weight	3,229 lb
Empty weight, as tested	3,591 lb
Max ramp weight	5,200 lb
Max takeoff weight	5,200 lb
Zero-fuel weight	4,500 lb
Max useful load	1,971 lb
Max useful load, as tested	1,609 lb
Payload w/full fuel	843 lb
Payload w/full fuel, as tested	481 lb
Max landing weight	4,950 lb
Fuel capacity, std	140 gal usable (840 lb usable)
Fuel capacity, w/opt tanks	188 gal usable (1,128 lb usable)
Baggage capacity, nose	150 lb, 25.4 cu ft
Baggage capacity, aft	150 lb, 20.2 cu ft

Performance

Takeoff distance, ground roll	820 ft
Takeoff distance over 50-ft obstacle	1,250 ft
Accelerate-stop distance	2,220 ft
Rate of climb, sea level	1,530 fpm
Single-engine ROC, sea level	265 fpm
Cruise speed/range w/45-min rsv (fuel consumption) @ 92% power, best power mixture, 17,000 ft	204 kt/856 nm (38 gph)
@ 70% power, best economy mixture, 8,000 ft	168 kt/1102 nm (25.7 gph)
Max operating altitude	30,000 ft
Service ceiling	30,000 ft
Single-engine service ceiling	15,300 ft
Absolute ceiling	18,700 ft
Landing distance over 50-ft obstacle	1,620 ft
Landing distance, ground roll	850 ft

Limiting and Recommended Airspeeds

V_R (rotation)	74 KIAS
V_X (best angle of climb)	84 KIAS
V_Y (best rate of climb)	100 KIAS
V_{MC} (min control w/critical engine inoperative)	69 KIAS
V_{XSE} (best single-engine angle of climb)	82 KIAS
V_{YSE} (best single-engine rate of climb)	90 KIAS
V_A (design maneuvering)	130 KIAS
V_{FE} (max flap extended)	109 KIAS
V_{LE} (max gear extended)	130 KIAS
V_{LO} (max gear operating)	
Extend	130 KIAS
Retract	130 KIAS
V_{NO} (max structural cruising)	172 KIAS
V_{NE} (never exceed)	216 KIAS
V_{S1} (stall, clean)	76 KIAS
V_{SO} (stall, in landing configuration)	70 KIAS

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.

They're easy to fly and reasonably priced, but by now many Aztecs look like they've been worked hard and put away wet.

Recent Aztec ADs

AD 98-17-11. Textron Lycoming engines. Crankshafts repaired by Nelson Balancing Service, of Bedford, Massachusetts, must be removed from service, inspected, and reworked or removed from service as indicated. Prompted by reports of heat cracking and failure of affected crankshafts.

AD 98-18-12. Textron Lycoming fuel-injected engines. Engines with certain Crane/Lear Romec rotary fuel pumps must have initial and repetitive inspections of pump relief valve attaching screws. Leaking pumps have caused in-flight engine fires.

AD 2001-09-08. Hartzell propellers. Initial blade inspections of all "Y" shank blades. AD intended to prevent failure of propeller blade from fatigue cracks in the blade shank radius.

AD 2001-17-13. JanAero heaters. Inspect and pressure-test heater fuel regulator shutoff valves for leaks. If leaks are found, replace shutoff valve. AD intended to eliminate or severely reduce the potential for fuel leakage, which could cause an aircraft fire.

AD 2002-12-07. Textron Lycoming engines. Supersedes AD 2000-18-53, an emergency, repetitive AD. Requires inspection of oil filter base for signs of oil leakage or gasket extrusion. Amendment requires installation of an improved gasket design, which terminates the repetitive AD. The improved design is intended to prevent the complete loss of engine oil, subsequent seizing of the engine, and engine fire.

persona many have lived hard lives hauling all sorts of loads under all sorts of conditions. Translation: There are a lot of beat-up Aztecs out there. *Vref*, an aircraft-pricing guide, says that Aztec prices can be as low as $37,000 (for a 1960 model). But that would be a "mechanic's special," to employ used-car terminology. On the other hand, a 1981 Turbo F in good condition can fetch up to $160,000. That's quite a price range, but like we said, if you want a twin, want to haul a load, and don't have a lot to spend, then an Aztec should be on your wish list. Just be prepared for remedial maintenance and some upgrades after the purchase. And make sure the airplane is in compliance with all ADs.

i Links to additional information about Piper light twins may be found on AOPA Online (www.aopa.org/pilot/links.shtml). Keyword search: Piper twin.

Final verdict: It may not be as sexy-looking as a Twin Comanche, or as fast as a Cessna 310, but the Aztec's honest flying behavior and wide loading envelope make it a rational choice for those seeking a versatile light twin. AOPA

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